Bowman

DATE: 12/5/2024 **FILE: 4192.10/360025-02-040**

TO: County of San Diego

FROM: Jeff Novoa & Chelisa Pack, Bowman

SUBJECT: Drainage Memorandum to accompany Drainage Report for the resubmittal of the Revised Tentative Map Ocean Breeze Ranch Project PDS2023-TM-5615TER/MUP-16-012/MUP-16-013TE

This drainage report memo has been prepared to support the Drainage Report associated with the Revised Tentative Map for Ocean Breeze Ranch. This memo will help clarify the resubmittal of the Preliminary Drainage Report. The revised Tentative Map is currently under concurrent processing with the Rough Grading Plans and reports. The Final Engineering version of the Drainage Study was recently updated. Rather than updating the Preliminary Drainage Report again to reflect the most recent changes on the site plan, we are electing to submit this memo with the Final Engineering version of the Drainage Study in order to satisfy the requirement to submit the Preliminary Drainage Study as a part of the TM Replacement package. The Final Engineering version of the report is more detailed than what is necessary for a CEQA review such as hydraulics, but there will be consistency between the Tentative Map report and the Final Engineering report. Per discussion with the County, the final engineering Drainage Report will be reviewed as part of the Revised Tentative Map. The comments associated with the TM-5616TER have been addressed in this report resubmittal. The table below has been provided to cross reference the page # of the TM Preliminary Grading Plan and Rough Grading Plan to provide the reviewer a cross-reference table in order to locate BMPs and other drainage structures between the two different plan sets. See below.

BMP ID #	Page # of Revised TM Preliminary Grading Plan (PDS2023-TM-5615TER)	Page # of Rough Grading Plan (PDS2020-LDGRMJ-30295)
1A	13	193
1B	3	194
2A	12	195
2B	12	196
2C	12	197
2D	12	198
2E	12	199
2F	12	199
2G	12	200
2H	14	200
2I	12	198
3A	5	201
3B	8	201
3C	8	202
3D	8	203

3E	9	204
3F	9	204
3G	11	205
3H	17	205
3I	17	206
3J	5	207
3K	5	207
1A-1	13	193
1A-2	13	193
1A-3	13	193
1B-1	3	194
2A-1	12	208
2A-2	12	208
2B-1	12	196
2B-2	12	210
2C-1	12	197
2H-1	14	210
3C-1	8	202
3D-1	8	203

A response to comment matrix has been included in this submittal package to respond the latest comments.

FINAL DRAINAGE STUDY
OCEAN BREEZE RANCH

County of San Diego, CA
October 31, 2024

TM 5615
PDS2020-LDGRMJ-30295

Prepared For:

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DECLARATION OF RESPONSIBLE CHARGE

I HEREBY DECLARE THAT I AM THE ENGINEER OF WORK FOR THIS PROJECT. THAT I HAVE EXERCISED RESPONSIBLE CHARGE OVER THE DESIGN OF THE PROJECT AS DEFINED IN SECTION 6703 OF THE BUSINESS AND PROFESSIONS CODE, AND THAT THE DESIGN IS CONSISTENT WITH CURRENT STANDARDS.

I UNDERSTAND THAT THE CHECK OF PROJECT DRAWINGS AND SPECIFICATIONS BY THE COUNTY OF SAN DIEGO IS CONFINED TO A REVIEW ONLY AND DOES NOT RELIEVE ME, AS AN ENGINEER OF WORK, OF MY RESPONSIBILITIES FOR PROJECT DESIGN.



Prepared by: J.Novoa, PE
Under the supervision of

_____
Chelisa Pack, PE RCE 71026
Registration Expires 06/30/25

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1. INTRODUCTION

This drainage report supports the design of the proposed storm drain improvements associated with Ocean Breeze Ranch project processing a rough grading plan under PDS#2020-LDGRMJ-30295. The project is located in the County of San Diego within the Fallbrook Community Planning Area. The site is 1,403 acres in size and is located west of Interstate 15, south of the San Luis Rey River and State Route 76 (SR 76), and north of West Lilac Road. The site is generally in between the cross streets of Camino del Cielo and Via Ararat Drive along West Lilac Road. Sullivan Middle School is located near the southeastern portion of the site. Figure 1 shows the vicinity map for the project.

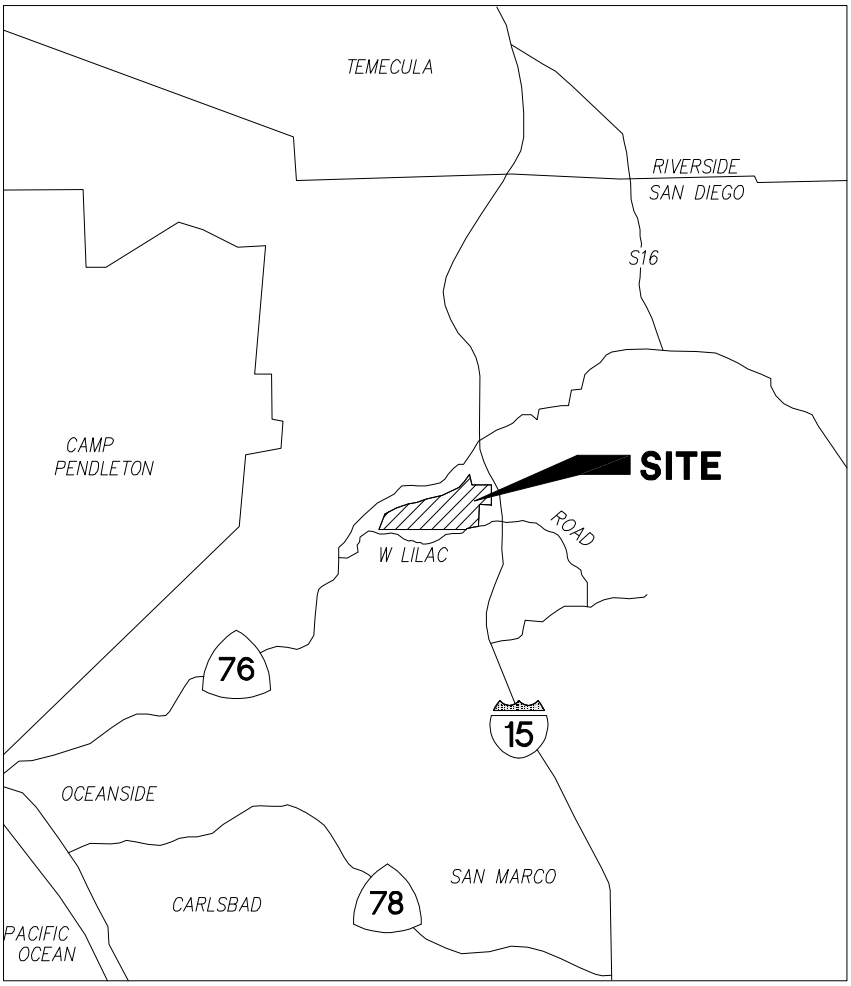


Figure 1: Project Vicinity Map

The site is currently a ranch with a few residences, agricultural farms and a large complex of barns for horses. The project includes preservation of the existing residences and barns, and development of large portions of the site into single-family homes with the associated improvements including streets, landscaping, and utilities. In addition, the project also includes street widening improvements for offsite areas.

The purpose of this report is to determine hydrologic impact, if any, to the existing storm drain facilities or natural drainage, provide peak 100-year discharge values for existing and proposed conditions, and to provide the required analysis of potential development impacts and mitigations with respect to drainage.

The drainage analyses presented herein are reflective of the current grading plans for OBR, which include peak 100-year storm event hydrologic analyses using relative street and lot grades and hydraulic analyses, including detention and storm drain sizing.

For information regarding post-construction storm water mitigation BMPs, refer to the Storm Water Quality Management Plan (SWQMP) under a separate cover prepared by Project Design Consultants.

2. EXISTING AND PROPOSED DRAINAGE PATTERNS AND IMPROVEMENTS

The following sections provide descriptions of the existing and proposed drainage patterns and improvements for the project. See Exhibit A for the existing condition hydrology maps.

2.1 Existing Drainage Patterns

The site currently consists of a large agricultural ranch surrounding by steep hillsides. The site is mostly undeveloped and includes hillsides and pastures, former tomato fields, barns, farm ponds, farm roads, and various scattered buildings throughout the site. Slopes vary from moderate to steep and cover is mostly brush and agricultural crops with some areas of dense trees. Under existing conditions, there are several farm ponds throughout the site that are presumed to be wet throughout the year. The site mostly drains to the north towards the San Luis Rey River. Some of the drainage sheet flows into the river, and other areas discharge into defined channels that drain offsite towards the river. There are a few areas near the southwest and southeast corners of the site that drain south towards West Lilac Road, and discharge into various culverts that cross the road and drain to the south and eventually drain to the San Luis Rey River further downstream.

The site drainage is affected by several areas of upstream runon. East of the Redondo Drive/West Lilac Road intersection, there is a large portion of runon that drains onto the property and drains to the north through the site via the steep valley channels. There is also another significant area of runon along the easterly property line that drains through the site along a stream that drains in a northwesterly direction toward the river. The runon areas are mostly low-density residential areas with agricultural and other improvements. The storm drain improvements consist of small roadway culverts and heavily vegetated channels, typical of the semi-rural character of the surrounding development.

For the purpose of the analysis within this report, onsite drainage have been divided into several drainage areas, designated as System ####E100. Included are Systems 500E and 550E, wherein a large basin is broken up into two separate systems along the berm of an existing pond. This was done to allow for a simple pre- and post-project comparison of Rational Method results. The two systems, together exceed the one square mile threshold for the Rational Method. However,

the existing pond likely retains a lot of water from the upstream watershed, so the systems were analyzed separately for comparison purposes. For design purposes, a Unit Hydrograph model was prepared for the watershed, since the area exceeds one square mile.

The "E" in the system name refers to the existing condition drainage area in order to differentiate between the proposed (P) drainage areas. These systems have also been identified relative to the directional quadrant to which they discharge (ie. Northwestern, Northeastern, Southwestern, Southeastern) in order to facilitate a comparison with the post-project conditions. The quadrants are used for comparison points because in the post-project condition, there are multiple discharge locations. In all cases drainage is sent to the same quadrants however a system by system comparison is not possible due to the grading and adjustments to drainage areas. From west to east, beginning with basins draining to the north and then to the south, they include the following areas:

Northwestern Quadrant

System 100E: System 100E represents the area that drains northwesterly and discharges off the property near the San Luis Rey River near the most westerly part of the project. A large portion of the drainage area within this system is from offsite areas.

System 200E: System 200E represents the onsite area that drains northwesterly and discharges off the property near the San Luis Rey River downstream of (and west of) the existing horse barns.

Northeastern Quadrant

Systems 300E and 400E: Systems 300E and 400E represent the onsite area that drains northerly and discharges off the property near the San Luis Rey River upstream of (and east of) the existing horse barns.

System 500E: System 500 represents the offsite area which drains into a pond located outside of the PA3 limits and south of the central section of Dulin Road.

System 550E: System 550E represents onsite area downstream of the pond draining

System 500E northwesterly and discharges off the property near the San Luis Rey River upstream of (and east of) existing horse barns.

Systems 3050E, 3100E, 3130E, 3400E, 3700E, 3800E, and 3900E: These systems represent the onsite area at the northeastern extents of the property that drains northerly and discharges off the property near the San Luis Rey River.

Southwestern Quadrant

System 4000E: System 4000E represents the onsite and offsite area that drains northerly and discharges off the property near the San Luis Rey River north of West Lilac Road.

Systems 4030E, 4040E, and 4050E: Systems 4030E, 4040E, and 4050E represent the onsite hillside and West Lilac Road drainage area that drains to three shallow culverts crossing West Lilac Road to the east of Vessels Ranch Road.

System 4060E: System 4060E represents the portion of the site to drains to a small culvert near the Vessels Ranch Road/West Lilac Road intersection. Based on survey shots, the shallow culvert has an adverse slope, so if the water doesn't drain into the culvert, the drainage would flow westerly down West Lilac Road towards the river.

System 4080E: System 4080E represents the offsite hillside and roadway area that drains to an existing offsite West Lilac Road culvert near the most westerly property line.

Southeastern Quadrant

System 1100E: System 1100E represents the onsite graded area adjacent to Sullivan Middle School that drains to the south towards an existing desilting basin wherein runoff drains into an existing CMP inlet which is connected to an existing dual 24-inch storm drain. A portion of West Lilac Road street drainage drains into an existing type B-1 inlet which is also connected to the dual storm drain. The inlet acts as the point of confluence for the farm hillside runoff and West Lilac roadway drainage. Drainage conveyed into the dual 24-inch storm drain systems discharge into a dense brush area located directly south of the school.

System 1800E: System 1800E represents a small patch of West Lilac Road drainage directly south of System 1100E.

2.2 Proposed Drainage Patterns and Improvements

The proposed project entails the construction of single-family housing developments including parks and trails, estate lots with a private access road/street, and onsite/offsite widening improvements. There are three planning areas within the property boundary. Planning Area (PA) 1 and PA 2 will be comprised of single-family homes, public streets, parks and trails. Onsite street widening improvements will be constructed south of PA 2 along West Lilac Road. PA 3 will consist of future estate lots, a private access roadway (Dulin Road), and a private street. Additional onsite street widening improvements will be constructed along West Lilac Road located south of PA 3 and east of Sullivan Middle School.

The onsite drainage improvements consist of a series of mass graded pads, public and private streets, gutters, curb inlets, and catch basins that all tie into an underground storm drain system. Refer to Exhibit B in Appendix 6 for an exhibit highlighting public versus private storm drain systems. The project improvements also include a bypass system to prevent the commingling of on-site runoff and run-on from undeveloped areas/hill slopes. The bypass system consists of earthen channels, toe and brow ditches, catch basins, storm drains, and crossing culverts.

Flow from both onsite and offsite drainage areas are conveyed to outfalls along either the San Luis Rey River or the roadside drainage ditches to the south of the property. For the proposed conditions, mostly all drainage is conveyed to the same quadrant of the site to closely match existing conditions.

See Exhibit C in Appendix 6 for the proposed condition hydrology maps. In order to provide a simple comparison between existing and proposed conditions, a naming convention was adopted similar to the existing conditions but with additional systems broken out to facilitate modeling of a complex drainage system. From west to east, beginning with basins draining to the north and then to the south, they include the following systems by quadrant:

Northwestern Quadrant

System 1000P: Total System 1000P consists of the entirety of PA1 (including onsite confluence Systems 1100 and 1200). Drainage in this system is conveyed through onsite public storm drains which outfall into one treatment basin.

System 1300P: System 1300P represents the off-site area to the southwest which is bypassed towards undeveloped open space (Lot B, bio-open space) and includes the routed flow from Basin 1A from System 1000.

System 2006P: This system consists of approximately two-thirds of PA2, wherein drainage from five cul-de-sacs drain southerly towards sag outlets. Drainage is then treated via pollutant control basins (Basins 2C– 2G and 2I) prior to conveyance in a dual pipe storm drain system along the park. The park is located along the southern perimeter of PA2. Adjacent undeveloped hillside run-on south of PA2 drains into catch basins via surface sheetflow or earthen channels. The run-on into the catch basins commingle with onsite treated drainage in the dual storm drain system along the park. The commingled drainage is then conveyed westerly towards an outfall near the San Luis Rey River. Additional offsite hillside run-on drains into the storm drain via a brow ditch.

Systems 2040P, 2027P, 2023P, 2058P, 2015P, and 2000P: Consists of the drainage areas draining to the cul-de-sac basins (Basins 2C– 2G and 2I on the southern limits of PA-2).

System 2200P: System 2200P consists of one-sixth of the PA2 site. This drainage system includes System 2100P. Onsite runoff (including stretch of Road A) drains via sheetflow into onsite inlets via gutter flow. Runoff is then conveyed westerly in an onsite storm drain system which outlets into a basin (Basin 2A) for pollutant treatment, which is located along the western side of PA2. Treated onsite drainage is then discharged to the west near the San Luis Rey River.

System 2300P: System 2300P represents the northeasterly portion of PA2, a stretch of Road A roadway (between PA1 and PA2), small section of Road B roadway (north of

PA1), and a park (east of Road A and south of Road B). Drainage from the graded hillside and Street A roadway sheetflow towards the gutter. Gutter flows drain northerly towards inlets. Runoff in the inlets drain northerly in a public storm drain system which outlets stormwater into a treatment basin (Basin 2B) located near the northeast corner of PA2. All treated stormwater from the basin discharges to the north near the San Luis Rey River.

Systems 3000P, 3450P, 3500P: System 3000P represents the westerly portion of Dulin Road (the private access road to Basin 3A). System 3500P (including System 3450P) consists of the undeveloped land to the south of the road that drains northerly and is bypassed under Dulin Road via private bypass storm drains. The run-on from the undeveloped land south of Dulin Road confluences with undeveloped land north of Dulin Road and drains downstream in a northwesterly direction.

Northeastern Quadrant

System 3150: This system includes onsite drainage areas from a portion of Dulin Road and the equestrian lots which drains towards treatment Basins 3B, 3J, and 3K. The onsite drainage commingles with offsite bypass (areas south of Dulin Road), including System 3550. The drainage from these areas eventually drain northeasterly towards the undeveloped land north of Dulin Road and discharges off the property near the San Luis Rey River.

System 3200: This system consists of onsite drainage areas from estate lots, drainage from a portion of Dulin Road, and some graded slopes. Drainage from these areas drain into inlets and outlet into a treatment Basin 3C. Treated drainage then commingles with offsite bypass System 3260 at Node 3216.

Systems 3260P, 3270P, 3400P, 3700P, 3800P, 3900P, and 3050P, 3100P, and 3130P: These systems represent offsite areas which drains northerly downstream towards Dulin Road but do not commingle with onsite private street drainage. All drainage from these systems are bypassed via private storm drain systems under Dulin Road with outfalls along the north perimeter of Dulin Road. Drainage eventually heads downstream at a

point south of the San Luis Rey River.

System 3300P: System represents the onsite project area including some estate lots, the private street for the estate lots, a portion of Dulin Road, and some onsite graded slopes. The drainage from these onsite areas will outlet into the Basin 3D which is located along the north perimeter of Dulin Road. This system ties into the bypassed pipe for System 3270P.

System 3650P, 3650P: Systems to be compared to Systems 500E and 550E pre-project conditions but includes a slight change in acreage.

System 3350P, 3750P, 3950P: These systems represent street drainage along the private Dulin Road that drains towards three proposed basins (Basins 3E-3G) located along the north eastern end (of Dulin Road). Drainage enters into private storm drain systems that outlet drainage into the basins for pollutant treatment.

Southwestern Quadrant

System 4000P, 4030P, 4040P, 4050P, 4060P, and 4016P, 4080P: Under proposed conditions, there will be improvements along West Lilac Road wherein the road will be widened. The drainage north of the roadway crown (including drainage from the roadway, a portion of Road A, and a portion of onsite hillside) will drain and/or be conveyed westerly towards a treatment basin (Basin 2H). Before discharging out into the open space, onsite drainage will commingle with offsite hillside/roadway drainage south of the W. Lilac street crown. Onsite flows then confluence with bypassed drainage prior to discharging to the west. Additional offsite hillside drainage south of the W. Lilac street crown will have drainage captured by an inlet and will discharge north along the W. Lilac perimeter fill areas. All drainage from these systems eventually drains to the San Luis Rey River. Under existing conditions, there are existing corrugated squash pipes along W. Lilac Road between the Road A T-intersections are undersized and have shallow cover. Since the roadway will be widened, it was determined the existing squash pipes would have to be replaced with new pipes (Systems 4030P, 4040P, and 4050P) and the alignments extended in order to capture/convey the hillside drainage. Refer to the

hydraulics in Appendix 8 for the brow ditch and culvert calculations for these proposed storm drains.

Southeastern Quadrant

System 5000P: Under proposed conditions, the existing temporary desilting basin will be removed and all the offsite graded area (adjacent to the middle school) will drain southwesterly towards a brow ditch that will direct flows into a catch basin that is tied to a proposed storm drain line. The storm drain line will connect into the existing storm drain inlet to match existing conditions. Roadway widening improvements are proposed along a section of West Lilac Road (along the southern perimeter of the onsite area between the middle school and Via Ararat Drive. A new proposed pad will be constructed and will flow into a basin (Basin 3I) for pollutant treatment and outlet to proposed storm drain pipe that travels along W. Lilac Road. A new at grade inlet will be placed east of the existing inlet to capture drainage from the proposed street improvements. Runoff into the inlet will outlet into a basin (Basin 3H) for pollutant treatment and basin outflows will tie into the existing storm drain. At this point, drainage will confluence with bypassed flows prior to conveyance into the existing dual pipe storm drain system. Wherein, stormwater will drain southerly to the existing condition discharge point south of West Lilac Road.

System 5050P: System 1800E represents a small patch of roadway directly south of System 5005P that will have curb and gutter improvements incorporated under proposed conditions.

3. HYDROLOGY CRITERIA, METHODOLOGY, AND RESULTS

This section of the report summarizes the drainage criteria that were used in the hydrologic analysis and key elements of the methodology. Also included is a description of the computer models used in the computations.

3.1 Rational Method Hydrology Criteria

The drainage basins were delineated using available topography and the proposed grading layout for the project. Table 1 summarizes the key hydrology assumptions and criteria used for the hydrologic modeling.

Table 1: Rational Method Hydrology Criteria

Existing and Proposed Hydrology:	100-year storm frequency
Soil Type:	Hydrologic Soil Group A, B, C, and D per USDA web soil survey. (Appendix 1).
Land Use / Runoff Coefficients:	Based on criteria presented in the 2003 County of San Diego Hydrology Manual,
Rainfall intensity:	Based on intensity duration frequency relationships presented in the 2003 County of San Diego Hydrology Manual.

The existing and proposed condition runoff coefficients were calculated based on the percentage of soil types within the project and the subarea class (based on the % impervious calculated/ or lots per acre).

3.2 Rational Method Hydrologic Methodology

The Modified Rational Method was used to determine the 100-year peak discharge flows for the design of the storm drain improvements. The goal of the project hydrology analysis was to:

- Determine existing and design peak 100-year flows for the sizing of the onsite storm drain system gutters, curb inlets, catch basins, and pipes that convey flow to the discharge locations. From an analytical perspective, the project hydrology was prepared using relative lot and street grades.

- Verify that the project does not adversely impact the existing storm drain improvements or natural drainage. A comparative analysis was performed between the existing and proposed peak 100-year discharges. For results of the analysis, see Exhibit A and C in

Appendix 6 for existing and proposed conditions hydrology maps, and Appendices 2 and 3 for existing and proposed condition Rational Method computer output.

3.3 Description of Hydrologic Modeling Software

The Modified Rational Method was used to determine the 100-year storm flow for the design of the storm system. The Advanced Engineering Software (AES) Rational Method Program was used to perform the hydrologic calculations. This section provides a brief explanation of the computational procedure used in the computer model.

The AES Modified Rational Method Hydrology Program is a computer-aided design program where the user develops a node link model of the watershed. Developing independent node link models for each interior watershed and linking these sub-models together at confluence points creates the node link model. The intensity-duration-frequency relationships are applied to each of the drainage areas in the model to get the peak flow rates at each point of interest.

3.4 Rational Method Hydrology Results

The project hydrology results presented herein were used to 1) verify that the project does not adversely impact the existing storm drain system or natural drainage, and 2) verify that the proposed detention volumes are adequate to control post-project peak flows.

Storm runoff from the project will be collected and conveyed to several locations across the site that generally match the existing conditions. Site drainage improvements resulted in minor adjustments to outfall locations and/or the exact number of acres. The total runoff has been summarized for each system and compared according to the respective geographic quadrant. Table 2 summarizes the Rational Method hydrology results for each system for the existing and proposed conditions, first without detention taken into account, and then with detention based on matching pre-project conditions. In other words, the detained 100-year peak flows are less than or equal to the pre-project 100-year peak flows.

Table 2: Hydrology Results

OCEAN BREEZE RANCH HYDROLOGY SUMMARY										
QUADRANT	EXISTING			PROPOSED						
NORTHWEST	SYSTEM	AREA	Q100	SYSTEM	COMMENT	AREA	TC	Q100 (UNDETAINED)	AVE C	Q100 (INCLUDING DETENTION)
	100	400.3	538.1	1300	Bypass Drainage & System 1000 (includes 1100&1200)	301.2	19.8	439.2	0.41	354.9
				2006	Includes drainage to Basins 2C+2D+2I+2E+2F+2G & Bypass	68.2	12.9	134.1	0.42	117.2
				2200	BASIN 2A (Includes Sys 2100)	19.4	8.5	69.2	0.58	13.5
				2300	BASIN 2B (INCLUDES SYS2400)	18.5	9.0	61.6	0.56	26.4
	SUBTOTAL	**400.3**	**538.1**	**SUBTOTAL**		**407.3**		**704.1**		**512.0**
	200	197.7	167.5	3500	BYPASS (+SYS 3450)	182.9	32.9	150.6	0.32	144.6
				3000	BASIN 3A	3	6.7	13.2	0.61	3
	SUBTOTAL	**197.7**	**167.5**	**SUBTOTAL**		**185.9**		**163.8**		**147.6**
	TOTAL	**598.0**	**705.6**	**TOTAL**		**593.2**		**867.9**		**659.6**
NORTHEAST	SYSTEM	AREA	Q100	SYSTEM	COMMENT	AREA	TC	Q100 (UNDETAINED)	AVE C	Q100 (INCLUDING DETENTION)
	300	109.2	108.1	3150	Includes SYS 3550 Bypass & Basin 3B+3J+3K	110.4	25.2	120.4	0.36	120.4
	SUBTOTAL	**109.2**	**108.1**	**SUBTOTAL**		**110.4**		**120.4**		**120.4**
	400	146.7	216.6	3260	Included System 3200 to Basin 3c at Node 3216)	110.1	17.7	148.0	0.35	137.9
				3270	Bypass System	20.5	12.6	34.9	0.36	34.9
				3300	AT NODE 3327 (Basin 3D)	15.8	10	46.2	0.53	19.6
	SUBTOTAL	**146.7**	**216.6**	**SUBTOTAL**		**146.4**		**229.1**		**192.4**
	500	587.7	836.7	3600	BYPASS	586.6	17.1	835.6	0.36	835.6
	550	171.2	198	3650	BYPASS	172.9	19.7	185.9	0.30	185.9
	SUBTOTAL	**758.9**	**1034.7**	**SUBTOTAL**		**759.5**		**1021.5**		**1021.5**
				3350	BASIN 3E	1.5	5.8	8.1	0.68	1.5
	3400	18.8	35.0	3400	BYPASS	18.4	8.3	38.8	0.34	38.8
	3700	8.4	18.7	3700	BYPASS	6.7	7.6	15.4	0.35	15.4
				3750	BASIN 3F	1.5	5.9	9.1	0.78	9.1
	3800	13.0	27.3	3800	BYPASS	12.8	9.4	24.6	0.33	24.6
	3900	5.8	11.5	3900	BYPASS	5.1	10	10.7	0.38	10.7
				3950	BASIN 3G	2.2	13.1	7.2	0.70	3.8
	3050	4.8	9.5	3050	BYPASS	4.1	9.2	7.7	0.32	7.7
	3100	22.4	41.5	3100	BYPASS	22.3	10.3	40.6	0.33	40.6
	3130	13.8	22.5	3130	BYPASS	13	10.7	20.3	0.29	20.3
	SUBTOTAL	**87.0**	**166**	**SUBTOTAL**		**87.6**		**182.5**		**172.5**
	TOTAL	**1101.8**	**1525.4**	**TOTAL**		**1103.9**		**1553.5**		**1506.8**
SOUTHWEST	SYSTEM	AREA	Q100	SYSTEM	COMMENT	AREA	TC	Q100 (UNDETAINED)	AVE C	Q100 (INCLUDING DETENTION)
	4030	19.3	31.8	4030		18.9	12	30.7	0.33	30.7
	4040	5.1	10.5	4040		4.3	7.5	9.5	0.33	9.5
	4050	1.8	4	4050		2.1	10.9	4	0.36	4
	4060	5.8	14.7							
	SUBTOTAL	**32.0**	**61.0**	**SUBTOTAL**		**25.3**		**44.2**		**44.2**
	4000	29.6	41.6	4060		21.9	13.2	32.3	0.32	32.3
				4016	Includes Detention of Sys 4000 - Basin 2H	14	13.4	38.4	0.60	24.8
	4080	3.7	11.3	4080		3.4	4.5	11.2	0.35	11.2
	TOTAL	**65.3**	**113.9**	**TOTAL**		**64.6**		**126.1**		**112.5**
SOUTHEAST	SYSTEM	AREA	Q100	SYSTEM	COMMENT	AREA	TC	Q100 (UNDETAINED)	AVE C	Q100 (INCLUDING DETENTION)
	1100	23.9	40.5	5000	Includes Sys 5005 - Basin 3I	26.1	10.7	41.5	0.30	41.5
	1800	1.6	5.6	5050	WILL NOT INCLUDE DETENTION	0.9	9.2	3	0.57	3
	TOTAL	**25.5**	**46.1**	**TOTAL**		**27**		**44.5**		**44.5**

Table 2 compares the existing and proposed peak flow rates for each outfall within the four quadrants of the project site.

The proposed hydrology analysis indicated the undetained flows in some quadrants would increase above the existing conditions. Therefore, detention was modeled for the applicable proposed detention basins to detain the 100-year post project peak flows so that total flow for each quadrant in the proposed condition is less than or equal to the existing condition. The basins requiring detention had individual systems modeled separately from bypass drainage. The column showing the proposed condition flow rates including detention show the bypass flows combined with the detained flows are less than existing conditions.

In addition to the comparisons by quadrant, it should also be noted that there are some discharge locations where a more localized comparison point is warranted for locations that may affect adjacent properties. For example, the culverts discharging along the West Lilac Road area in the southwest quadrant were compared to each discharge location in Table 2. The only increase in a discharge to an existing culvert is the discharge point of System 4050. The increase above pre-project conditions is only one cfs, but the combined subtotal flow comprising Systems 4030, 4040, and 4050 result in a net decrease of flow, compared to pre-project conditions. Therefore, there should be no adverse impact on adjacent properties, as the peak flow total decreases compared to pre-project conditions. Table 2 can be used as a comparison point for all flows and all quadrants.

Table 2 also compares the existing and proposed peak flow rates for each outfall in the southeast quadrant. These system locations are east of Sullivan Middle School. These outfalls are located along W. Lilac Road. The hydrology analysis indicated the undetained flows in this quadrant would not increase above the existing conditions. Therefore, detention was not included for Basins 3I and 3H.

In summary, there is a net reduction in peak flows for the entire project, due to the proposed detention basins, which will store and detain runoff volumes prior to discharge. For proposed pipe discharge locations, riprap is provided to mitigate erosive velocities. The velocities in the

river per the project floodplain study also show minimal changes between pre- and post-project conditions.

3.5 NRCS Unit Hydrograph Criteria, Methodology, and Results

As mentioned above, the tributary area inclusive of Systems 3600P and 3650P exceed one square mile. In order to provide a design flow rate for the proposed culvert at the roadway crossing, a Natural Resources Conservation Service (NRCS) Unit Hydrograph model was prepared. Table 3 summarizes the key hydrology assumptions and criteria used for the hydrologic modeling.

Table 3: NRCS Unit Hydrograph Hydrology Criteria (Combined Systems 3600P and 3650P)

Hydrology:	100-year storm frequency
Land Use and Land Cover:	Low density residential (assume 1 acre lots)
Soil Type:	Hydrologic Soil Group information was obtained from the NRCS Web Soil Survey. Note that watershed contains B, C, and D type soils.
PZN Condition:	Based on 2003 County of San Diego Hydrology Manual
Curve Numbers:	Based on percentage of land use and land cover in the various soil groups and adjusted for PZN condition.
Rainfall intensity for hyetograph creation:	Hyetograph generated with 2/3, 1/3 distribution using 2003 County of San Diego Hydrology Manual methodology.

The NRCS unit hydrograph method was used to determine the peak 100-year storm flow for proposed conditions. A single-basin model was performed using the soil types and the land use/land cover classifications developed for this study. The majority of the watershed is undeveloped and/or low density residential, with a significant amount of open space areas.

The composite curve number (CN) for the NRCS method was developed by performing a composite analysis of the land use, land cover, and soil type information for the basin. The CN was adjusted to account for the precipitation zone number and antecedent moisture condition. The procedure for the analysis is summarized below.

The composite unadjusted composite CN was determined and it was then adjusted based on the PZN condition using Figure C-1 and Table 4-6 from the 2003 County of San Diego Hydrology Manual. See Appendix 5 for the hydrology calculations and Appendix 6 for the regional drainage map (Exhibit E).

The rainfall distribution for the basin was generated by first consulting the 100-year 6-hour and 24-hour duration isopluvial maps in the 2003 County Hydrology Manual. The rainfall hyetograph was generated based on the County 2/3, 1/3 distribution and the depth-area adjustment was applied based on the total drainage area. HEC-HMS, a hydrologic modeling program, was used to generate the hydrograph for the basin. The unit hydrograph was based on the NRCS unit hydrograph method with a lag time computed based on the Corps Lag equation and then converted to an NRCS lag time. The basin "n" factor was estimated to be 0.08.

The procedures outlined in the 2003 County of San Diego Hydrology Manual were used to determine runoff curve numbers and lag times used in the HEC-HMS model. The HEC-HMS model was developed by the U.S. Army Corps of Engineers and is designed to simulate the surface runoff response of a drainage basin to precipitation by representing the basin as an interconnected system of hydrologic and hydraulic components. The result of the modeling process is the computation of runoff flow hydrographs at the downstream location in the drainage basin.

Appendix 5 summarizes the HEC-HMS regional hydrologic analyses results.

3.6 Hydromodification Management

The project is tributary to the San Luis Rey River. Utilizing the HEC-RAS floodplain model for the project, the 10-year flow in the river was modeled and compared to the outfalls for Basins 2A and 2B outfalls. The point of discharge for Basins 2A and 2B qualify for direct discharge exemption since the invert of the outlet structures are below the 10-year water surface elevation for the San Luis Rey River. Refer to the Ocean Breeze Ranch Floodplain Study prepared by Chang Consultants under a separate cover, and Attachment 9.1 of the Storm Water Quality

Management Plan under a separate cover. Since Basins 2C-2G, and 2I will discharge to the same point of compliance as Basin 2A, these basins are also considered exempt form hydromodification management. Basin 2H is also proposed for a hydromodification exemption. For more information hydromodification regarding how all the other basins proposed in this project meet hydromodification requirements, refer to the Hydromodification Management Study (Storm Water Quality Management Plan Attachment 8.1), prepared by Project Design Consultants under a separate cover.

3.7 Water Quality Considerations

All of the permanent basins will meet the County's pollutant control requirements, while some the proposed basins in this project will serve more than one purpose for detention and/or hydromodification. Refer to the SWQMP under a separate cover. The project also proposes temporary desilting traps for some of the lots in PA 3, since the lots will be developed as custom lots and may be developed at different times.

4. DETENTION METHODOLOGY

The detention basins were sized to attenuate post-project peak flow rates to at or below pre-project levels for the 100-year storm event. Based on the Rational Method analyses, determination was made on a drainage basin by drainage basin basis as to the impacts of detention and whether analyses were warranted to demonstrate peak flow mitigation. By including a number of basins, the post-project peak flows were reduced to below pre-project levels.

The 100-year detention calculations were performed with Bentley's PondPack software. The detention results from routing the basin outflow hydrographs are included in Appendix 4. Each of the basins were modeled as surface storage ponds. Using the Rational Method results for these basins' systems, the proposed condition peak inflow hydrographs were generated with Rick Engineering's Rational Method Hydrograph Generator. This program develops a synthetic hydrograph per the 2003 County Hydrology Manual using the results from the AES Rational Method output. The inflow hydrograph for each system was then entered into Bentley's

PondPack software and the detention routing was performed along with the design of the detention basins and the outlet structures. All of the basins with the exception of Basins 1B, 2D-2G, 2I, 3B, 3F, 3H, 3I, 3J, and 3K were modeled for detention routing. The 100-year hydrograph was routed through the basin to demonstrate that the post-development peak flow rate will be less than or equal to the pre-development peak flow rate and that the detention basins will not overtop during the 100-year peak event. The riser for each BMP was designed to ensure that the riser size, rim elevation, and orifice placement worked in conjunction to properly mitigate the increased flow rate. Underdrains were not modeled and the starting water surface elevation was set as the water quality ponding depth and infiltration was turned off in the detention routing in order to meet the County's Conjunctive Use criteria. Freeboard was also checked to meet County requirements for each detention basin. Table 4 summarizes the results of the detention basin routing calculations.

Table 4: Detention Basin Summary Table

Basin Name	Hydrology System	Q100 Undetained Inflow (cfs)	Q100 Detained Outflow (cfs)	Tributary Area (AC)	Composite Runoff Coef (C)
1A	System 1000	201.6	39.8	49.2	0.62
2A	System 2200	69.2	13.5	19.4	0.58
2B	System 2300	61.6	26.4	18.5	0.56
2C	System 2040	19.7	3.3	5.9	0.57
2H	System 4000	29.4	15.1	8.4	0.60
3A	System 3000	13.2	3.0	2.9	0.62
3C	System 3200	21.3	3.9	8.9	0.35
3D	System 3300	46.2	19.6	15.8	0.53
3E	System 3350	8.1	1.5	2.2	0.70
3G	System 3950	7.2	3.8	2.2	0.70

5. HYDRAULIC CRITERIA, METHODOLOGY, AND RESULTS

Using the Rational Method results, the Flowmaster program was used to determine the flow depth within street sections at curb inlet locations. The flow depth upstream of the curb inlet is required to determine the curb inlet opening length for continuous grade inlets. The curb inlet openings were sized based on the continuous grade or sump locations. Both scenarios had the inlets sized for the 100-year storm event using formulas from the County of San Diego Hydraulic Design Manual. The inlet calculations are provided in Appendix 8.

FlowMaster was also used to model the brow ditch calculations for the brow ditches along the northwestern perimeter of W. Lilac Road (the stretch between Road A). hCulvertMaster calculations were also performed for the proposed culverts for some of the pipes in the secondary emergency access road through the Equestrian area.

Due to the topography of the project site, some of the onsite drainage areas are over 25 acres and the lines of inundation of the 100-year flood were required. A hydraulic analysis was performed using the United States Army Corps of Engineers Hydrologic Engineering Center's River Analysis System (HEC-RAS) 5.0.7. HEC-RAS 5.0.7 is computer-aided hydraulic analysis program that is designed to perform one and two-dimensional hydraulic calculations for a full network of natural and constructed channels. Cross sections of the existing and proposed conditions were inputted from the existing and proposed topography into HEC-RAS in order to model an accurate geometric shape of the channel. Several channels were assessed to show the lines of inundation of the 100-year flood. (See HEC-RAS exhibits in Appendix 7).

Ephemeral drainages have also been incorporated into the plan as a proposed mitigating feature from an environmental perspective to include additional linear feet of drainages. Some of the ephemeral drainages are low-flow channels for mitigation.

Curb inlets were sized based either on continuous grade or in sump locations. For both scenarios, the curb inlets were sized for the 100-year storm event using the formulas within the San Diego County Hydraulic Design Manual. The calculations are located in Appendix 8.

The proposed storm drain systems were sized using the WSPG program. Refer to Exhibit D, Hydraulic Map. The detailed results are included in Appendix 8. The flows modeled were based on proposed condition 100 year flow rates.

The County of Los Angeles Water Surface Pressure Gradient (WSPGW) program is used to perform the hydraulic analyses for the proposed storm drain improvements. The WSPGW program computes and plots uniform and non-uniform steady flow water surface profiles in open channels or closed conduits with irregular or regular sections. The flow in a system may alternate between supercritical, subcritical, or pressure flow in any sequence. The program uses basic mathematical and hydraulic principles to calculate data such as cross-sectional area, wetted perimeter, normal depth, critical depth, pressure, and momentum.

The starting water surface elevations for the storm drain pipe systems were modeled using conservative estimates. Generally, for pipes draining into the detention basins, the starting water surface elevations were assigned conservative values (such as the corresponding water surface elevation at the corresponding time of the peak inflow hydrograph into the basin). This elevation is slightly lower than the maximum water surface elevation, but this approach more accurately represents the tailwater at the time of the peak inflow into the basin due to the detention routing. Refer to the printout in Appendix 8 for the starting tailwater used.

For storm drain lines with pre-treatment nutrient separating baffle boxes, the WSPGW models were split into two models (upstream and downstream). The HGL loss through the units were determined by the vendor (OldCastle) and the starting HGL for the upstream lines were adjusted

for the upstream line models. Refer to the Oldcastle bypass structure headloss calculations in Appendix 8. The headloss was determined using the submerged weir equations. This upstream HGL was used as the starting WSE for the upstream WSPG line model.

Wall entrance losses were added to the WSPG models to approximate the junction losses. Entrance loss coefficients used for the WSPG models vary 0.2 to 0.5 per Table 3-15 of the County Hydraulic Design Manual.

The Riprap sizing was designed based on the San Diego Regional Standard Drawing D-40 for rock class, size, and thickness.

For basins utilized for peak flow detention, the basin risers were modeled in Pondpack without any orifices to show they can accommodate the 100-year undetained peak flows based on the post project conditions with 1' of freeboard, which are shown in Appendix 9. For basins that did not have detention routing, grate inlet calculations were calculated with the corresponding grate size to show the proposed condition flows are able to flow out the riser while maintaining adequate freeboard. The riser capacity calculations are provided in Appendix 9 to demonstrate adequate conveyance head to bypass undetained peak flows.

6. ENVIRONMENTAL IMPACTS

This section summarizes the following questions for CEQA purposes.

Would the project:

1. **Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?**

   The project's drainage patterns mimic the existing conditions, so no substantial impacts will exist. The project does not propose to substantially alter the adjacent San Luis Rey River, but does proposes to raise a portion of the site above the floodplain elevation. Development of the project will not result in substantial erosion of siltation on- or off-site.

2. **Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially**

increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?

Existing drainage patterns will be maintained. The project will not substantially increase the rate or amount of surface runoff in a manner which would result in any substantial increase of flooding on- or off-site.

3. **Create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems?**

   The project proposes to detain stormwater onsite and does not increase peak flows; therefore, the project will not contribute runoff water that would substantially change the existing condition.

4. **Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map, including County Floodplain Maps? For example; research the foregoing and provide same (to indicate applicability or not) in the study.**

   No. The hydraulic modeling of the San Luis Rey River (in the Chang Consultants Floodplain Study) shows that the proposed single family residential area is well above the river 100-year floodplain elevation.

5. **Place within a 100-year flood hazard area structures which would impede or redirect flood flows?**

   No, all proposed building structures are outside of the proposed 100-year flood hazard area. Project will not significantly impede flood flows.

6. **Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam on-site or off site?**

   There are no dams or levees within or near the project site. The onsite basins may be designed with small berms, but will be designed adequately to reduce the potential for subsurface piping.

7. CONCLUSION

This drainage report has been prepared in support of the grading plans and the design of the storm drain improvements to be built for the Ocean Breeze Ranch project. The purpose of this report is to provide peak discharges for use in designing the private and public storm drain systems for the project and to address issues regarding comparing the post-project flows to the

pre-project flows and to include hydraulic calculations to support the storm drain design. The proposed development is not anticipated to increase the volume or velocity of surface flows to the detriment of downstream landowners or facilities.

APPENDIX 1

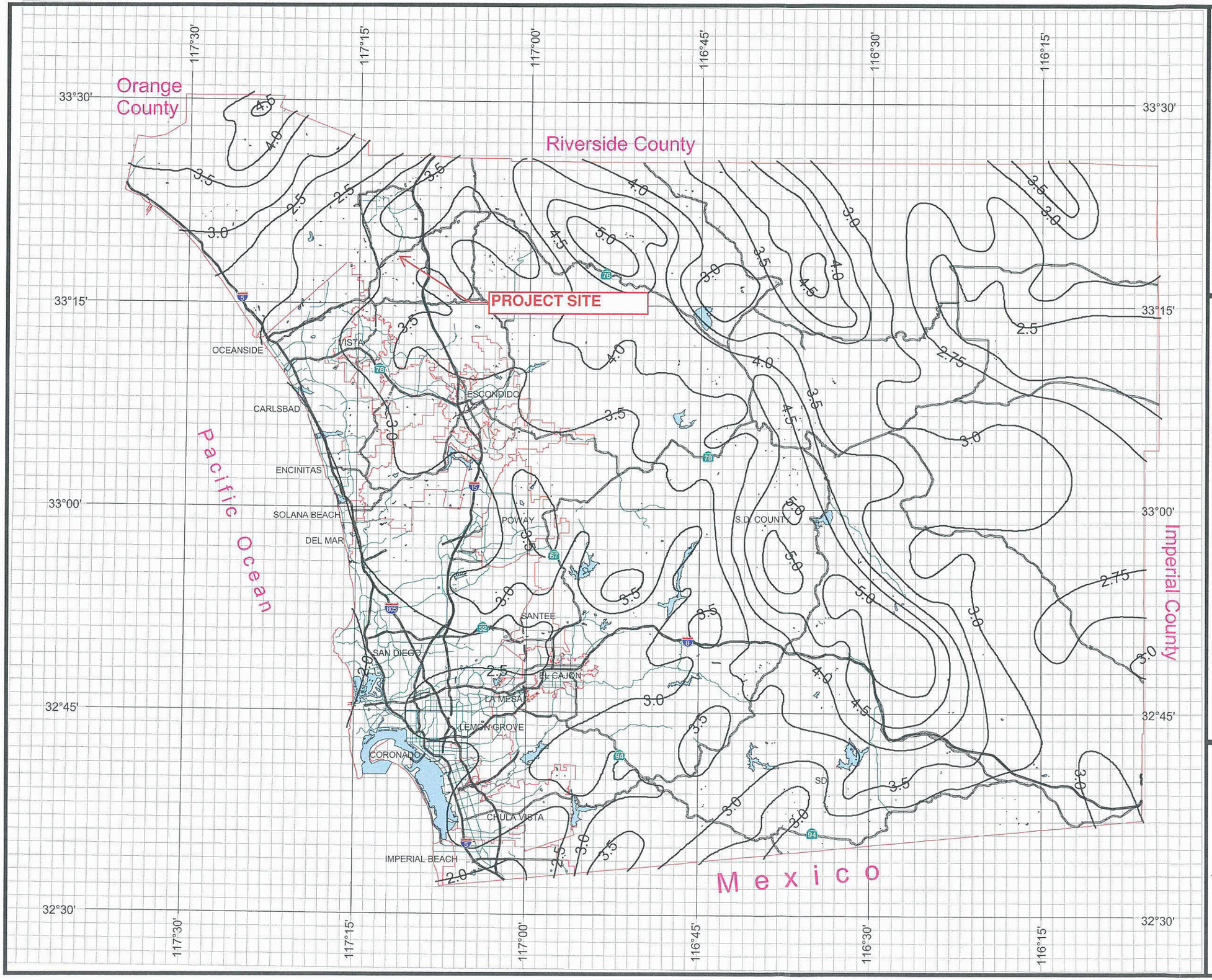
Isopluvials - Intensity-Duration Chart - Runoff Coefficients – NRCS Hydrologic Soil Groups

County of San Diego Hydrology Manual

Rainfall Isopluvials

100 Year Rainfall Event - 6 Hours

Isopluvial (inches)



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County of San Diego Hydrology Manual

Rainfall Isopluvials

100 Year Rainfall Event - 24 Hours

Isopluvial (inches)

PROJECT SITE

Orange County

Riverside County

Imperial County

Pacific Ocean

Mexico

OCEANSIDE
VISTA
CARLSBAD
ESCONDIDO
ENCINITAS
SOLANA BEACH
DEL MAR
POWAY
S.D. COUNTY
SANTEE
SAN DIEGO
EL CAJON
LA MESA
LEMON GROVE
CORONADO
SD
CHULA VISTA
IMPERIAL BEACH

117°30' 117°15' 117°00' 116°45' 116°30' 116°15'
33°30' 33°15' 33°00' 32°45' 32°30'

DPW GIS
Department of Public Works
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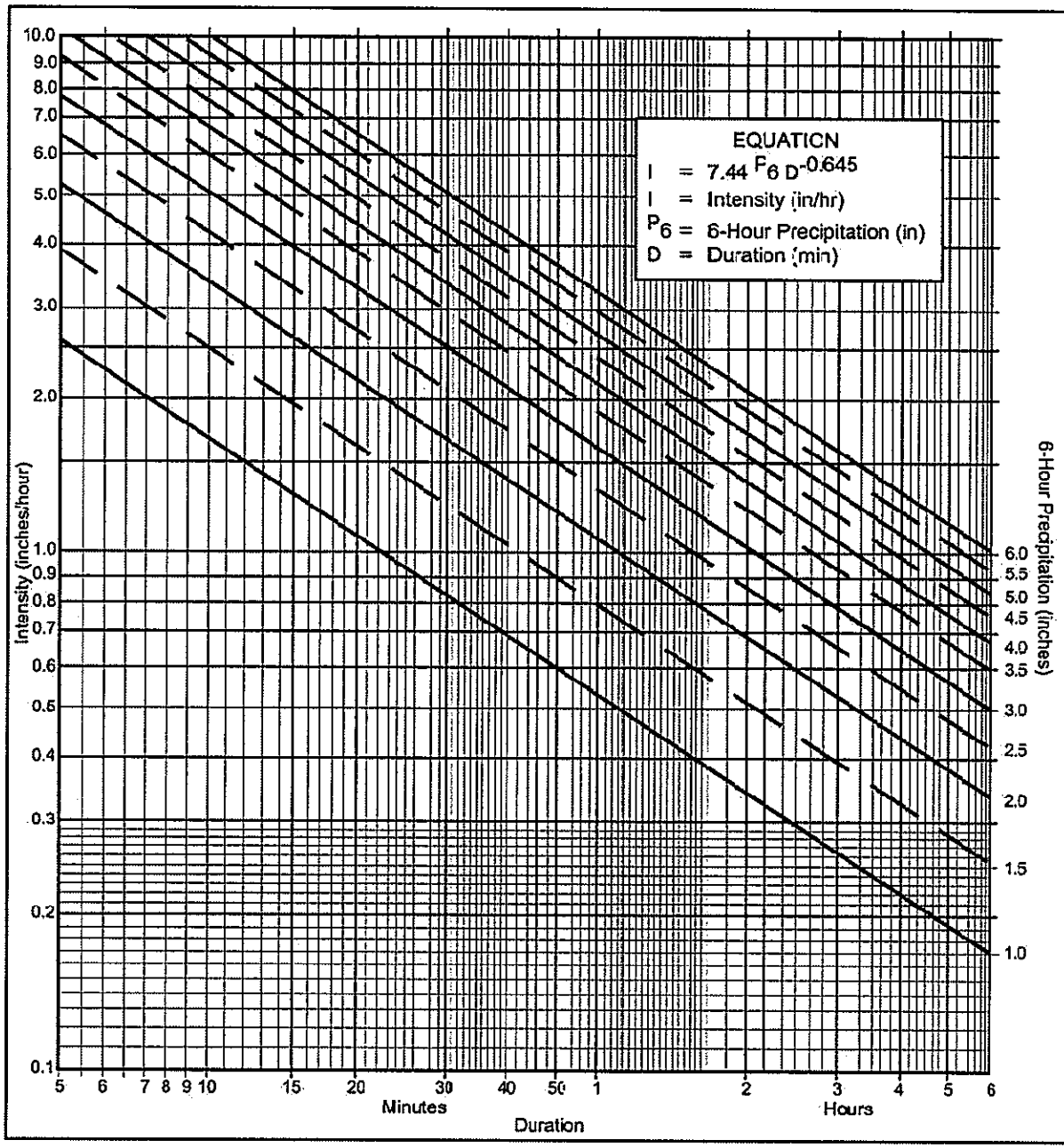
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Table 3-1
RUNOFF COEFFICIENTS FOR URBAN AREAS

Land Use		Runoff Coefficient "C"				
			Soil Type			
NRCS Elements	County Elements	% IMPER.	A	B	C	D
Undisturbed Natural Terrain (Natural)	Permanent Open Space	0*	0.20	0.25	0.30	0.35
Low Density Residential (LDR)	Residential, 1.0 DU/A or less	10	0.27	0.32	0.36	0.41
Low Density Residential (LDR)	Residential, 2.0 DU/A or less	20	0.34	0.38	0.42	0.46
Low Density Residential (LDR)	Residential, 2.9 DU/A or less	25	0.38	0.41	0.45	0.49
Medium Density Residential (MDR)	Residential, 4.3 DU/A or less	30	0.41	0.45	0.48	0.52
Medium Density Residential (MDR)	Residential, 7.3 DU/A or less	40	0.48	0.51	0.54	0.57
Medium Density Residential (MDR)	Residential, 10.9 DU/A or less	45	0.52	0.54	0.57	0.60
Medium Density Residential (MDR)	Residential, 14.5 DU/A or less	50	0.55	0.58	0.60	0.63
High Density Residential (HDR)	Residential, 24.0 DU/A or less	65	0.66	0.67	0.69	0.71
High Density Residential (HDR)	Residential, 43.0 DU/A or less	80	0.76	0.77	0.78	0.79
Commercial/Industrial (N. Com)	Neighborhood Commercial	80	0.76	0.77	0.78	0.79
Commercial/Industrial (G. Com)	General Commercial	85	0.80	0.80	0.81	0.82
Commercial/Industrial (O.P. Com)	Office Professional/Commercial	90	0.83	0.84	0.84	0.85
Commercial/Industrial (Limited I.)	Limited Industrial	90	0.83	0.84	0.84	0.85
Commercial/Industrial (General I.)	General Industrial	95	0.87	0.87	0.87	0.87

*The values associated with 0% impervious may be used for direct calculation of the runoff coefficient as described in Section 3.1.2 (representing the pervious runoff coefficient, Cp, for the soil type), or for areas that will remain undisturbed in perpetuity. Justification must be given that the area will remain natural forever (e.g., the area is located in Cleveland National Forest).
DU/A = dwelling units per acre
NRCS = National Resources Conservation Service



Directions for Application:

(1) From precipitation maps determine 6 hr and 24 hr amounts for the selected frequency. These maps are included in the County Hydrology Manual (10, 50, and 100 yr maps included in the Design and Procedure Manual).

(2) Adjust 6 hr precipitation (if necessary) so that it is within the range of 45% to 65% of the 24 hr precipitation (not applicaple to Desert).

(3) Plot 6 hr precipitation on the right side of the chart.

(4) Draw a line through the point parallel to the plotted lines.

(5) This line is the intensity-duration curve for the location being analyzed.

Application Form:

(a) Selected frequency 100 year

(b) P_6 = 3.3 in., P_{24} = 5.8, $\frac{P_6}{P_{24}}$ = 57 %(2)

(c) Adjusted P_6(2) = 3.3 in.

(d) t_x = _____ min.

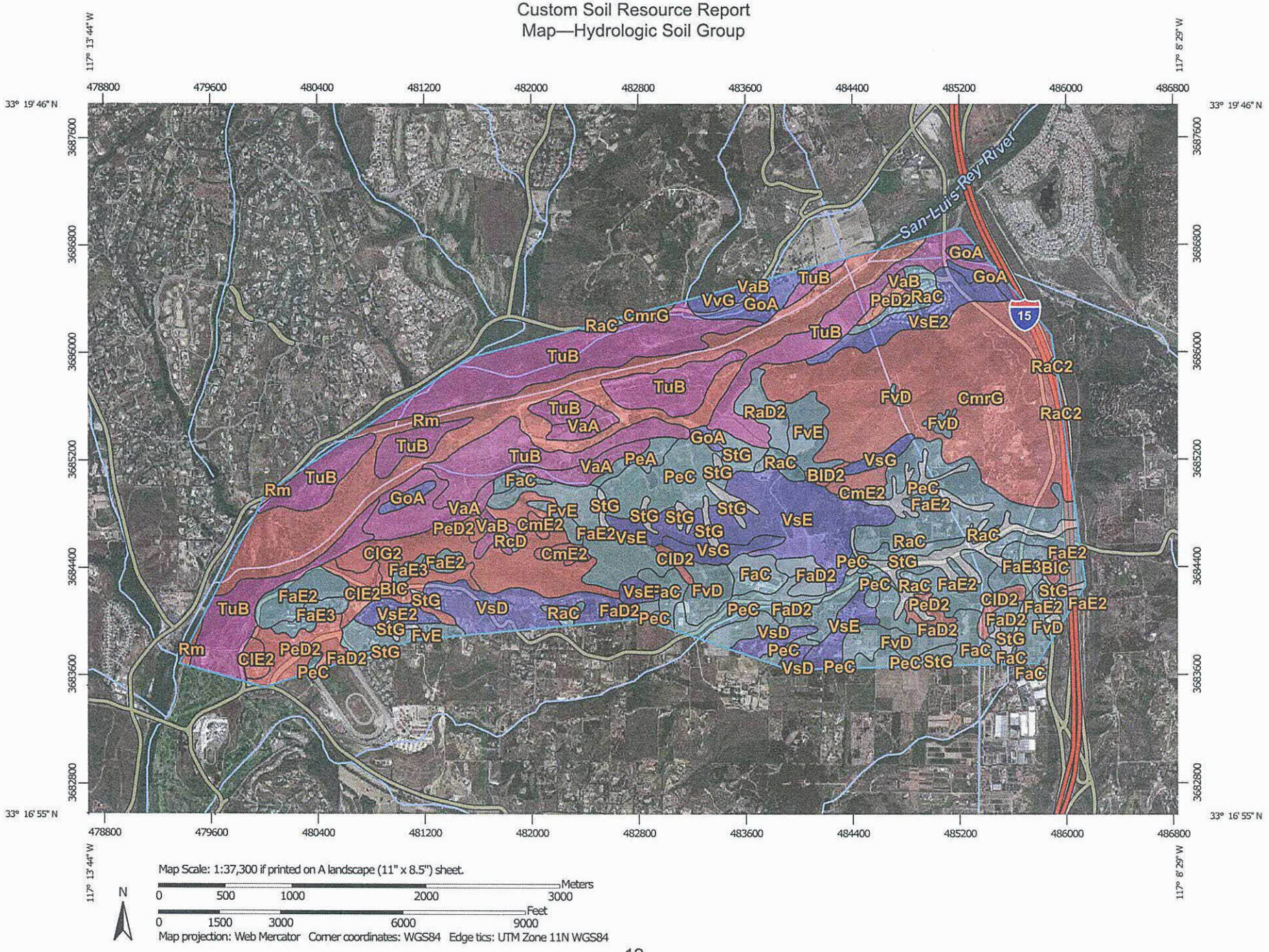
(e) I = _____ in./hr.

Note: This chart replaces the Intensity-Duration-Frequency curves used since 1965.

P6	1	1.5	2	2.5	3	3.5	4	4.5	5	5.5	6
Duration	I	I	I	I	I	I	I	I	I	I	I
5	2.63	3.95	5.27	6.59	7.90	9.22	10.54	11.86	13.17	14.49	15.81
7	2.12	3.18	4.24	5.30	6.36	7.42	8.48	9.54	10.60	11.66	12.72
10	1.68	2.53	3.37	4.21	5.05	5.90	6.74	7.58	8.42	9.27	10.11
15	1.30	1.95	2.59	3.24	3.89	4.54	5.19	5.84	6.49	7.13	7.78
20	1.08	1.62	2.15	2.69	3.23	3.77	4.31	4.85	5.39	5.93	6.46
25	0.93	1.40	1.87	2.33	2.80	3.27	3.73	4.20	4.67	5.13	5.60
30	0.83	1.24	1.66	2.07	2.49	2.90	3.32	3.73	4.15	4.56	4.98
40	0.69	1.03	1.38	1.72	2.07	2.41	2.76	3.10	3.45	3.79	4.13
50	0.60	0.90	1.19	1.49	1.79	2.09	2.39	2.69	2.98	3.28	3.58
60	0.53	0.80	1.06	1.33	1.59	1.86	2.12	2.39	2.65	2.92	3.18
90	0.41	0.61	0.82	1.02	1.23	1.43	1.63	1.84	2.04	2.25	2.45
120	0.34	0.51	0.68	0.85	1.02	1.19	1.36	1.53	1.70	1.87	2.04
150	0.29	0.44	0.59	0.73	0.88	1.03	1.18	1.32	1.47	1.62	1.76
180	0.26	0.39	0.52	0.65	0.78	0.91	1.04	1.18	1.31	1.44	1.57
240	0.22	0.33	0.43	0.54	0.65	0.76	0.87	0.98	1.08	1.19	1.30
300	0.19	0.28	0.38	0.47	0.56	0.66	0.75	0.85	0.94	1.03	1.13
360	0.17	0.25	0.33	0.42	0.50	0.58	0.67	0.75	0.84	0.92	1.00

Intensity-Duration Design Chart - Template

FIGURE 3-1



Map Scale: 1:37,300 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 500 1000 2000 3000

Feet: 0 1500 3000 6000 9000

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 11N WGS84

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

Soil Rating Polygons

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: San Diego County Area, California
Survey Area Data: Version 9, Sep 17, 2015

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Data not available.

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Hydrologic Soil Group

Hydrologic Soil Group— Summary by Map Unit — San Diego County Area, California (CA638)				
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
BIC	Bonsall sandy loam, 2 to 9 percent slopes	D	52.8	1.4%
BID2	Bonsall sandy loam, 9 to 15 percent slopes, eroded	D	7.3	0.2%
CID2	Cieneba coarse sandy loam, 5 to 15 percent slopes, erod ed	D	19.7	0.5%
CIE2	Cieneba coarse sandy loam, 15 to 30 percent slopes, ero ded	D	12.7	0.3%
CIG2	Cieneba coarse sandy loam, 30 to 65 percent slopes, ero ded	D	143.4	3.9%
CmE2	Cieneba rocky coarse sandy loam, 9 to 30 percent slopes , eroded	D	33.0	0.9%
CmrG	Cieneba very rocky coarse sandy loam, 30 to 75 percent slopes	D	496.2	13.3%
FaC	Fallbrook sandy loam, 5 to 9 percent slopes	C	59.0	1.6%
FaD2	Fallbrook sandy loam, 9 to 15 percent slopes, eroded	C	127.5	3.4%
FaE2	Fallbrook sandy loam, 15 to 30 percent slopes, eroded	C	349.8	9.4%
FaE3	Fallbrook sandy loam, 9 to 30 percent slopes, severely eroded	C	53.4	1.4%
FvD	Fallbrook-Vista sandy loams, 9 to 15 percent slopes	C	95.5	2.6%
FvE	Fallbrook-Vista sandy loams, 15 to 30 percent slopes	C	75.3	2.0%
GoA	Grangeville fine sandy loam, 0 to 2 percent slopes	B	63.1	1.7%
PeA	Placentia sandy loam, 0 to 2 percent slopes, warm MAAT, MLRA 19	C	17.0	0.5%
PeC	Placentia sandy loam, 2 to 9 percent slopes, warm MAAT, MLRA 19	C	188.7	5.1%
PeD2	Placentia sandy loam, 9 to 15 percent slopes, eroded	D	82.0	2.2%

Hydrologic Soil Group— Summary by Map Unit — San Diego County Area, California (CA638)				
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
RaC	Ramona sandy loam, 5 to 9 percent slopes	C	66.7	1.8%
RaC2	Ramona sandy loam, 5 to 9 percent slopes, eroded	C	1.8	0.0%
RaD2	Ramona sandy loam, 9 to 15 percent slopes, eroded	C	28.7	0.8%
RcD	Ramona gravelly sandy loam, 9 to 15 percent slopes	C	2.8	0.1%
Rm	Riverwash	D	370.7	10.0%
StG	Steep gullied land		145.6	3.9%
TuB	Tujunga sand, 0 to 5 percent slopes	A	646.7	17.4%
VaA	Visalia sandy loam, 0 to 2 percent slopes	A	99.0	2.7%
VaB	Visalia sandy loam, 2 to 5 percent slopes	A	19.3	0.5%
VsD	Vista coarse sandy loam, 9 to 15 percent slopes	B	111.1	3.0%
VsE	Vista coarse sandy loam, 15 to 30 percent slopes	B	220.6	5.9%
VsE2	Vista coarse sandy loam, 15 to 30 percent slopes, erode d	B	80.5	2.2%
VsG	Vista coarse sandy loam, 30 to 65 percent slopes	B	36.5	1.0%
VvG	Vista rocky coarse sandy loam, 30 to 65 percent slopes	B	12.6	0.3%
Totals for Area of Interest			**3,718.9**	**100.0%**

Rating Options—Hydrologic Soil Group

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

APPENDIX 2

100-year Existing Conditions Rational Method Computer Output

Northwest Quadrant

```
************************************************************************

          RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT
                       2003,1985,1981 HYDROLOGY MANUAL
       (c) Copyright 1982-2016 Advanced Engineering Software (aes)
           Ver. 23.0 Release Date: 07/01/2016  License ID 1509

                          Analysis prepared by:




 ************************** DESCRIPTION OF STUDY **************************
* OCEAN BREEZE RANCH                                                     *
* SYSTEM 100 - EXISTING 100 YR                                           *
* NORTHWEST QUADRANT                                                     *
 ************************************************************************

  FILE NAME: S100E100.DAT
  TIME/DATE OF STUDY: 15:55 05/30/2024
------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) = 100.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   3.300
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  ==================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0312 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

************************************************************************
  FLOW PROCESS FROM NODE    100.00 TO NODE    101.00 IS CODE =  21
------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
========================================================================
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .3300
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    640.00
  DOWNSTREAM ELEVATION(FEET) =    600.00
  ELEVATION DIFFERENCE(FEET) =     40.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.434
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
```



```
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.390
  SUBAREA RUNOFF(CFS) =      1.68
  TOTAL AREA(ACRES) =      0.69   TOTAL RUNOFF(CFS) =      1.68

************************************************************************
  FLOW PROCESS FROM NODE    101.00 TO NODE    102.00 IS CODE =  51
------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    600.00  DOWNSTREAM(FEET) =    330.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  3361.00   CHANNEL SLOPE =  0.0803
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   3.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.869
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .3300
  S.C.S. CURVE NUMBER (AMC II) =   0
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      93.44
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   9.57
  AVERAGE FLOW DEPTH(FEET) =   0.84   TRAVEL TIME(MIN.) =   5.85
  Tc(MIN.) =   12.29
  SUBAREA AREA(ACRES) =   110.14       SUBAREA RUNOFF(CFS) =  176.96
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.330
  TOTAL AREA(ACRES) =      110.8         PEAK FLOW RATE(CFS) =     178.07

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.21   FLOW VELOCITY(FEET/SEC.) =  11.85
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    102.00 =    3461.00 FEET.

************************************************************************
  FLOW PROCESS FROM NODE    102.00 TO NODE    133.00 IS CODE =  51
------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    330.00  DOWNSTREAM(FEET) =    262.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   503.00   CHANNEL SLOPE =  0.1352
  CHANNEL BASE(FEET) =    8.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   6.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.722
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3200
  S.C.S. CURVE NUMBER (AMC II) =   0
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     184.73
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  14.07
  AVERAGE FLOW DEPTH(FEET) =   1.15   TRAVEL TIME(MIN.) =   0.60
  Tc(MIN.) =   12.88
  SUBAREA AREA(ACRES) =     8.82       SUBAREA RUNOFF(CFS) =   13.33
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.329
  TOTAL AREA(ACRES) =      119.7         PEAK FLOW RATE(CFS) =     186.04

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.15   FLOW VELOCITY(FEET/SEC.) =  14.14
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    133.00 =    3964.00 FEET.

************************************************************************
  FLOW PROCESS FROM NODE    102.00 TO NODE    133.00 IS CODE =   1
------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
========================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
```

```
  TIME OF CONCENTRATION(MIN.) =   12.88
  RAINFALL INTENSITY(INCH/HR) =   4.72
  TOTAL STREAM AREA(ACRES) =   119.65
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    186.04

****************************************************************************
  FLOW PROCESS FROM NODE    134.00 TO NODE    135.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .3200
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    65.00
  UPSTREAM ELEVATION(FEET) =    482.00
  DOWNSTREAM ELEVATION(FEET) =    480.00
  ELEVATION DIFFERENCE(FEET) =      2.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    7.783
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.536
  SUBAREA RUNOFF(CFS) =      0.15
  TOTAL AREA(ACRES) =      0.07   TOTAL RUNOFF(CFS) =      0.15

****************************************************************************
  FLOW PROCESS FROM NODE    135.00 TO NODE    103.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    480.00  DOWNSTREAM(FEET) =    350.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1075.00   CHANNEL SLOPE =  0.1209
  CHANNEL BASE(FEET) =    8.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   3.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.893
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .3200
  S.C.S. CURVE NUMBER (AMC II) =   0
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       5.35
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.06
  AVERAGE FLOW DEPTH(FEET) =   0.16   TRAVEL TIME(MIN.) =   4.41
  Tc(MIN.) =   12.19
  SUBAREA AREA(ACRES) =     6.49       SUBAREA RUNOFF(CFS) =   10.16
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.320
  TOTAL AREA(ACRES) =        6.6         PEAK FLOW RATE(CFS) =      10.27

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.23   FLOW VELOCITY(FEET/SEC.) =   5.24
  LONGEST FLOWPATH FROM NODE    134.00 TO NODE    103.00 =    1140.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    103.00 TO NODE    136.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   350.00  DOWNSTREAM(FEET) =   346.00
  FLOW LENGTH(FEET) =    40.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   7.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  16.26
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      10.27
  PIPE TRAVEL TIME(MIN.) =   0.04    Tc(MIN.) =   12.23
  LONGEST FLOWPATH FROM NODE    134.00 TO NODE    136.00 =    1180.00 FEET.
```



```
****************************************************************************
  FLOW PROCESS FROM NODE    136.00 TO NODE    133.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    346.00  DOWNSTREAM(FEET) =    262.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   422.00   CHANNEL SLOPE =  0.1991
  CHANNEL BASE(FEET) =    8.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   3.00
  CHANNEL FLOW THRU SUBAREA(CFS) =      10.27
  FLOW VELOCITY(FEET/SEC.) =   6.12   FLOW DEPTH(FEET) =   0.20
  TRAVEL TIME(MIN.) =   1.15   Tc(MIN.) =   13.38
  LONGEST FLOWPATH FROM NODE    134.00 TO NODE    133.00 =    1602.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    136.00 TO NODE    133.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   13.38
  RAINFALL INTENSITY(INCH/HR) =   4.61
  TOTAL STREAM AREA(ACRES) =     6.56
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     10.27

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc       INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1      186.04    12.88        4.722        119.65
      2       10.27    13.38        4.607          6.56

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF       Tc       INTENSITY
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)
      1      195.92    12.88        4.722
      2      191.78    13.38        4.607

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     195.92   Tc(MIN.) =   12.88
  TOTAL AREA(ACRES) =      126.2
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    133.00 =    3964.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    133.00 TO NODE    110.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    262.00  DOWNSTREAM(FEET) =    242.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   310.00   CHANNEL SLOPE =  0.0645
  CHANNEL BASE(FEET) =    8.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   3.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.615
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3290
  S.C.S. CURVE NUMBER (AMC II) =   0
```

```
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     198.19
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  11.10
  AVERAGE FLOW DEPTH(FEET) =   1.45   TRAVEL TIME(MIN.) =   0.47
  Tc(MIN.) =   13.35
  SUBAREA AREA(ACRES) =     2.99       SUBAREA RUNOFF(CFS) =    4.54
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.329
  TOTAL AREA(ACRES) =      129.2         PEAK FLOW RATE(CFS) =     196.06

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.44   FLOW VELOCITY(FEET/SEC.) =  11.06
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    110.00 =    4274.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    133.00 TO NODE    110.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    105.00 TO NODE    106.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  STREETS & ROADS (CURBS/STORM DRAINS) RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "B"
  S.C.S. CURVE NUMBER (AMC II) =  98
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    60.00
  UPSTREAM ELEVATION(FEET) =    352.00
  DOWNSTREAM ELEVATION(FEET) =    349.00
  ELEVATION DIFFERENCE(FEET) =      3.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    1.875
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.15
  TOTAL AREA(ACRES) =      0.02   TOTAL RUNOFF(CFS) =      0.15

****************************************************************************
  FLOW PROCESS FROM NODE    106.00 TO NODE    107.00 IS CODE =  61
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STANDARD CURB SECTION USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  349.00  DOWNSTREAM ELEVATION(FEET) =  312.00
  STREET LENGTH(FEET) =   686.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 16.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.018
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.018

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0165
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       0.91
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.20
    HALFSTREET FLOOD WIDTH(FEET) =    4.14
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.33
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.68
  STREET FLOW TRAVEL TIME(MIN.) =   3.43   Tc(MIN.) =    5.31
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.367
```



```
  STREETS & ROADS (CURBS/STORM DRAINS) RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "B"
  S.C.S. CURVE NUMBER (AMC II) =  98
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    0.21      SUBAREA RUNOFF(CFS) =    1.53
  TOTAL AREA(ACRES) =        0.2        PEAK FLOW RATE(CFS) =       1.67

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.24   HALFSTREET FLOOD WIDTH(FEET) =   6.20
  FLOW VELOCITY(FEET/SEC.) =  3.59   DEPTH*VELOCITY(FT*FT/SEC.) =   0.87
  LONGEST FLOWPATH FROM NODE    105.00 TO NODE    107.00 =     746.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    106.00 TO NODE    107.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =    5.31
  RAINFALL INTENSITY(INCH/HR) =   8.37
  TOTAL STREAM AREA(ACRES) =     0.23
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.67

****************************************************************************
  FLOW PROCESS FROM NODE    137.00 TO NODE    139.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .2500
  S.C.S. CURVE NUMBER (AMC II) =  98
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    96.00
  UPSTREAM ELEVATION(FEET) =    455.00
  DOWNSTREAM ELEVATION(FEET) =    440.00
  ELEVATION DIFFERENCE(FEET) =     15.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.959
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.025
  SUBAREA RUNOFF(CFS) =      0.14
  TOTAL AREA(ACRES) =      0.08   TOTAL RUNOFF(CFS) =      0.14

****************************************************************************
  FLOW PROCESS FROM NODE    138.00 TO NODE    107.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    440.00  DOWNSTREAM(FEET) =    312.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   820.00   CHANNEL SLOPE =  0.1561
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   5.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.210
  RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .3200
  SOIL CLASSIFICATION IS "B"
  S.C.S. CURVE NUMBER (AMC II) =  65
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       3.23
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.33
  AVERAGE FLOW DEPTH(FEET) =   0.09   TRAVEL TIME(MIN.) =   4.10
  Tc(MIN.) =   11.06
  SUBAREA AREA(ACRES) =     3.69       SUBAREA RUNOFF(CFS) =    6.15
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.319
  TOTAL AREA(ACRES) =        3.8         PEAK FLOW RATE(CFS) =       6.26
```

```
  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.14   FLOW VELOCITY(FEET/SEC.) =   4.28
  LONGEST FLOWPATH FROM NODE    137.00 TO NODE    107.00 =     916.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    107.00 TO NODE    107.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.210
  RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .3200
  SOIL CLASSIFICATION IS "B"
  S.C.S. CURVE NUMBER (AMC II) =  65
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3187
  SUBAREA AREA(ACRES) =    0.58   SUBAREA RUNOFF(CFS) =    0.97
  TOTAL AREA(ACRES) =        4.3   TOTAL RUNOFF(CFS) =       7.22
  TC(MIN.) =   11.06

****************************************************************************
  FLOW PROCESS FROM NODE    107.00 TO NODE    109.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   308.92  DOWNSTREAM(FEET) =   305.41
  FLOW LENGTH(FEET) =    39.98   MANNING'S N =  0.011
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   5.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  15.87
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       7.22
  PIPE TRAVEL TIME(MIN.) =   0.04    Tc(MIN.) =   11.10
  LONGEST FLOWPATH FROM NODE    137.00 TO NODE    109.00 =     955.98 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    108.00 TO NODE    107.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.197
  RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .3200
  SOIL CLASSIFICATION IS "B"
  S.C.S. CURVE NUMBER (AMC II) =  65
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3191
  SUBAREA AREA(ACRES) =    2.14   SUBAREA RUNOFF(CFS) =    3.56
  TOTAL AREA(ACRES) =        6.5   TOTAL RUNOFF(CFS) =      10.76
  TC(MIN.) =   11.10

****************************************************************************
  FLOW PROCESS FROM NODE    108.00 TO NODE    107.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   11.10
  RAINFALL INTENSITY(INCH/HR) =   5.20
  TOTAL STREAM AREA(ACRES) =     6.49
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     10.76

  ** CONFLUENCE DATA **
```



```
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        1.67      5.31        8.367         0.23
      2       10.76     11.10        5.197         6.49

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF       Tc      INTENSITY
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)
      1        6.82      5.31        8.367
      2       11.80     11.10        5.197

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      11.80   Tc(MIN.) =   11.10
  TOTAL AREA(ACRES) =        6.7
  LONGEST FLOWPATH FROM NODE    137.00 TO NODE    107.00 =     955.98 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    107.00 TO NODE    109.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   308.92  DOWNSTREAM(FEET) =   305.41
  FLOW LENGTH(FEET) =    39.98   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   7.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  16.09
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      11.80
  PIPE TRAVEL TIME(MIN.) =   0.04    Tc(MIN.) =   11.15
  LONGEST FLOWPATH FROM NODE    137.00 TO NODE    109.00 =     995.96 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    111.00 TO NODE    109.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.185
  STREETS & ROADS (CURBS/STORM DRAINS) RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "B"
  S.C.S. CURVE NUMBER (AMC II) =  98
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3563
  SUBAREA AREA(ACRES) =    0.24   SUBAREA RUNOFF(CFS) =    1.08
  TOTAL AREA(ACRES) =        7.0   TOTAL RUNOFF(CFS) =      12.86
  TC(MIN.) =   11.15

****************************************************************************
  FLOW PROCESS FROM NODE    109.00 TO NODE    110.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    312.00  DOWNSTREAM(FEET) =    242.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   732.00   CHANNEL SLOPE =  0.0956
  CHANNEL BASE(FEET) =   12.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   5.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.617
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3200
  S.C.S. CURVE NUMBER (AMC II) =  98
```

```
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      21.52
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.55
  AVERAGE FLOW DEPTH(FEET) =   0.30   TRAVEL TIME(MIN.) =   2.20
  Tc(MIN.) =   13.34
  SUBAREA AREA(ACRES) =    11.68       SUBAREA RUNOFF(CFS) =   17.25
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.334
  TOTAL AREA(ACRES) =       18.6         PEAK FLOW RATE(CFS) =      28.70

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.35   FLOW VELOCITY(FEET/SEC.) =   6.21
  LONGEST FLOWPATH FROM NODE    137.00 TO NODE    110.00 =    1727.96 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    109.00 TO NODE    110.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM     RUNOFF      Tc       INTENSITY     AREA
  NUMBER      (CFS)     (MIN.)    (INCH/HOUR)   (ACRE)
      1       28.70    13.34       4.617       18.64
  LONGEST FLOWPATH FROM NODE    137.00 TO NODE    110.00 =    1727.96 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
  STREAM     RUNOFF      Tc       INTENSITY     AREA
  NUMBER      (CFS)     (MIN.)    (INCH/HOUR)   (ACRE)
      1      196.06    13.35       4.615      129.20
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    110.00 =    4274.00 FEET.

  ** PEAK FLOW RATE TABLE **
  STREAM    RUNOFF       Tc       INTENSITY
  NUMBER     (CFS)      (MIN.)    (INCH/HOUR)
      1     224.68      13.34        4.617
      2     224.75      13.35        4.615

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     224.75   Tc(MIN.) =   13.35
  TOTAL AREA(ACRES) =      147.8

****************************************************************************
  FLOW PROCESS FROM NODE    110.00 TO NODE    130.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    242.00  DOWNSTREAM(FEET) =    207.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1395.00   CHANNEL SLOPE =  0.0251
  CHANNEL BASE(FEET) =    8.00   "Z" FACTOR =   4.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   5.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.058
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .3800
  S.C.S. CURVE NUMBER (AMC II) =  98
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     239.90
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.89
  AVERAGE FLOW DEPTH(FEET) =   1.93   TRAVEL TIME(MIN.) =   2.95
  Tc(MIN.) =   16.29
  SUBAREA AREA(ACRES) =    19.65       SUBAREA RUNOFF(CFS) =   30.30
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.335
  TOTAL AREA(ACRES) =      167.5         PEAK FLOW RATE(CFS) =     227.91

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
```



```
  DEPTH(FEET) =  1.89   FLOW VELOCITY(FEET/SEC.) =   7.77
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    130.00 =    5669.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    110.00 TO NODE    130.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   16.29
  RAINFALL INTENSITY(INCH/HR) =   4.06
  TOTAL STREAM AREA(ACRES) =   167.49
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    227.91

****************************************************************************
  FLOW PROCESS FROM NODE    120.00 TO NODE    121.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .2500
  SOIL CLASSIFICATION IS "B"
  S.C.S. CURVE NUMBER (AMC II) =  77
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    658.10
  DOWNSTREAM ELEVATION(FEET) =    646.00
  ELEVATION DIFFERENCE(FEET) =     12.10
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    7.102
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.933
  SUBAREA RUNOFF(CFS) =      0.29
  TOTAL AREA(ACRES) =      0.17   TOTAL RUNOFF(CFS) =      0.29

****************************************************************************
  FLOW PROCESS FROM NODE    121.00 TO NODE    122.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    646.00  DOWNSTREAM(FEET) =    346.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2460.00   CHANNEL SLOPE =  0.1220
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   5.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.779
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3000
  S.C.S. CURVE NUMBER (AMC II) =  77
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      33.10
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.40
  AVERAGE FLOW DEPTH(FEET) =   0.40   TRAVEL TIME(MIN.) =   5.54
  Tc(MIN.) =   12.65
  SUBAREA AREA(ACRES) =    44.95       SUBAREA RUNOFF(CFS) =   64.45
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.300
  TOTAL AREA(ACRES) =       45.1         PEAK FLOW RATE(CFS) =      64.65

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.58   FLOW VELOCITY(FEET/SEC.) =   9.41
  LONGEST FLOWPATH FROM NODE    120.00 TO NODE    122.00 =    2560.00 FEET.

+----------------------------------------------------------------------------+
| LAND USE - NATURAL                                                         |
| COMPOSITE C (B&C&D)                                                        |
| (13.54*0.25+14.89*0.30+16.52*0.35)/44.95 = 0.30                            |
```

```
+----------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE    122.00 TO NODE    130.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    350.00  DOWNSTREAM(FEET) =    225.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1850.00   CHANNEL SLOPE =  0.0676
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   5.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   5.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.036
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3300
  S.C.S. CURVE NUMBER (AMC II) =  77
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      94.24
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.14
  AVERAGE FLOW DEPTH(FEET) =   0.82   TRAVEL TIME(MIN.) =   3.79
  Tc(MIN.) =   16.43
  SUBAREA AREA(ACRES) =    44.43       SUBAREA RUNOFF(CFS) =   59.17
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.315
  TOTAL AREA(ACRES) =       89.6         PEAK FLOW RATE(CFS) =     113.76

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.91   FLOW VELOCITY(FEET/SEC.) =   8.58
  LONGEST FLOWPATH FROM NODE    120.00 TO NODE    130.00 =    4410.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    122.00 TO NODE    130.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   16.43
  RAINFALL INTENSITY(INCH/HR) =   4.04
  TOTAL STREAM AREA(ACRES) =    89.55
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    113.76

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER       (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1      227.91    16.29        4.058        167.49
      2      113.76    16.43        4.036         89.55

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER       (CFS)    (MIN.)   (INCH/HOUR)
      1      340.71    16.29       4.058
      2      340.43    16.43       4.036

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     340.71   Tc(MIN.) =   16.29
  TOTAL AREA(ACRES) =      257.0
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    130.00 =    5669.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    125.00 TO NODE    130.00 IS CODE =  81
```



```
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.058
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .3900
  S.C.S. CURVE NUMBER (AMC II) =  77
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3348
  SUBAREA AREA(ACRES) =   31.05   SUBAREA RUNOFF(CFS) =   49.14
  TOTAL AREA(ACRES) =      288.1   TOTAL RUNOFF(CFS) =     391.45
  TC(MIN.) =   16.29

****************************************************************************
  FLOW PROCESS FROM NODE    130.00 TO NODE    132.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.058
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .3220
  S.C.S. CURVE NUMBER (AMC II) =  77
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3312
  SUBAREA AREA(ACRES) =  112.24   SUBAREA RUNOFF(CFS) =  146.66
  TOTAL AREA(ACRES) =      400.3   TOTAL RUNOFF(CFS) =     538.11
  TC(MIN.) =   16.29

****************************************************************************
  FLOW PROCESS FROM NODE    130.00 TO NODE    132.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    264.00  DOWNSTREAM(FEET) =    184.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2250.00   CHANNEL SLOPE =  0.0356
  CHANNEL BASE(FEET) =   50.00   "Z" FACTOR =  15.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   4.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     538.11
  FLOW VELOCITY(FEET/SEC.) =   7.34   FLOW DEPTH(FEET) =   1.10
  TRAVEL TIME(MIN.) =   5.11   Tc(MIN.) =   21.40
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    132.00 =    7919.00 FEET.
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =      400.3  TC(MIN.) =     21.40
  PEAK FLOW RATE(CFS)   =     538.11
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

```
**************************************************************************

          RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT
                       2003,1985,1981 HYDROLOGY MANUAL
       (c) Copyright 1982-2016 Advanced Engineering Software (aes)
           Ver. 23.0 Release Date: 07/01/2016  License ID 1509

                          Analysis prepared by:




 ************************** DESCRIPTION OF STUDY **************************
* OCEAN BREEZE RANCH                                                     *
* SYSTEM 200 - EXISTING 100 YR                                           *
* NORTHWEST QUADRANT                                                     *
 **************************************************************************

  FILE NAME: S200E100.DAT
  TIME/DATE OF STUDY: 15:56 05/30/2024
--------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
--------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) = 100.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   3.300
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  ================  ======  =====  ====  =====  =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0312 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

**************************************************************************
  FLOW PROCESS FROM NODE    200.00 TO NODE    201.00 IS CODE =  21
--------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==========================================================================
  USER-SPECIFIED RUNOFF COEFFICIENT = .3000
  S.C.S. CURVE NUMBER (AMC II) =  85
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    600.00
  DOWNSTREAM ELEVATION(FEET) =    590.00
  ELEVATION DIFFERENCE(FEET) =     10.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.684
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.210
```



```
  SUBAREA RUNOFF(CFS) =      0.35
  TOTAL AREA(ACRES) =      0.16   TOTAL RUNOFF(CFS) =      0.35

**************************************************************************
  FLOW PROCESS FROM NODE    201.00 TO NODE    210.00 IS CODE =  51
--------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
==========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    590.00  DOWNSTREAM(FEET) =    208.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  3000.00   CHANNEL SLOPE =  0.1273
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   6.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   5.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.332
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3000
  S.C.S. CURVE NUMBER (AMC II) =  85
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      38.03
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.22
  AVERAGE FLOW DEPTH(FEET) =   0.48   TRAVEL TIME(MIN.) =   8.04
  Tc(MIN.) =   14.73
  SUBAREA AREA(ACRES) =    55.10       SUBAREA RUNOFF(CFS) =   71.60
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.300
  TOTAL AREA(ACRES) =       55.3         PEAK FLOW RATE(CFS) =      71.81

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.67   FLOW VELOCITY(FEET/SEC.) =   7.58
  LONGEST FLOWPATH FROM NODE    200.00 TO NODE    210.00 =    3100.00 FEET.

+------------------------------------------------------------------------+
| NATURAL                                                                |
| COMPOSITE C (B&C&D)                                                    |
| (3.3*0.25+51.49*0.3+0.31*0.35)/55.1=0.30                               |
+------------------------------------------------------------------------+

**************************************************************************
  FLOW PROCESS FROM NODE    209.00 TO NODE    210.00 IS CODE =  81
--------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.332
  USER-SPECIFIED RUNOFF COEFFICIENT = .3000
  S.C.S. CURVE NUMBER (AMC II) =  85
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3000
  SUBAREA AREA(ACRES) =   18.44   SUBAREA RUNOFF(CFS) =   23.96
  TOTAL AREA(ACRES) =       73.7   TOTAL RUNOFF(CFS) =      95.77
  TC(MIN.) =   14.73

**************************************************************************
  FLOW PROCESS FROM NODE    210.00 TO NODE    214.00 IS CODE =  51
--------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
==========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    208.00  DOWNSTREAM(FEET) =    202.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1023.00   CHANNEL SLOPE =  0.0059
  CHANNEL BASE(FEET) =    8.00   "Z" FACTOR =   8.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   5.00
  CHANNEL FLOW THRU SUBAREA(CFS) =      95.77
  FLOW VELOCITY(FEET/SEC.) =   3.12   FLOW DEPTH(FEET) =   1.52
  TRAVEL TIME(MIN.) =   5.46   Tc(MIN.) =   20.19
  LONGEST FLOWPATH FROM NODE    200.00 TO NODE    214.00 =    4123.00 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE    210.00 TO NODE    214.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   20.19
  RAINFALL INTENSITY(INCH/HR) =   3.53
  TOTAL STREAM AREA(ACRES) =    73.70
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     95.77

****************************************************************************
  FLOW PROCESS FROM NODE    212.00 TO NODE    213.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .2900
  S.C.S. CURVE NUMBER (AMC II) =  85
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    396.90
  DOWNSTREAM ELEVATION(FEET) =    376.00
  ELEVATION DIFFERENCE(FEET) =     20.90
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.768
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.152
  SUBAREA RUNOFF(CFS) =      0.44
  TOTAL AREA(ACRES) =      0.21   TOTAL RUNOFF(CFS) =      0.44

****************************************************************************
  FLOW PROCESS FROM NODE    213.00 TO NODE    214.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    376.00  DOWNSTREAM(FEET) =    202.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1099.00   CHANNEL SLOPE =  0.1583
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   2.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.068
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .2500
  S.C.S. CURVE NUMBER (AMC II) =  85
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      49.13
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   9.33
  AVERAGE FLOW DEPTH(FEET) =   0.46   TRAVEL TIME(MIN.) =   1.96
  Tc(MIN.) =    8.73
  SUBAREA AREA(ACRES) =    63.33       SUBAREA RUNOFF(CFS) =   96.08
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.250
  TOTAL AREA(ACRES) =       63.5         PEAK FLOW RATE(CFS) =      96.45

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.68   FLOW VELOCITY(FEET/SEC.) =  11.70
  LONGEST FLOWPATH FROM NODE    212.00 TO NODE    214.00 =    1199.00 FEET.

+--------------------------------------------------------------------------+
| LAND USE - NATURAL (MOSTLY)                                              |
| COMPOSITE C FOR A, C, & D SOILS                                          |
| (0.20*35.02+0.30*17.76+0.35*10.55)/63.33 = 0.25                          |
+--------------------------------------------------------------------------+

****************************************************************************
```



```
  FLOW PROCESS FROM NODE    213.00 TO NODE    214.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    8.73
  RAINFALL INTENSITY(INCH/HR) =   6.07
  TOTAL STREAM AREA(ACRES) =    63.54
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     96.45

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       95.77    20.19        3.534         73.70
      2       96.45     8.73        6.068         63.54

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF       Tc      INTENSITY
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)
      1      137.87     8.73        6.068
      2      151.95    20.19        3.534

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     151.95   Tc(MIN.) =   20.19
  TOTAL AREA(ACRES) =      137.2
  LONGEST FLOWPATH FROM NODE    200.00 TO NODE    214.00 =    4123.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    214.00 TO NODE    215.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    202.00  DOWNSTREAM(FEET) =    200.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   548.00   CHANNEL SLOPE =  0.0036
  CHANNEL BASE(FEET) =    8.00   "Z" FACTOR =   8.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   5.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.228
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3200
  S.C.S. CURVE NUMBER (AMC II) =  85
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     161.31
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.00
  AVERAGE FLOW DEPTH(FEET) =   2.14   TRAVEL TIME(MIN.) =   3.05
  Tc(MIN.) =   23.23
  SUBAREA AREA(ACRES) =    18.13       SUBAREA RUNOFF(CFS) =   18.73
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.282
  TOTAL AREA(ACRES) =      155.4         PEAK FLOW RATE(CFS) =     151.95

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  2.09   FLOW VELOCITY(FEET/SEC.) =   2.95
  LONGEST FLOWPATH FROM NODE    200.00 TO NODE    215.00 =    4671.00 FEET.

+--------------------------------------------------------------------------+
| LAND USE - 1 DU/A                                                        |
| COMPOSITE C FOR A, C, & D                                                |
| (.27*9.80+.36*4.51+.41*3.82)/18.13 = 0.32                                |
+--------------------------------------------------------------------------+
```

```
****************************************************************************
  FLOW PROCESS FROM NODE    215.00 TO NODE    220.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    200.00  DOWNSTREAM(FEET) =    195.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1580.00   CHANNEL SLOPE =  0.0032
  CHANNEL BASE(FEET) =   20.00   "Z" FACTOR =  12.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   5.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.538
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .2100
  S.C.S. CURVE NUMBER (AMC II) =  85
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     159.03
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   2.51
  AVERAGE FLOW DEPTH(FEET) =   1.61   TRAVEL TIME(MIN.) =  10.51
  Tc(MIN.) =   33.74
  SUBAREA AREA(ACRES) =    26.50       SUBAREA RUNOFF(CFS) =   14.12
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.271
  TOTAL AREA(ACRES) =      181.9         PEAK FLOW RATE(CFS) =     151.95

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.57   FLOW VELOCITY(FEET/SEC.) =   2.48
  LONGEST FLOWPATH FROM NODE    200.00 TO NODE    220.00 =    6251.00 FEET.

+--------------------------------------------------------------------------+
| LAND USE - NATURAL                                                       |
| COMPOSITE C (A&C)                                                        |
| (23.78*0.20+2.72*0.30)/26.50 = 0.21                                      |
+--------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE    215.00 TO NODE    220.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   33.74
  RAINFALL INTENSITY(INCH/HR) =   2.54
  TOTAL STREAM AREA(ACRES) =   181.87
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    151.95

****************************************************************************
  FLOW PROCESS FROM NODE    217.00 TO NODE    218.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  USER-SPECIFIED RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =  88
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    352.00
  DOWNSTREAM ELEVATION(FEET) =    326.00
  ELEVATION DIFFERENCE(FEET) =     26.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.267
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.516
  SUBAREA RUNOFF(CFS) =      0.53
  TOTAL AREA(ACRES) =      0.20   TOTAL RUNOFF(CFS) =      0.53

****************************************************************************
```



```
  FLOW PROCESS FROM NODE    218.00 TO NODE    219.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    326.00  DOWNSTREAM(FEET) =    204.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   578.00   CHANNEL SLOPE =  0.2111
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   2.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.640
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3600
  S.C.S. CURVE NUMBER (AMC II) =  88
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      19.25
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.26
  AVERAGE FLOW DEPTH(FEET) =   0.25   TRAVEL TIME(MIN.) =   1.33
  Tc(MIN.) =    7.59
  SUBAREA AREA(ACRES) =    15.62       SUBAREA RUNOFF(CFS) =   37.34
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.360
  TOTAL AREA(ACRES) =       15.8         PEAK FLOW RATE(CFS) =      37.80

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.36   FLOW VELOCITY(FEET/SEC.) =   9.38
  LONGEST FLOWPATH FROM NODE    217.00 TO NODE    219.00 =     678.00 FEET.

+--------------------------------------------------------------------------+
| LAND USE - 1DU/A                                                         |
| COMPSITE C FOR A, C, & D SOILS                                           |
| (0.71*.27+12.86*.36+.41*2.05/15.62 = 0.36                                |
+--------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE    219.00 TO NODE    220.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    204.00  DOWNSTREAM(FEET) =    195.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   275.00   CHANNEL SLOPE =  0.0327
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =      37.80
  FLOW VELOCITY(FEET/SEC.) =   5.06   FLOW DEPTH(FEET) =   0.63
  TRAVEL TIME(MIN.) =   0.91   Tc(MIN.) =    8.50
  LONGEST FLOWPATH FROM NODE    217.00 TO NODE    220.00 =     953.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    219.00 TO NODE    220.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    8.50
  RAINFALL INTENSITY(INCH/HR) =   6.17
  TOTAL STREAM AREA(ACRES) =    15.82
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     37.80

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1      151.95    33.74        2.538        181.87
```

```
      2       37.80     8.50        6.175         15.82

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF       Tc       INTENSITY
  NUMBER       (CFS)     (MIN.)    (INCH/HOUR)
      1       100.25     8.50        6.175
      2       167.48    33.74        2.538

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     167.48   Tc(MIN.) =   33.74
  TOTAL AREA(ACRES) =       197.7
  LONGEST FLOWPATH FROM NODE    200.00 TO NODE    220.00 =    6251.00 FEET.
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =      197.7  TC(MIN.) =     33.74
  PEAK FLOW RATE(CFS)   =     167.48
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

Northeast Quadrant

```
************************************************************************

          RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT
                       2003,1985,1981 HYDROLOGY MANUAL
       (c) Copyright 1982-2016 Advanced Engineering Software (aes)
           Ver. 23.0 Release Date: 07/01/2016  License ID 1509

                        Analysis prepared by:




 ************************** DESCRIPTION OF STUDY **************************
* OCEAN BREEZE RANCH                                                     *
* SYSTEM 300 - EXISTING 100                                              *
* NORTHEAST QUADRANT                                                     *
 ************************************************************************

  FILE NAME: S300E100.DAT
  TIME/DATE OF STUDY: 15:59 05/30/2024
------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) = 100.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   3.300
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  ==================  ======  =====  ====== =====  ======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0312 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

************************************************************************
  FLOW PROCESS FROM NODE    300.00 TO NODE    301.00 IS CODE =  21
------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
========================================================================
  USER-SPECIFIED RUNOFF COEFFICIENT = .3000
  S.C.S. CURVE NUMBER (AMC II) =  85
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    630.00
  DOWNSTREAM ELEVATION(FEET) =    624.00
  ELEVATION DIFFERENCE(FEET) =      6.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    7.925
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.460
  SUBAREA RUNOFF(CFS) =      0.66
```



```
  TOTAL AREA(ACRES) =      0.34   TOTAL RUNOFF(CFS) =      0.66

************************************************************************
  FLOW PROCESS FROM NODE    301.00 TO NODE    305.00 IS CODE =  51
------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    624.00  DOWNSTREAM(FEET) =    270.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2000.00   CHANNEL SLOPE =  0.1770
  CHANNEL BASE(FEET) =    5.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   6.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.908
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .2930
  S.C.S. CURVE NUMBER (AMC II) =  85
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      28.75
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.92
  AVERAGE FLOW DEPTH(FEET) =   0.55   TRAVEL TIME(MIN.) =   4.21
  Tc(MIN.) =   12.13
  SUBAREA AREA(ACRES) =    38.36       SUBAREA RUNOFF(CFS) =   55.17
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.293
  TOTAL AREA(ACRES) =       38.7         PEAK FLOW RATE(CFS) =      55.67

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.78   FLOW VELOCITY(FEET/SEC.) =   9.67
  LONGEST FLOWPATH FROM NODE    300.00 TO NODE    305.00 =    2100.00 FEET.

+----------------------------------------------------------------------+
| NATURAL AREA                                                         |
| COMPOSITE C (B&C&D)                                                  |
| (11.21*0.25+21.31*0.3+5.84*0.35)/38.36=0.293                         |
+----------------------------------------------------------------------+

************************************************************************
  FLOW PROCESS FROM NODE    305.00 TO NODE    310.00 IS CODE =  51
------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    270.00  DOWNSTREAM(FEET) =    220.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1180.00   CHANNEL SLOPE =  0.0424
  CHANNEL BASE(FEET) =    6.00   "Z" FACTOR =   6.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   5.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.133
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .2860
  S.C.S. CURVE NUMBER (AMC II) =  85
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      68.50
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.30
  AVERAGE FLOW DEPTH(FEET) =   1.05   TRAVEL TIME(MIN.) =   3.71
  Tc(MIN.) =   15.84
  SUBAREA AREA(ACRES) =    21.68       SUBAREA RUNOFF(CFS) =   25.63
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.291
  TOTAL AREA(ACRES) =       60.4         PEAK FLOW RATE(CFS) =      72.50

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.08   FLOW VELOCITY(FEET/SEC.) =   5.37
  LONGEST FLOWPATH FROM NODE    300.00 TO NODE    310.00 =    3280.00 FEET.

+----------------------------------------------------------------------+
| NATURAL TERRAIN                                                      |
| COMPOSITE C (B&C&D)                                                  |
```

```
| (6.36*0.25+15.14*0.3+0.18*0.35)/21.68=0.286                              |
+--------------------------------------------------------------------------+

**************************************************************************
  FLOW PROCESS FROM NODE    309.00 TO NODE    310.00 IS CODE =  81
--------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.133
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .2730
  S.C.S. CURVE NUMBER (AMC II) =  85
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.2852
  SUBAREA AREA(ACRES) =   26.56   SUBAREA RUNOFF(CFS) =   29.97
  TOTAL AREA(ACRES) =       86.9   TOTAL RUNOFF(CFS) =     102.46
  TC(MIN.) =   15.84

+--------------------------------------------------------------------------+
| NATURAL TERRAIN                                                          |
| COMPOSITE C (B&C)                                                        |
| (14.15*0.25+12.41*0.3)/26.56=0.273                                       |
+--------------------------------------------------------------------------+

**************************************************************************
  FLOW PROCESS FROM NODE    310.00 TO NODE    315.00 IS CODE =  51
--------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
==========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    220.00  DOWNSTREAM(FEET) =    210.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1100.00   CHANNEL SLOPE =  0.0091
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   5.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.486
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .2800
  S.C.S. CURVE NUMBER (AMC II) =  85
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     113.33
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.83
  AVERAGE FLOW DEPTH(FEET) =   1.89   TRAVEL TIME(MIN.) =   4.78
  Tc(MIN.) =   20.62
  SUBAREA AREA(ACRES) =    22.24       SUBAREA RUNOFF(CFS) =   21.71
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.284
  TOTAL AREA(ACRES) =      109.2         PEAK FLOW RATE(CFS) =     108.14

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.84   FLOW VELOCITY(FEET/SEC.) =   3.78
  LONGEST FLOWPATH FROM NODE    300.00 TO NODE    315.00 =    4380.00 FEET.

+--------------------------------------------------------------------------+
| NATURAL TERRAIN                                                          |
| COMPOSITE C (A&C&D)                                                      |
| (9.12*0.2+3.72*0.3+9.4*0.35)/22.24=0.280                                 |
+--------------------------------------------------------------------------+
==========================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)      =      109.2  TC(MIN.) =     20.62
  PEAK FLOW RATE(CFS)    =     108.14
==========================================================================
==========================================================================
  END OF RATIONAL METHOD ANALYSIS
```

```
**************************************************************************

          RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT
                       2003,1985,1981 HYDROLOGY MANUAL
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            Ver. 23.0 Release Date: 07/01/2016  License ID 1509

                          Analysis prepared by:




 ************************* DESCRIPTION OF STUDY *************************
* OCEAN BREEZE RANCH                                                    *
* SYSTEM 400 - EXISTING 100 YR                                          *
* NORTHEAST QUADRANT                                                    *
 ************************************************************************

  FILE NAME: S400E100.DAT
  TIME/DATE OF STUDY: 16:27 05/30/2024
------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) = 100.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   3.300
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  ==================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0312 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

**************************************************************************
  FLOW PROCESS FROM NODE    400.00 TO NODE    401.00 IS CODE =  21
------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==========================================================================
  USER-SPECIFIED RUNOFF COEFFICIENT = .3000
  S.C.S. CURVE NUMBER (AMC II) =  85
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    50.00
  UPSTREAM ELEVATION(FEET) =    721.15
  DOWNSTREAM ELEVATION(FEET) =    710.00
  ELEVATION DIFFERENCE(FEET) =     11.15
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    4.727
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
```



```
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.37
  TOTAL AREA(ACRES) =      0.14   TOTAL RUNOFF(CFS) =      0.37

**************************************************************************
  FLOW PROCESS FROM NODE    401.00 TO NODE    405.00 IS CODE =  51
------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
==========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    710.00  DOWNSTREAM(FEET) =    430.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   925.00   CHANNEL SLOPE =  0.3027
  CHANNEL BASE(FEET) =    5.00   "Z" FACTOR =   4.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   5.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.135
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3300
  S.C.S. CURVE NUMBER (AMC II) =  85
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      14.85
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.46
  AVERAGE FLOW DEPTH(FEET) =   0.32   TRAVEL TIME(MIN.) =   2.07
  Tc(MIN.) =    6.79
  SUBAREA AREA(ACRES) =    12.26       SUBAREA RUNOFF(CFS) =   28.87
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.330
  TOTAL AREA(ACRES) =       12.4         PEAK FLOW RATE(CFS) =      29.17

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.46   FLOW VELOCITY(FEET/SEC.) =   9.21
  LONGEST FLOWPATH FROM NODE    400.00 TO NODE    405.00 =     975.00 FEET.

+------------------------------------------------------------------------+
| NATURAL TERRAIN W/ ~10% IMPERVIOUSNESS                                 |
| COMPOSITE C FOR B & C SOILS                                            |
| (4.51*0.36+7.75*0.32)/12.26=0.33                                       |
+------------------------------------------------------------------------+

**************************************************************************
  FLOW PROCESS FROM NODE    405.00 TO NODE    410.00 IS CODE =  51
------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
==========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    430.00  DOWNSTREAM(FEET) =    275.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1100.00   CHANNEL SLOPE =  0.1409
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   6.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   5.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.952
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3400
  S.C.S. CURVE NUMBER (AMC II) =  85
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      85.76
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.32
  AVERAGE FLOW DEPTH(FEET) =   0.72   TRAVEL TIME(MIN.) =   2.20
  Tc(MIN.) =    9.00
  SUBAREA AREA(ACRES) =    55.66       SUBAREA RUNOFF(CFS) =  112.64
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.338
  TOTAL AREA(ACRES) =       68.1         PEAK FLOW RATE(CFS) =     136.97

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.93   FLOW VELOCITY(FEET/SEC.) =   9.51
  LONGEST FLOWPATH FROM NODE    400.00 TO NODE    410.00 =    2075.00 FEET.

+------------------------------------------------------------------------+
```

```
| NATURAL TERRAIN W/ 10% IMPERVIOUSNESS                                      |
| COMPOSITE C FOR B & C SOILS                                                |
| (23.56*0.36+32.1*0.32)/55.66=0.34                                          |
+----------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE    410.00 TO NODE    420.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    275.00  DOWNSTREAM(FEET) =    211.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2050.00   CHANNEL SLOPE =  0.0312
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   6.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   5.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.315
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3540
  S.C.S. CURVE NUMBER (AMC II) =  85
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     167.36
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.87
  AVERAGE FLOW DEPTH(FEET) =   1.50   TRAVEL TIME(MIN.) =   5.82
  Tc(MIN.) =   14.82
  SUBAREA AREA(ACRES) =    39.67       SUBAREA RUNOFF(CFS) =   60.59
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.344
  TOTAL AREA(ACRES) =      107.7         PEAK FLOW RATE(CFS) =     159.88

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.47   FLOW VELOCITY(FEET/SEC.) =   5.79
  LONGEST FLOWPATH FROM NODE    400.00 TO NODE    420.00 =    4125.00 FEET.

+----------------------------------------------------------------------------+
| NATURAL TERRAIN W/ 10% IMPERVIOUSNESS                                      |
| COMPOSITE C FOR A, B, C & D SOILS                                          |
| (5.18*0.27+0.93*0.32+28.06*0.36+5.5*0.41)/39.67=0.354                      |
+----------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE    415.00 TO NODE    420.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.315
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3370
  S.C.S. CURVE NUMBER (AMC II) =  85
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3421
  SUBAREA AREA(ACRES) =   38.98   SUBAREA RUNOFF(CFS) =   56.68
  TOTAL AREA(ACRES) =      146.7   TOTAL RUNOFF(CFS) =     216.56
  TC(MIN.) =   14.82

+----------------------------------------------------------------------------+
| NATURAL TERRAIN W/ ~10% IMPERVIOUSNESS                                     |
| COMPOSITE C FOR A, B & C SOILS                                             |
| (5.08*0.27+11.42*0.32+22.48*0.36)/38.98=0.337                              |
+----------------------------------------------------------------------------+
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =      146.7  TC(MIN.) =     14.82
  PEAK FLOW RATE(CFS)   =     216.56
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

```
************************************************************************

          RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT
                       2003,1985,1981 HYDROLOGY MANUAL
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            Ver. 23.0 Release Date: 07/01/2016  License ID 1509

                        Analysis prepared by:




 ************************** DESCRIPTION OF STUDY **************************
* OCEAN BREEZE RANCH                                                     *
* SYSTEM 500 - EXISTING 100 YR                                           *
* NORTHEAST QUADRANT                                                     *
 ************************************************************************

  FILE NAME: S500E100.DAT
  TIME/DATE OF STUDY: 16:28 05/30/2024
------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) = 100.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   3.300
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  ================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0312 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

************************************************************************
  FLOW PROCESS FROM NODE    501.00 TO NODE    502.00 IS CODE =  21
------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
========================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3700
  S.C.S. CURVE NUMBER (AMC II) =  85
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    90.00
  UPSTREAM ELEVATION(FEET) =    890.00
  DOWNSTREAM ELEVATION(FEET) =    880.00
  ELEVATION DIFFERENCE(FEET) =     10.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    5.787
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
```



```
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.913
  SUBAREA RUNOFF(CFS) =      1.14
  TOTAL AREA(ACRES) =      0.39   TOTAL RUNOFF(CFS) =      1.14

+------------------------------------------------------------------------+
| 1 DU/AC COMPOSITE C AND D SOILS                                        |
| C=(0.28*0.36+0.11*0.41)/0.39=0.37                                      |
|                                                                        |
+------------------------------------------------------------------------+

************************************************************************
  FLOW PROCESS FROM NODE    502.00 TO NODE    503.00 IS CODE =  51
------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    880.00  DOWNSTREAM(FEET) =    680.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1272.00   CHANNEL SLOPE =  0.1572
  CHANNEL BASE(FEET) =    8.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   5.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.352
  USER-SPECIFIED RUNOFF COEFFICIENT = .3600
  S.C.S. CURVE NUMBER (AMC II) =  76
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      64.55
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   9.03
  AVERAGE FLOW DEPTH(FEET) =   0.71   TRAVEL TIME(MIN.) =   2.35
  Tc(MIN.) =    8.14
  SUBAREA AREA(ACRES) =    54.73       SUBAREA RUNOFF(CFS) =  125.15
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.360
  TOTAL AREA(ACRES) =       55.1         PEAK FLOW RATE(CFS) =     126.06

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.03   FLOW VELOCITY(FEET/SEC.) =  11.10
  LONGEST FLOWPATH FROM NODE    501.00 TO NODE    503.00 =    1362.00 FEET.

+------------------------------------------------------------------------+
| NATURAL AREA W/ IMPERVIOUS AREAS                                       |
| USE 1DU/A                                                              |
| (52.11*0.36+2.62*0.41)/54.73=0.36                                      |
+------------------------------------------------------------------------+

************************************************************************
  FLOW PROCESS FROM NODE    503.00 TO NODE    510.00 IS CODE =  51
------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    680.00  DOWNSTREAM(FEET) =    304.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  4599.00   CHANNEL SLOPE =  0.0818
  CHANNEL BASE(FEET) =   12.00   "Z" FACTOR =   5.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   6.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.162
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =  76
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     322.78
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  10.18
  AVERAGE FLOW DEPTH(FEET) =   1.59   TRAVEL TIME(MIN.) =   7.53
  Tc(MIN.) =   15.67
  SUBAREA AREA(ACRES) =   263.38       SUBAREA RUNOFF(CFS) =  383.69
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.352
  TOTAL AREA(ACRES) =      318.5         PEAK FLOW RATE(CFS) =     466.30
```

```
  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.91   FLOW VELOCITY(FEET/SEC.) =  11.31
  LONGEST FLOWPATH FROM NODE    501.00 TO NODE    510.00 =    5961.00 FEET.

+----------------------------------------------------------------------------+
| NATURAL AREA W/ IMPERVIOUSNESS (1DU/A)                                     |
| COMPOSITE C (B, C, AND D)                                                  |
| (60.85*0.32+188.6*0.36+13.93*0.41)/263.38=0.35                             |
+----------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE    503.00 TO NODE    510.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   15.67
  RAINFALL INTENSITY(INCH/HR) =   4.16
  TOTAL STREAM AREA(ACRES) =   318.50
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    466.30

****************************************************************************
  FLOW PROCESS FROM NODE    505.00 TO NODE    506.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  USER-SPECIFIED RUNOFF COEFFICIENT = .4100
  S.C.S. CURVE NUMBER (AMC II) =  82
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =   1000.00
  DOWNSTREAM ELEVATION(FEET) =    980.00
  ELEVATION DIFFERENCE(FEET) =     20.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    5.765
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.932
  SUBAREA RUNOFF(CFS) =      1.53
  TOTAL AREA(ACRES) =      0.47   TOTAL RUNOFF(CFS) =      1.53

****************************************************************************
  FLOW PROCESS FROM NODE    506.00 TO NODE    507.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    980.00  DOWNSTREAM(FEET) =    750.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1376.00   CHANNEL SLOPE =  0.1672
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   4.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   6.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.821
  USER-SPECIFIED RUNOFF COEFFICIENT = .4100
  S.C.S. CURVE NUMBER (AMC II) =  82
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      27.54
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.46
  AVERAGE FLOW DEPTH(FEET) =   0.37   TRAVEL TIME(MIN.) =   3.55
  Tc(MIN.) =    9.31
  SUBAREA AREA(ACRES) =    21.35       SUBAREA RUNOFF(CFS) =   50.96
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.410
  TOTAL AREA(ACRES) =       21.8         PEAK FLOW RATE(CFS) =      52.08

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.54   FLOW VELOCITY(FEET/SEC.) =   7.95
  LONGEST FLOWPATH FROM NODE    505.00 TO NODE    507.00 =    1476.00 FEET.
```



```
****************************************************************************
  FLOW PROCESS FROM NODE    507.00 TO NODE    510.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    750.00  DOWNSTREAM(FEET) =    304.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  3950.00   CHANNEL SLOPE =  0.1129
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   4.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   6.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.159
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3700
  S.C.S. CURVE NUMBER (AMC II) =  82
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     185.56
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  10.33
  AVERAGE FLOW DEPTH(FEET) =   1.21   TRAVEL TIME(MIN.) =   6.37
  Tc(MIN.) =   15.69
  SUBAREA AREA(ACRES) =   169.49       SUBAREA RUNOFF(CFS) =  260.82
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.375
  TOTAL AREA(ACRES) =      191.3          PEAK FLOW RATE(CFS) =     298.03

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.55   FLOW VELOCITY(FEET/SEC.) =  11.85
  LONGEST FLOWPATH FROM NODE    505.00 TO NODE    510.00 =    5426.00 FEET.

+----------------------------------------------------------------------------+
| NATURAL W/ IMPERVIOUS AREA (1DU/A)                                         |
| COMPOSITE C (B&C&D)                                                        |
| (12.08*0.32+119.64*0.36+37.77*0.41)/169.49=0.37                            |
+----------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE    507.00 TO NODE    510.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   15.69
  RAINFALL INTENSITY(INCH/HR) =   4.16
  TOTAL STREAM AREA(ACRES) =   191.31
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    298.03

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1      466.30    15.67        4.162        318.50
      2      298.03    15.69        4.159        191.31

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF       Tc      INTENSITY
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)
      1      763.96    15.67        4.162
      2      763.96    15.69        4.159

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     763.96   Tc(MIN.) =   15.67
```

```
  TOTAL AREA(ACRES) =      509.8
  LONGEST FLOWPATH FROM NODE    501.00 TO NODE    510.00 =    5961.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    510.00 TO NODE    515.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    304.00  DOWNSTREAM(FEET) =    286.30
  CHANNEL LENGTH THRU SUBAREA(FEET) =   729.00   CHANNEL SLOPE =  0.0243
  CHANNEL BASE(FEET) =   20.00   "Z" FACTOR =   4.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   5.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.935
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3800
  S.C.S. CURVE NUMBER (AMC II) =  82
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     812.24
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.54
  AVERAGE FLOW DEPTH(FEET) =   2.98   TRAVEL TIME(MIN.) =   1.42
  Tc(MIN.) =   17.09
  SUBAREA AREA(ACRES) =    64.56       SUBAREA RUNOFF(CFS) =   96.54
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.363
  TOTAL AREA(ACRES) =      574.4         PEAK FLOW RATE(CFS) =     819.41

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  3.00   FLOW VELOCITY(FEET/SEC.) =   8.55
  LONGEST FLOWPATH FROM NODE    501.00 TO NODE    515.00 =    6690.00 FEET.

+--------------------------------------------------------------------------+
| COMPOSITE B, C, D SOILS 1 DU/AC                                          |
| C=(17.7*0.32+6.86*0.36+40*0.41)/64.56=0.38                               |
|                                                                          |
+--------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE    515.00 TO NODE    520.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.935
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3300
  S.C.S. CURVE NUMBER (AMC II) =  82
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3618
  SUBAREA AREA(ACRES) =   13.32   SUBAREA RUNOFF(CFS) =   17.30
  TOTAL AREA(ACRES) =      587.7   TOTAL RUNOFF(CFS) =     836.70
  TC(MIN.) =   17.09

+--------------------------------------------------------------------------+
| NATURAL W/ IMPERVIOUS AREA                                               |
| COMPOSITE C (B&C&D)                                                      |
| (9.37*0.32+3.87*0.36+0.08*0.41)/13.32=0.33                               |
+--------------------------------------------------------------------------+
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)      =      587.7  TC(MIN.) =     17.09
  PEAK FLOW RATE(CFS)    =     836.70
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

```
****************************************************************************

          RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT
                       2003,1985,1981 HYDROLOGY MANUAL
        (c) Copyright 1982-2016 Advanced Engineering Software (aes)
            Ver. 23.0 Release Date: 07/01/2016  License ID 1509

                        Analysis prepared by:




 ************************** DESCRIPTION OF STUDY **************************
* OCEAN BREEZE RANCH                                                      *
* SYSTEM 550 - EXISTING 100 YR                                            *
* NORTHEAST QUADRANT                                                      *
 ****************************************************************************

  FILE NAME: S550E100.DAT
  TIME/DATE OF STUDY: 16:29 05/30/2024
----------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
----------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) = 100.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   3.300
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  ==================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0312 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

****************************************************************************
  FLOW PROCESS FROM NODE    550.00 TO NODE    551.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .2600
  S.C.S. CURVE NUMBER (AMC II) =  82
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    740.00
  DOWNSTREAM ELEVATION(FEET) =    730.00
  ELEVATION DIFFERENCE(FEET) =     10.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    7.019
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
```



```
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.986
  SUBAREA RUNOFF(CFS) =      0.56
  TOTAL AREA(ACRES) =      0.31   TOTAL RUNOFF(CFS) =      0.56

+----------------------------------------------------------------------------+
| COMPOSITE C OF B & C SOILS                                                 |
| NATURAL                                                                    |
| (0.25*0.25+0.06*0.30)/0.31=0.26                                            |
+----------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE    551.00 TO NODE    562.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    730.00  DOWNSTREAM(FEET) =    246.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  3370.00   CHANNEL SLOPE =  0.1436
  CHANNEL BASE(FEET) =    6.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   5.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.433
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3300
  S.C.S. CURVE NUMBER (AMC II) =  82
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      38.27
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.81
  AVERAGE FLOW DEPTH(FEET) =   0.62   TRAVEL TIME(MIN.) =   7.19
  Tc(MIN.) =   14.21
  SUBAREA AREA(ACRES) =    50.52       SUBAREA RUNOFF(CFS) =   73.90
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.330
  TOTAL AREA(ACRES) =       50.8         PEAK FLOW RATE(CFS) =      74.26

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.90   FLOW VELOCITY(FEET/SEC.) =   9.55
  LONGEST FLOWPATH FROM NODE    550.00 TO NODE    562.00 =    3470.00 FEET.

+----------------------------------------------------------------------------+
| COMPOSITE C FOR A, B, C SOILS, NATURAL                                     |
| C=(0.2*0.25+0.25*36.25+0.3*14.02)/50.52=0.26                               |
|                                                                            |
+----------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE    551.00 TO NODE    562.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   14.21
  RAINFALL INTENSITY(INCH/HR) =   4.43
  TOTAL STREAM AREA(ACRES) =    50.83
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     74.26

****************************************************************************
  FLOW PROCESS FROM NODE    563.00 TO NODE    564.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  USER-SPECIFIED RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =  88
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    840.00
```

```
  DOWNSTREAM ELEVATION(FEET) =    796.00
  ELEVATION DIFFERENCE(FEET) =     44.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.267
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.516
  SUBAREA RUNOFF(CFS) =      0.50
  TOTAL AREA(ACRES) =      0.19   TOTAL RUNOFF(CFS) =      0.50

****************************************************************************
  FLOW PROCESS FROM NODE    564.00 TO NODE    565.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    796.00  DOWNSTREAM(FEET) =    316.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2096.00   CHANNEL SLOPE =  0.2290
  CHANNEL BASE(FEET) =   12.00   "Z" FACTOR =   6.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   5.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.751
  USER-SPECIFIED RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =  88
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      15.49
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.38
  AVERAGE FLOW DEPTH(FEET) =   0.22   TRAVEL TIME(MIN.) =   6.49
  Tc(MIN.) =   12.76
  SUBAREA AREA(ACRES) =    17.20       SUBAREA RUNOFF(CFS) =   28.60
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.350
  TOTAL AREA(ACRES) =      17.4         PEAK FLOW RATE(CFS) =      28.92

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.31   FLOW VELOCITY(FEET/SEC.) =   6.73
  LONGEST FLOWPATH FROM NODE    563.00 TO NODE    565.00 =    2196.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    566.00 TO NODE    565.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.751
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3360
  S.C.S. CURVE NUMBER (AMC II) =  88
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3466
  SUBAREA AREA(ACRES) =     5.49   SUBAREA RUNOFF(CFS) =     8.76
  TOTAL AREA(ACRES) =       22.9   TOTAL RUNOFF(CFS) =      37.68
  TC(MIN.) =   12.76

+--------------------------------------------------------------------------+
| COMPOSITE C ( C & D)                                                     |
| (1.55*0.3+3.94*0.35)/5.49=0.336                                          |
|                                                                          |
+--------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE    567.00 TO NODE    565.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.751
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3100
  S.C.S. CURVE NUMBER (AMC II) =  88
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3444
```



```
  SUBAREA AREA(ACRES) =     1.51   SUBAREA RUNOFF(CFS) =     2.22
  TOTAL AREA(ACRES) =       24.4   TOTAL RUNOFF(CFS) =      39.91
  TC(MIN.) =   12.76

+--------------------------------------------------------------------------+
| COMPOSITE C (C & D)                                                      |
| (1.29*0.3+0.22*0.35)/1.51=0.31                                           |
|                                                                          |
+--------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE    565.00 TO NODE    562.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    316.00  DOWNSTREAM(FEET) =    268.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1525.00   CHANNEL SLOPE =  0.0315
  CHANNEL BASE(FEET) =   12.00   "Z" FACTOR =   6.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   5.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.648
  USER-SPECIFIED RUNOFF COEFFICIENT = .3000
  S.C.S. CURVE NUMBER (AMC II) =  85
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      43.90
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.93
  AVERAGE FLOW DEPTH(FEET) =   0.69   TRAVEL TIME(MIN.) =   6.46
  Tc(MIN.) =   19.22
  SUBAREA AREA(ACRES) =     7.27       SUBAREA RUNOFF(CFS) =    7.96
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.334
  TOTAL AREA(ACRES) =       31.7         PEAK FLOW RATE(CFS) =      39.91

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.66   FLOW VELOCITY(FEET/SEC.) =   3.80
  LONGEST FLOWPATH FROM NODE    563.00 TO NODE    562.00 =    3721.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    565.00 TO NODE    562.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   19.22
  RAINFALL INTENSITY(INCH/HR) =   3.65
  TOTAL STREAM AREA(ACRES) =    31.66
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     39.91

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       74.26    14.21        4.433         50.83
      2       39.91    19.22        3.648         31.66

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF       Tc      INTENSITY
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)
      1      103.76    14.21        4.433
      2      101.01    19.22        3.648
```

```
  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     103.76   Tc(MIN.) =   14.21
  TOTAL AREA(ACRES) =       82.5
  LONGEST FLOWPATH FROM NODE    563.00 TO NODE    562.00 =    3721.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    562.00 TO NODE    568.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    246.00  DOWNSTREAM(FEET) =    241.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   278.00   CHANNEL SLOPE =  0.0180
  CHANNEL BASE(FEET) =   12.00   "Z" FACTOR =   6.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   5.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     103.76
  FLOW VELOCITY(FEET/SEC.) =   4.16   FLOW DEPTH(FEET) =   1.27
  TRAVEL TIME(MIN.) =   1.11   Tc(MIN.) =   15.32
  LONGEST FLOWPATH FROM NODE    563.00 TO NODE    568.00 =    3999.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    562.00 TO NODE    568.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   15.32
  RAINFALL INTENSITY(INCH/HR) =   4.22
  TOTAL STREAM AREA(ACRES) =    82.49
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    103.76

****************************************************************************
  FLOW PROCESS FROM NODE    555.00 TO NODE    559.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  USER-SPECIFIED RUNOFF COEFFICIENT = .3000
  S.C.S. CURVE NUMBER (AMC II) =  85
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    868.00
  DOWNSTREAM ELEVATION(FEET) =    836.00
  ELEVATION DIFFERENCE(FEET) =     32.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.684
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.210
  SUBAREA RUNOFF(CFS) =      0.52
  TOTAL AREA(ACRES) =      0.24   TOTAL RUNOFF(CFS) =      0.52

****************************************************************************
  FLOW PROCESS FROM NODE    559.00 TO NODE    574.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    836.00  DOWNSTREAM(FEET) =    262.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  3137.00   CHANNEL SLOPE =  0.1830
  CHANNEL BASE(FEET) =   12.00   "Z" FACTOR =   6.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   5.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.375
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3400
  S.C.S. CURVE NUMBER (AMC II) =  85
```



```
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      36.15
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.69
  AVERAGE FLOW DEPTH(FEET) =   0.38   TRAVEL TIME(MIN.) =   7.82
  Tc(MIN.) =   14.50
  SUBAREA AREA(ACRES) =    46.06       SUBAREA RUNOFF(CFS) =   68.52
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.340
  TOTAL AREA(ACRES) =       46.3         PEAK FLOW RATE(CFS) =      68.83

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.55   FLOW VELOCITY(FEET/SEC.) =   8.24
  LONGEST FLOWPATH FROM NODE    555.00 TO NODE    574.00 =    3237.00 FEET.

+--------------------------------------------------------------------------+
| COMPOSITE C (B&C)                                                        |
| (10.78*0.3+35.28*0.35)=0.34                                              |
| NATURAL                                                                  |
+--------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE    571.00 TO NODE    574.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.375
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3100
  S.C.S. CURVE NUMBER (AMC II) =  85
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3340
  SUBAREA AREA(ACRES) =   11.29   SUBAREA RUNOFF(CFS) =   15.31
  TOTAL AREA(ACRES) =       57.6   TOTAL RUNOFF(CFS) =      84.15
  TC(MIN.) =   14.50

+--------------------------------------------------------------------------+
| COMPOSITE C (C AND D) NATURAL                                            |
| (8.94*0.3+2.35*0.35)/11.29=0.31                                          |
|                                                                          |
+--------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE    574.00 TO NODE    568.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    262.00  DOWNSTREAM(FEET) =    242.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   628.00   CHANNEL SLOPE =  0.0318
  CHANNEL BASE(FEET) =   12.00   "Z" FACTOR =   6.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   5.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.002
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .2900
  S.C.S. CURVE NUMBER (AMC II) =  85
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      88.02
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.86
  AVERAGE FLOW DEPTH(FEET) =   1.00   TRAVEL TIME(MIN.) =   2.15
  Tc(MIN.) =   16.65
  SUBAREA AREA(ACRES) =     6.68       SUBAREA RUNOFF(CFS) =    7.75
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.329
  TOTAL AREA(ACRES) =       64.3         PEAK FLOW RATE(CFS) =      84.71

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.99   FLOW VELOCITY(FEET/SEC.) =   4.79
  LONGEST FLOWPATH FROM NODE    555.00 TO NODE    568.00 =    3865.00 FEET.
```

```
+-------------------------------------------------------------------------+
| COMPOSITE C (A & C)                                                     |
| (1.24*0.2+5.44*0.3)/6.68=0.29                                           |
|                                                                         |
+-------------------------------------------------------------------------+

*************************************************************************
  FLOW PROCESS FROM NODE    574.00 TO NODE    568.00 IS CODE =   1
-------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
=========================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   16.65
  RAINFALL INTENSITY(INCH/HR) =   4.00
  TOTAL STREAM AREA(ACRES) =    64.27
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     84.71

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1      103.76    15.32        4.222         82.49
      2       84.71    16.65        4.002         64.27

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)
      1      181.71    15.32       4.222
      2      183.05    16.65       4.002

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     183.05   Tc(MIN.) =   16.65
  TOTAL AREA(ACRES) =      146.8
  LONGEST FLOWPATH FROM NODE    563.00 TO NODE    568.00 =    3999.00 FEET.

*************************************************************************
  FLOW PROCESS FROM NODE    568.00 TO NODE    570.00 IS CODE =  51
-------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
=========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    242.00  DOWNSTREAM(FEET) =    228.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   835.00   CHANNEL SLOPE =  0.0168
  CHANNEL BASE(FEET) =   12.00   "Z" FACTOR =   6.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   5.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.609
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .2600
  S.C.S. CURVE NUMBER (AMC II) =  85
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     194.51
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.82
  AVERAGE FLOW DEPTH(FEET) =   1.78   TRAVEL TIME(MIN.) =   2.89
  Tc(MIN.) =   19.54
  SUBAREA AREA(ACRES) =    24.41       SUBAREA RUNOFF(CFS) =   22.91
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.320
  TOTAL AREA(ACRES) =      171.2         PEAK FLOW RATE(CFS) =     197.96

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
```



```
  DEPTH(FEET) =  1.80   FLOW VELOCITY(FEET/SEC.) =   4.84
  LONGEST FLOWPATH FROM NODE    563.00 TO NODE    570.00 =    4834.00 FEET.

+-------------------------------------------------------------------------+
| COMPOSITE C (A & C)                                                     |
| (9.58*0.2+14.83*0.3)/24.41=0.26                                         |
| NATURAL                                                                 |
+-------------------------------------------------------------------------+
=========================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =      171.2  TC(MIN.) =     19.54
  PEAK FLOW RATE(CFS)   =     197.96
=========================================================================
=========================================================================
  END OF RATIONAL METHOD ANALYSIS
```

```
**************************************************************************

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                        Analysis prepared by:




 ************************* DESCRIPTION OF STUDY *************************
* OCEAN BREEZE RANCH - PA3                                              *
* SYSTEM 3050 EXISTING CONDITIONS - 100 YR                              *
* NORTHEAST QUADRANT                                                    *
 ************************************************************************

  FILE NAME: 3050E100.DAT
  TIME/DATE OF STUDY: 17:28 05/30/2024
--------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
--------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) = 100.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   3.300
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  ================  ======  =====  ====  =====  =======
  1   18.0     12.0    0.020/0.020/0.015   0.50    1.50 0.0417 0.125 0.0165
  2   20.0     13.0    0.020/0.020/0.015   0.50    1.50 0.0417 0.125 0.0165
  3   16.0     11.0    0.020/0.020/0.015   0.50    1.50 0.0417 0.125 0.0165
  4   12.0      7.0    0.020/0.020/0.015   0.50    1.50 0.0100 0.010 0.0160
  5   17.0     12.0    0.020/0.020/0.015   0.33    1.50 0.0100 0.010 0.0160

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth = -0.10 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

**************************************************************************
  FLOW PROCESS FROM NODE   3050.00 TO NODE   3051.00 IS CODE =  21
--------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==========================================================================
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  88
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    490.00
```



```
  DOWNSTREAM ELEVATION(FEET) =    454.00
  ELEVATION DIFFERENCE(FEET) =     36.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.267
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.516
  SUBAREA RUNOFF(CFS) =      0.26
  TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.26

**************************************************************************
  FLOW PROCESS FROM NODE   3051.00 TO NODE   3052.00 IS CODE =  51
--------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
==========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    454.00  DOWNSTREAM(FEET) =    236.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   480.00   CHANNEL SLOPE =  0.4542
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.444
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3100
  S.C.S. CURVE NUMBER (AMC II) =  88
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       4.98
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.74
  AVERAGE FLOW DEPTH(FEET) =   0.10   TRAVEL TIME(MIN.) =   1.69
  Tc(MIN.) =    7.96
  SUBAREA AREA(ACRES) =     4.66       SUBAREA RUNOFF(CFS) =    9.31
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.311
  TOTAL AREA(ACRES) =        4.8         PEAK FLOW RATE(CFS) =       9.53

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.15   FLOW VELOCITY(FEET/SEC.) =   6.09
  LONGEST FLOWPATH FROM NODE   3050.00 TO NODE   3052.00 =     580.00 FEET.

+------------------------------------------------------------------------+
| COMPOSITE C FOR B & D SOILS                                            |
| SUBAREA - NATURAL                                                      |
| (2.07*.25)+(2.59*.35)/4.66 = 0.31                                      |
+------------------------------------------------------------------------+
==========================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =        4.8  TC(MIN.) =      7.96
  PEAK FLOW RATE(CFS)   =       9.53
==========================================================================
==========================================================================
  END OF RATIONAL METHOD ANALYSIS
```

```
**************************************************************************

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                        Analysis prepared by:




 ************************* DESCRIPTION OF STUDY *************************
* OCEAN BREEZE RANCH - PA3                                              *
* SYSTEM 3100 EXISTING CONDITIONS - 100 YR                              *
* NORTHEAST QUADRANT                                                    *
 ************************************************************************

  FILE NAME: 3100E100.DAT
  TIME/DATE OF STUDY: 14:59 06/03/2024
--------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
--------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) = 100.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   3.300
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  ================  ======  ===== ====== ===== =======
  1   18.0     12.0    0.020/0.020/0.015   0.50    1.50 0.0417 0.125 0.0165
  2   20.0     13.0    0.020/0.020/0.015   0.50    1.50 0.0417 0.125 0.0165
  3   16.0     11.0    0.020/0.020/0.015   0.50    1.50 0.0417 0.125 0.0165
  4   12.0      7.0    0.020/0.020/0.015   0.50    1.50 0.0100 0.010 0.0160
  5   17.0     12.0    0.020/0.020/0.015   0.33    1.50 0.0100 0.010 0.0160

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth = -0.10 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

**************************************************************************
  FLOW PROCESS FROM NODE   3100.00 TO NODE   3101.00 IS CODE =  21
--------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==========================================================================
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  88
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    95.00
  UPSTREAM ELEVATION(FEET) =    827.20
```



```
  DOWNSTREAM ELEVATION(FEET) =    816.00
  ELEVATION DIFFERENCE(FEET) =     11.20
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.108
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.642
  SUBAREA RUNOFF(CFS) =      0.80
  TOTAL AREA(ACRES) =      0.30   TOTAL RUNOFF(CFS) =      0.80

**************************************************************************
  FLOW PROCESS FROM NODE   3101.00 TO NODE   3102.00 IS CODE =  51
--------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
==========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    816.00  DOWNSTREAM(FEET) =    240.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1572.00   CHANNEL SLOPE =  0.3664
  CHANNEL BASE(FEET) =   15.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   5.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.586
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3300
  S.C.S. CURVE NUMBER (AMC II) =  88
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      21.75
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.86
  AVERAGE FLOW DEPTH(FEET) =   0.20   TRAVEL TIME(MIN.) =   3.82
  Tc(MIN.) =    9.93
  SUBAREA AREA(ACRES) =    22.08       SUBAREA RUNOFF(CFS) =   40.70
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.330
  TOTAL AREA(ACRES) =       22.4          PEAK FLOW RATE(CFS) =      41.29

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.30   FLOW VELOCITY(FEET/SEC.) =   8.64
  LONGEST FLOWPATH FROM NODE   3100.00 TO NODE   3102.00 =    1667.00 FEET.
==========================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =       22.4  TC(MIN.) =      9.93
  PEAK FLOW RATE(CFS)   =      41.29
==========================================================================
==========================================================================
  END OF RATIONAL METHOD ANALYSIS
```

```
**************************************************************************

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                        Analysis prepared by:




 ************************* DESCRIPTION OF STUDY *************************
* OCEAN BREEZE RANCH - PA3                                              *
* SYSTEM 3130 EXISTING CONDITIONS                                       *
* NORTHEAST QUADRANT                                                    *
 ************************************************************************

  FILE NAME: 3130E100.DAT
  TIME/DATE OF STUDY: 15:09 06/03/2024
------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) = 100.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   3.300
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  ========  ================  ======  ===== ====== ===== =======
  1   18.0     12.0    0.020/0.020/0.015   0.50    1.50 0.0417 0.125 0.0165
  2   20.0     13.0    0.020/0.020/0.015   0.50    1.50 0.0417 0.125 0.0165
  3   16.0     11.0    0.020/0.020/0.015   0.50    1.50 0.0417 0.125 0.0165
  4   12.0      7.0    0.020/0.020/0.015   0.50    1.50 0.0100 0.010 0.0160
  5   17.0     12.0    0.020/0.020/0.015   0.33    1.50 0.0100 0.010 0.0160

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth = -0.10 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

**************************************************************************
  FLOW PROCESS FROM NODE   3130.00 TO NODE   3131.00 IS CODE =  21
------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
========================================================================
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  88
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    88.00
  UPSTREAM ELEVATION(FEET) =    820.00
```



```
  DOWNSTREAM ELEVATION(FEET) =    784.00
  ELEVATION DIFFERENCE(FEET) =     36.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    5.879
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.833
  SUBAREA RUNOFF(CFS) =      0.55
  TOTAL AREA(ACRES) =      0.20   TOTAL RUNOFF(CFS) =      0.55

**************************************************************************
  FLOW PROCESS FROM NODE   3131.00 TO NODE   3132.00 IS CODE =  51
------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    784.00  DOWNSTREAM(FEET) =    254.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1432.00   CHANNEL SLOPE =  0.3701
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.560
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3000
  S.C.S. CURVE NUMBER (AMC II) =  88
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       9.54
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.79
  AVERAGE FLOW DEPTH(FEET) =   0.16   TRAVEL TIME(MIN.) =   4.12
  Tc(MIN.) =   10.00
  SUBAREA AREA(ACRES) =    10.40       SUBAREA RUNOFF(CFS) =   17.35
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.301
  TOTAL AREA(ACRES) =       10.6          PEAK FLOW RATE(CFS) =      17.74

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.23   FLOW VELOCITY(FEET/SEC.) =   7.16
  LONGEST FLOWPATH FROM NODE   3130.00 TO NODE   3132.00 =    1520.00 FEET.

**************************************************************************
  FLOW PROCESS FROM NODE   3133.00 TO NODE   3132.00 IS CODE =  81
------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
========================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.560
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .2700
  S.C.S. CURVE NUMBER (AMC II) =  88
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.2938
  SUBAREA AREA(ACRES) =     3.19   SUBAREA RUNOFF(CFS) =     4.79
  TOTAL AREA(ACRES) =       13.8   TOTAL RUNOFF(CFS) =      22.52
  TC(MIN.) =   10.00
========================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =       13.8  TC(MIN.) =     10.00
  PEAK FLOW RATE(CFS)   =      22.52
========================================================================
========================================================================
  END OF RATIONAL METHOD ANALYSIS
```

```
****************************************************************************

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                        Analysis prepared by:




 ************************** DESCRIPTION OF STUDY **************************
* OCEAN BREEZE RANCH - PA3                                                *
* EXISTING CONDITIONS - 100YR                                             *
* NORTHEAST QUADRANT                                                      *
 ****************************************************************************

  FILE NAME: 3400E100.DAT
  TIME/DATE OF STUDY: 17:21 05/30/2024
----------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
----------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) = 100.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   3.300
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  ================  ======  =====  ====  =====  =======
  1   18.0     12.0    0.020/0.020/0.015   0.50    1.50 0.0417 0.125 0.0165
  2   20.0     13.0    0.020/0.020/0.015   0.50    1.50 0.0417 0.125 0.0165
  3   16.0     11.0    0.020/0.020/0.015   0.50    1.50 0.0417 0.125 0.0165
  4   12.0      7.0    0.020/0.020/0.015   0.50    1.50 0.0100 0.010 0.0160
  5   17.0     12.0    0.020/0.020/0.015   0.33    1.50 0.0100 0.010 0.0160

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth = -0.10 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

****************************************************************************
  FLOW PROCESS FROM NODE   3400.00 TO NODE   3401.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  88
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    466.00
```



```
  DOWNSTREAM ELEVATION(FEET) =    456.00
  ELEVATION DIFFERENCE(FEET) =     10.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.267
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.516
  SUBAREA RUNOFF(CFS) =      0.45
  TOTAL AREA(ACRES) =      0.17   TOTAL RUNOFF(CFS) =      0.45

****************************************************************************
  FLOW PROCESS FROM NODE   3401.00 TO NODE   3402.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    456.00  DOWNSTREAM(FEET) =    223.60
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1393.00   CHANNEL SLOPE =  0.1668
  CHANNEL BASE(FEET) =    3.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.831
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3200
  S.C.S. CURVE NUMBER (AMC II) =  88
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      18.10
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.68
  AVERAGE FLOW DEPTH(FEET) =   0.57   TRAVEL TIME(MIN.) =   3.02
  Tc(MIN.) =    9.29
  SUBAREA AREA(ACRES) =    18.59       SUBAREA RUNOFF(CFS) =   34.69
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.320
  TOTAL AREA(ACRES) =       18.8          PEAK FLOW RATE(CFS) =      35.03

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.82   FLOW VELOCITY(FEET/SEC.) =   9.22
  LONGEST FLOWPATH FROM NODE   3400.00 TO NODE   3402.00 =    1493.00 FEET.

+--------------------------------------------------------------------------+
| COMPOSITE C FOR B&C&D                                                    |
| SUBAREA - NATURAL                                                        |
| (1.13*0.2+7.24*0.3+10.22*0.35)/18.59=0.32                                |
+--------------------------------------------------------------------------+
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =       18.8  TC(MIN.) =      9.29
  PEAK FLOW RATE(CFS)   =      35.03
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

```
****************************************************************************

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            Ver. 18.2 Release Date: 05/08/2012  License ID 1509

                        Analysis prepared by:




 ************************** DESCRIPTION OF STUDY **************************
* OCEAN BREEZE RANCH - PA3                                                *
* EXISTING CONDITIONS - 100 YR                                            *
* SYSTEM 3700                                                             *
 ****************************************************************************

  FILE NAME: 3700E100.DAT
  TIME/DATE OF STUDY: 08:57 02/04/2021
----------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
----------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) = 100.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   3.300
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  ================  ======  =====  ====  =====  =======
  1   18.0     12.0    0.020/0.020/0.015   0.50    1.50 0.0417 0.125 0.0165
  2   20.0     13.0    0.020/0.020/0.015   0.50    1.50 0.0417 0.125 0.0165
  3   16.0     11.0    0.020/0.020/0.015   0.50    1.50 0.0417 0.125 0.0165
  4   12.0      7.0    0.020/0.020/0.015   0.50    1.50 0.0100 0.010 0.0160
  5   17.0     12.0    0.020/0.020/0.015   0.33    1.50 0.0100 0.010 0.0160

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth = -0.10 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

****************************************************************************
  FLOW PROCESS FROM NODE   3700.00 TO NODE   3701.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  88
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    466.00
```



```
  DOWNSTREAM ELEVATION(FEET) =    456.00
  ELEVATION DIFFERENCE(FEET) =     10.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.267
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.516
  SUBAREA RUNOFF(CFS) =      0.50
  TOTAL AREA(ACRES) =      0.19   TOTAL RUNOFF(CFS) =      0.50

****************************************************************************
  FLOW PROCESS FROM NODE   3701.00 TO NODE   3702.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    456.00  DOWNSTREAM(FEET) =    222.40
  CHANNEL LENGTH THRU SUBAREA(FEET) =   493.00   CHANNEL SLOPE =  0.4738
  CHANNEL BASE(FEET) =    6.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.755
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3300
  S.C.S. CURVE NUMBER (AMC II) =  88
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       9.67
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.28
  AVERAGE FLOW DEPTH(FEET) =   0.20   TRAVEL TIME(MIN.) =   1.13
  Tc(MIN.) =    7.40
  SUBAREA AREA(ACRES) =     8.18       SUBAREA RUNOFF(CFS) =   18.23
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.330
  TOTAL AREA(ACRES) =        8.4          PEAK FLOW RATE(CFS) =      18.68

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.29   FLOW VELOCITY(FEET/SEC.) =   9.21
  LONGEST FLOWPATH FROM NODE   3700.00 TO NODE   3702.00 =     593.00 FEET.

+--------------------------------------------------------------------------+
| COMPOSITE C FOR A&C&D                                                    |
| SUBAREA - NATURAL                                                        |
| (0.83*0.2+0.61*0.3+6.74*0.35)/8.18=0.33                                  |
+--------------------------------------------------------------------------+
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =        8.4  TC(MIN.) =      7.40
  PEAK FLOW RATE(CFS)   =      18.68
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

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****************************************************************************

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                        Analysis prepared by:




 ************************** DESCRIPTION OF STUDY **************************
* OCEAN BREEZE RANCH - PA3                                                *
* EXISTING CONDITIONS - 100 YR                                            *
* SYSTEM 3800                                                             *
 ****************************************************************************

  FILE NAME: 3800E100.DAT
  TIME/DATE OF STUDY: 08:54 07/31/2024
----------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
----------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) = 100.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   3.300
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  ================  ======  =====  ====  =====  =======
  1   18.0     12.0    0.020/0.020/0.015   0.50    1.50 0.0417 0.125 0.0165
  2   20.0     13.0    0.020/0.020/0.015   0.50    1.50 0.0417 0.125 0.0165
  3   16.0     11.0    0.020/0.020/0.015   0.50    1.50 0.0417 0.125 0.0165
  4   12.0      7.0    0.020/0.020/0.015   0.50    1.50 0.0100 0.010 0.0160
  5   17.0     12.0    0.020/0.020/0.015   0.33    1.50 0.0100 0.010 0.0160

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth = -0.10 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

****************************************************************************
  FLOW PROCESS FROM NODE   3800.00 TO NODE   3801.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  88
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    562.00
```



```
  DOWNSTREAM ELEVATION(FEET) =    532.00
  ELEVATION DIFFERENCE(FEET) =     30.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.267
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.516
  SUBAREA RUNOFF(CFS) =      0.47
  TOTAL AREA(ACRES) =      0.18   TOTAL RUNOFF(CFS) =      0.47

****************************************************************************
  FLOW PROCESS FROM NODE   3801.00 TO NODE   3802.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    532.00  DOWNSTREAM(FEET) =    226.70
  CHANNEL LENGTH THRU SUBAREA(FEET) =   779.00   CHANNEL SLOPE =  0.3919
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.329
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3300
  S.C.S. CURVE NUMBER (AMC II) =  88
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      14.04
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.78
  AVERAGE FLOW DEPTH(FEET) =   0.20   TRAVEL TIME(MIN.) =   1.91
  Tc(MIN.) =    8.18
  SUBAREA AREA(ACRES) =    12.86       SUBAREA RUNOFF(CFS) =   26.86
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.330
  TOTAL AREA(ACRES) =       13.0          PEAK FLOW RATE(CFS) =      27.26

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.29   FLOW VELOCITY(FEET/SEC.) =   8.56
  LONGEST FLOWPATH FROM NODE   3800.00 TO NODE   3802.00 =     879.00 FEET.

+--------------------------------------------------------------------------+
|                                                                          |
|                                                                          |
|                                                                          |
+--------------------------------------------------------------------------+
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =       13.0  TC(MIN.) =      8.18
  PEAK FLOW RATE(CFS)   =      27.26
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

```
 ************************************************************************

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                        Analysis prepared by:




 ************************** DESCRIPTION OF STUDY **************************
* OCEAN BREEZE RANCH - PA3                                                *
* EXISTING CONDITIONS - 100 YR                                            *
* SYSTEM 3900                                                             *
 ************************************************************************

  FILE NAME: 3900E100.DAT
  TIME/DATE OF STUDY: 08:51 07/31/2024
------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) = 100.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   3.300
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   18.0     12.0    0.020/0.020/0.015   0.50    1.50 0.0417 0.125 0.0165
  2   20.0     13.0    0.020/0.020/0.015   0.50    1.50 0.0417 0.125 0.0165
  3   16.0     11.0    0.020/0.020/0.015   0.50    1.50 0.0417 0.125 0.0165
  4   12.0      7.0    0.020/0.020/0.015   0.50    1.50 0.0100 0.010 0.0160
  5   17.0     12.0    0.020/0.020/0.015   0.33    1.50 0.0100 0.010 0.0160

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth = -0.10 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

 ************************************************************************
  FLOW PROCESS FROM NODE   3900.00 TO NODE   3901.00 IS CODE =  21
------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
========================================================================
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  88
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    634.00
```



```
  DOWNSTREAM ELEVATION(FEET) =    604.00
  ELEVATION DIFFERENCE(FEET) =     30.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.267
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.516
  SUBAREA RUNOFF(CFS) =      0.13
  TOTAL AREA(ACRES) =      0.05   TOTAL RUNOFF(CFS) =      0.13

 ************************************************************************
  FLOW PROCESS FROM NODE   3901.00 TO NODE   3902.00 IS CODE =  51
------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    604.00  DOWNSTREAM(FEET) =    236.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   870.00   CHANNEL SLOPE =  0.4230
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.855
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3400
  S.C.S. CURVE NUMBER (AMC II) =  88
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       5.94
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.89
  AVERAGE FLOW DEPTH(FEET) =   0.12   TRAVEL TIME(MIN.) =   2.96
  Tc(MIN.) =    9.23
  SUBAREA AREA(ACRES) =     5.71       SUBAREA RUNOFF(CFS) =   11.37
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.340
  TOTAL AREA(ACRES) =        5.8          PEAK FLOW RATE(CFS) =      11.47

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.17   FLOW VELOCITY(FEET/SEC.) =   6.39
  LONGEST FLOWPATH FROM NODE   3900.00 TO NODE   3902.00 =     970.00 FEET.
========================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =        5.8  TC(MIN.) =      9.23
  PEAK FLOW RATE(CFS)   =      11.47
========================================================================
========================================================================
  END OF RATIONAL METHOD ANALYSIS
```

Southwest Quadrant

```
****************************************************************************

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                        Analysis prepared by:




 ************************** DESCRIPTION OF STUDY **************************
* OCEAN BREEZE RANCH - W. LILAC                                           *
* SYSTEM 4000 EXISTING CONDITIONS - 100 YR                                *
* SOUTHWEST QUADRANT                                                      *
 ****************************************************************************

  FILE NAME: 4000E100.DAT
  TIME/DATE OF STUDY: 09:12 05/31/2024
----------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
----------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) = 100.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   3.300
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  =====  ====  =====  =======
  1   18.0     12.0    0.020/0.020/0.015   0.50    1.50 0.0313 0.125 0.0150
  2   20.0     13.0    0.020/0.020/0.015   0.50    1.50 0.0313 0.125 0.0150
  3   16.0     11.0    0.020/0.020/0.015   0.50    1.50 0.0313 0.125 0.0150
  4   12.0      7.0    0.020/0.020/0.015   0.50    0.10 0.0100 0.010 0.0150
  5   17.0     12.0    0.020/0.020/0.015   0.33    0.10 0.0100 0.010 0.0160
  6   20.0     12.0    0.020/0.020/0.015   0.33    0.10 0.0100 0.010 0.0160
  7   13.0      7.0    0.020/0.020/0.015   0.33    0.10 0.0100 0.010 0.0160

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth = -0.10 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

****************************************************************************
  FLOW PROCESS FROM NODE   4000.00 TO NODE   4001.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3000
  SOIL CLASSIFICATION IS "C"
  S.C.S. CURVE NUMBER (AMC II) =  85
```



```
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    358.09
  DOWNSTREAM ELEVATION(FEET) =    340.00
  ELEVATION DIFFERENCE(FEET) =     18.09
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.684
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.210
  SUBAREA RUNOFF(CFS) =      0.58
  TOTAL AREA(ACRES) =      0.27   TOTAL RUNOFF(CFS) =      0.58

****************************************************************************
  FLOW PROCESS FROM NODE   4001.00 TO NODE   4002.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    340.00  DOWNSTREAM(FEET) =    201.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   645.00   CHANNEL SLOPE =  0.2155
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   5.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.697
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3000
  S.C.S. CURVE NUMBER (AMC II) =  85
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       4.61
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.65
  AVERAGE FLOW DEPTH(FEET) =   0.12   TRAVEL TIME(MIN.) =   2.94
  Tc(MIN.) =    9.63
  SUBAREA AREA(ACRES) =     4.65       SUBAREA RUNOFF(CFS) =    7.95
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.300
  TOTAL AREA(ACRES) =        4.9         PEAK FLOW RATE(CFS) =       8.41

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.17   FLOW VELOCITY(FEET/SEC.) =   4.48
  LONGEST FLOWPATH FROM NODE   4000.00 TO NODE   4002.00 =     745.00 FEET.

+--------------------------------------------------------------------------+
| COMPOSITE C FOR C & D SOILS                                              |
| NATURAL                                                                  |
| (0.3*4.43+0.35*0.22)/4.65=0.30                                           |
+--------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   4001.00 TO NODE   4002.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE   4005.00 TO NODE   4006.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  STREETS & ROADS (CURBS/STORM DRAINS) RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  98
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    60.00
  UPSTREAM ELEVATION(FEET) =    244.50
  DOWNSTREAM ELEVATION(FEET) =    241.80
  ELEVATION DIFFERENCE(FEET) =      2.70
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    1.942
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
```

```
  SUBAREA RUNOFF(CFS) =      0.15
  TOTAL AREA(ACRES) =      0.02   TOTAL RUNOFF(CFS) =      0.15

****************************************************************************
  FLOW PROCESS FROM NODE   4006.00 TO NODE   4008.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  6 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  241.80  DOWNSTREAM ELEVATION(FEET) =  230.00
  STREET LENGTH(FEET) =   248.00   CURB HEIGHT(INCHES) =  4.0
  STREET HALFWIDTH(FEET) = 20.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  12.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.015
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0160
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       0.42
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.10
    HALFSTREET FLOOD WIDTH(FEET) =    4.14
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.40
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.24
  STREET FLOW TRAVEL TIME(MIN.) =   1.72   Tc(MIN.) =    3.66
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  STREETS & ROADS (CURBS/STORM DRAINS) RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  98
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    0.07      SUBAREA RUNOFF(CFS) =    0.53
  TOTAL AREA(ACRES) =        0.1        PEAK FLOW RATE(CFS) =       0.68

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.12   HALFSTREET FLOOD WIDTH(FEET) =   5.01
  FLOW VELOCITY(FEET/SEC.) =  2.70   DEPTH*VELOCITY(FT*FT/SEC.) =   0.32
  LONGEST FLOWPATH FROM NODE   4005.00 TO NODE   4008.00 =     308.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   4006.00 TO NODE   4008.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =    3.66
  RAINFALL INTENSITY(INCH/HR) =   8.69
  TOTAL STREAM AREA(ACRES) =     0.09
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      0.68

****************************************************************************
  FLOW PROCESS FROM NODE   4006.00 TO NODE   4007.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3000
  SOIL CLASSIFICATION IS "C"
  S.C.S. CURVE NUMBER (AMC II) =  85
```



```
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    331.57
  DOWNSTREAM ELEVATION(FEET) =    218.00
  ELEVATION DIFFERENCE(FEET) =    113.57
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.684
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.210
  SUBAREA RUNOFF(CFS) =      0.19
  TOTAL AREA(ACRES) =      0.09   TOTAL RUNOFF(CFS) =      0.19

****************************************************************************
  FLOW PROCESS FROM NODE   4007.00 TO NODE   4008.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    318.00  DOWNSTREAM(FEET) =    230.20
  CHANNEL LENGTH THRU SUBAREA(FEET) =   688.00   CHANNEL SLOPE =  0.1276
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   5.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.136
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3300
  S.C.S. CURVE NUMBER (AMC II) =  85
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       2.66
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   2.48
  AVERAGE FLOW DEPTH(FEET) =   0.10   TRAVEL TIME(MIN.) =   4.62
  Tc(MIN.) =   11.31
  SUBAREA AREA(ACRES) =     2.86       SUBAREA RUNOFF(CFS) =    4.85
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.329
  TOTAL AREA(ACRES) =        2.9         PEAK FLOW RATE(CFS) =       4.99

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.15   FLOW VELOCITY(FEET/SEC.) =   3.14
  LONGEST FLOWPATH FROM NODE   4006.00 TO NODE   4008.00 =     788.00 FEET.

+--------------------------------------------------------------------------+
| COMPOSITE C FOR C & D SOILS                                              |
| SUBAREA - NATURAL                                                        |
| (0.3*1.13 + 1.73*0.35)/2.86=0.33                                         |
+--------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   4007.00 TO NODE   4008.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   11.31
  RAINFALL INTENSITY(INCH/HR) =   5.14
  TOTAL STREAM AREA(ACRES) =     2.95
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.99

  ** CONFLUENCE DATA **
  STREAM     RUNOFF        Tc       INTENSITY       AREA
  NUMBER      (CFS)      (MIN.)    (INCH/HOUR)     (ACRE)
      1        0.68      3.66        8.695           0.09
      2        4.99     11.31        5.136           2.95

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.
```

```
  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)
      1        2.30     3.66       8.695
      2        5.39    11.31       5.136

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       5.39   Tc(MIN.) =   11.31
  TOTAL AREA(ACRES) =        3.0
  LONGEST FLOWPATH FROM NODE   4006.00 TO NODE   4008.00 =     788.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   4008.00 TO NODE   4002.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  6 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  230.20  DOWNSTREAM ELEVATION(FEET) =  201.00
  STREET LENGTH(FEET) =   530.00   CURB HEIGHT(INCHES) =  4.0
  STREET HALFWIDTH(FEET) = 20.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  12.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.015
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0160
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       6.81
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.25
    HALFSTREET FLOOD WIDTH(FEET) =   11.52
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.13
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.27
  STREET FLOW TRAVEL TIME(MIN.) =   1.72   Tc(MIN.) =   13.03
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.688
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .2900
  S.C.S. CURVE NUMBER (AMC II) =  85
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.323
  SUBAREA AREA(ACRES) =    2.09      SUBAREA RUNOFF(CFS) =    2.84
  TOTAL AREA(ACRES) =        5.1       PEAK FLOW RATE(CFS) =       7.76

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.26   HALFSTREET FLOOD WIDTH(FEET) =  12.17
  FLOW VELOCITY(FEET/SEC.) =  5.23   DEPTH*VELOCITY(FT*FT/SEC.) =   1.37
  LONGEST FLOWPATH FROM NODE   4006.00 TO NODE   4002.00 =    1318.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   4009.00 TO NODE   4008.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.688
  STREETS & ROADS (CURBS/STORM DRAINS) RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  98
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3422
  SUBAREA AREA(ACRES) =    0.19   SUBAREA RUNOFF(CFS) =    0.77
  TOTAL AREA(ACRES) =        5.3   TOTAL RUNOFF(CFS) =       8.53
```



```
  TC(MIN.) =   13.03

+--------------------------------------------------------------------------+
| COMPOSTE FOR C& D SOILS                                                  |
| SUNAREA NATURAL                                                          |
| (0.3*1.74+0.26*0.35)/2.09=0.29                                           |
+--------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   4009.00 TO NODE   4002.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY     AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)   (ACRE)
      1        8.53    13.03       4.688        5.32
  LONGEST FLOWPATH FROM NODE   4006.00 TO NODE   4002.00 =    1318.00 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY     AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)   (ACRE)
      1        8.41     9.63       5.697        4.92
  LONGEST FLOWPATH FROM NODE   4000.00 TO NODE   4002.00 =     745.00 FEET.

  ** PEAK FLOW RATE TABLE **
  STREAM    RUNOFF       Tc      INTENSITY
  NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
      1      14.72      9.63       5.697
      2      15.45     13.03       4.688

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      15.45   Tc(MIN.) =   13.03
  TOTAL AREA(ACRES) =       10.2

****************************************************************************
  FLOW PROCESS FROM NODE   4002.00 TO NODE   4003.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   198.38  DOWNSTREAM(FEET) =   196.94
  FLOW LENGTH(FEET) =    40.70   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  12.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  12.11
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      15.45
  PIPE TRAVEL TIME(MIN.) =   0.06    Tc(MIN.) =   13.09
  LONGEST FLOWPATH FROM NODE   4006.00 TO NODE   4003.00 =    1358.70 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   4003.00 TO NODE   4004.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    196.94  DOWNSTREAM(FEET) =    179.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   375.00   CHANNEL SLOPE =  0.0478
  CHANNEL BASE(FEET) =    3.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =   5.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.480
  *USER SPECIFIED(SUBAREA):
```

```
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3100
  S.C.S. CURVE NUMBER (AMC II) =  98
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      28.88
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.02
  AVERAGE FLOW DEPTH(FEET) =   0.77   TRAVEL TIME(MIN.) =   0.89
  Tc(MIN.) =   13.98
  SUBAREA AREA(ACRES) =    19.32       SUBAREA RUNOFF(CFS) =   26.83
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.314
  TOTAL AREA(ACRES) =       29.6         PEAK FLOW RATE(CFS) =      41.60

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.93   FLOW VELOCITY(FEET/SEC.) =   7.75
  LONGEST FLOWPATH FROM NODE   4006.00 TO NODE   4004.00 =    1733.70 FEET.

+----------------------------------------------------------------------------+
| COMPOSITE C (A & D)                                                        |
| NATURAL                                                                    |
| (5.16*0.19+14.14*0.35)/19.32=0.31                                          |
+----------------------------------------------------------------------------+
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =       29.6  TC(MIN.) =     13.98
  PEAK FLOW RATE(CFS)   =      41.60
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

```
**************************************************************************

          RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT
                       2003,1985,1981 HYDROLOGY MANUAL
        (c) Copyright 1982-2016 Advanced Engineering Software (aes)
            Ver. 23.0 Release Date: 07/01/2016  License ID 1509

                        Analysis prepared by:




 ************************* DESCRIPTION OF STUDY *************************
* OCEAN BREEZE RANCH - W. LILAC                                         *
* SYSTEM 4030 EXISTING CONDITIONS - 100 YR                              *
* SOUTHWEST QUADRANT                                                    *
 ************************************************************************

  FILE NAME: 4030E100.DAT
  TIME/DATE OF STUDY: 09:09 05/31/2024
------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) = 100.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   3.300
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  ================  ======  =====  ====== =====  =======
  1   18.0     12.0    0.020/0.020/0.015   0.50    1.50 0.0313 0.125 0.0150
  2   20.0     13.0    0.020/0.020/0.015   0.50    1.50 0.0313 0.125 0.0150
  3   16.0     11.0    0.020/0.020/0.015   0.50    1.50 0.0313 0.125 0.0150
  4   12.0      7.0    0.020/0.020/0.015   0.50    1.50 0.0100 0.010 0.0160
  5   17.0     12.0    0.020/0.020/0.015   0.33    1.50 0.0100 0.010 0.0160

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth = -0.10 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

**************************************************************************
  FLOW PROCESS FROM NODE   4030.00 TO NODE   4031.00 IS CODE =  21
------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
========================================================================
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  88
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    412.70
```



```
  DOWNSTREAM ELEVATION(FEET) =    390.00
  ELEVATION DIFFERENCE(FEET) =     22.70
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.267
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.516
  SUBAREA RUNOFF(CFS) =      0.66
  TOTAL AREA(ACRES) =      0.25   TOTAL RUNOFF(CFS) =      0.66

**************************************************************************
  FLOW PROCESS FROM NODE   4031.00 TO NODE   4032.00 IS CODE =  51
------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    392.00  DOWNSTREAM(FEET) =    267.40
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1209.00   CHANNEL SLOPE =  0.1031
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   5.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.038
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3300
  S.C.S. CURVE NUMBER (AMC II) =  88
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       9.41
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.74
  AVERAGE FLOW DEPTH(FEET) =   0.23   TRAVEL TIME(MIN.) =   5.39
  Tc(MIN.) =   11.65
  SUBAREA AREA(ACRES) =    10.14       SUBAREA RUNOFF(CFS) =   16.86
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.330
  TOTAL AREA(ACRES) =       10.4          PEAK FLOW RATE(CFS) =      17.30

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.33   FLOW VELOCITY(FEET/SEC.) =   4.58
  LONGEST FLOWPATH FROM NODE   4030.00 TO NODE   4032.00 =    1309.00 FEET.

+------------------------------------------------------------------------+
| NATURAL                                                                |
| COMPOSITE C (C&D)                                                      |
| (3.38*0.3+6.76*0.35)/10.14=0.33                                        |
+------------------------------------------------------------------------+

**************************************************************************
  FLOW PROCESS FROM NODE   4031.00 TO NODE   4032.00 IS CODE =   1
------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
========================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   11.65
  RAINFALL INTENSITY(INCH/HR) =   5.04
  TOTAL STREAM AREA(ACRES) =    10.39
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     17.30

**************************************************************************
  FLOW PROCESS FROM NODE   4035.00 TO NODE   4036.00 IS CODE =  21
------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
========================================================================
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  88
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    376.30
  DOWNSTREAM ELEVATION(FEET) =    363.80
```

```
  ELEVATION DIFFERENCE(FEET) =     12.50
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.267
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.516
  SUBAREA RUNOFF(CFS) =      0.68
  TOTAL AREA(ACRES) =      0.26   TOTAL RUNOFF(CFS) =      0.68

****************************************************************************
  FLOW PROCESS FROM NODE   4036.00 TO NODE   4032.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    363.80  DOWNSTREAM(FEET) =    270.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   763.00   CHANNEL SLOPE =  0.1229
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   5.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.393
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3200
  S.C.S. CURVE NUMBER (AMC II) =  88
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       4.59
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.02
  AVERAGE FLOW DEPTH(FEET) =   0.14   TRAVEL TIME(MIN.) =   4.22
  Tc(MIN.) =   10.48
  SUBAREA AREA(ACRES) =     4.38       SUBAREA RUNOFF(CFS) =     7.56
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.322
  TOTAL AREA(ACRES) =        4.6         PEAK FLOW RATE(CFS) =       8.05

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.20   FLOW VELOCITY(FEET/SEC.) =   3.75
  LONGEST FLOWPATH FROM NODE   4035.00 TO NODE   4032.00 =     863.00 FEET.

+--------------------------------------------------------------------------+
| COMPOSITE C                                                              |
| (2.38*0.3+2*0.35)/4.38=0.32                                              |
|                                                                          |
+--------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   4036.00 TO NODE   4032.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   10.48
  RAINFALL INTENSITY(INCH/HR) =   5.39
  TOTAL STREAM AREA(ACRES) =     4.64
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      8.05

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       17.30    11.65        5.038         10.39
      2        8.05    10.48        5.393          4.64

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
```



```
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)
      1       23.61    10.48        5.393
      2       24.82    11.65        5.038

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      24.82   Tc(MIN.) =   11.65
  TOTAL AREA(ACRES) =       15.0
  LONGEST FLOWPATH FROM NODE   4030.00 TO NODE   4032.00 =    1309.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   4033.00 TO NODE   4032.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.038
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3200
  S.C.S. CURVE NUMBER (AMC II) =  88
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3260
  SUBAREA AREA(ACRES) =     4.30   SUBAREA RUNOFF(CFS) =     6.93
  TOTAL AREA(ACRES) =       19.3   TOTAL RUNOFF(CFS) =      31.75
  TC(MIN.) =   11.65

+--------------------------------------------------------------------------+
| COMPOSITE C FOR B, C, & D SOILS                                          |
| SUBAREA - NATURAL                                                        |
| (0.93*0.25+1.08*0.3+2.29*0.35)/4.30=0.32                                 |
+--------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   4032.00 TO NODE   4034.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   267.20  DOWNSTREAM(FEET) =   266.38
  FLOW LENGTH(FEET) =    42.50   MANNING'S N =  0.013
  DEPTH OF FLOW IN  27.0 INCH PIPE IS  17.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  11.59
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      31.75
  PIPE TRAVEL TIME(MIN.) =   0.06    Tc(MIN.) =   11.71
  LONGEST FLOWPATH FROM NODE   4030.00 TO NODE   4034.00 =    1351.50 FEET.
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =       19.3  TC(MIN.) =     11.71
  PEAK FLOW RATE(CFS)   =      31.75
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

```
****************************************************************************

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                        Analysis prepared by:




 ************************** DESCRIPTION OF STUDY **************************
* OCEAN BREEZE RANCH - W. LILAC                                           *
* SYSTEM 4040 EXISTING CONDITIONS - 100 YR                                *
* SOUTHWEST QUADRANT                                                      *
 ****************************************************************************

  FILE NAME: 4040E100.DAT
  TIME/DATE OF STUDY: 09:10 05/31/2024
----------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
----------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) = 100.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   3.300
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  ========  ================  ======  =====  ====== =====  =======
  1   18.0     12.0    0.020/0.020/0.015   0.50    1.50 0.0313 0.125 0.0150
  2   20.0     13.0    0.020/0.020/0.015   0.50    1.50 0.0313 0.125 0.0150
  3   16.0     11.0    0.020/0.020/0.015   0.50    1.50 0.0313 0.125 0.0150
  4   12.0      7.0    0.020/0.020/0.015   0.50    1.50 0.0100 0.010 0.0160
  5   17.0     12.0    0.020/0.020/0.015   0.33    1.50 0.0100 0.010 0.0160

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth = -0.10 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

****************************************************************************
  FLOW PROCESS FROM NODE   4040.00 TO NODE   4041.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  88
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    64.00
  UPSTREAM ELEVATION(FEET) =    372.60
```



```
  DOWNSTREAM ELEVATION(FEET) =    362.00
  ELEVATION DIFFERENCE(FEET) =     10.60
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    5.013
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.680
  SUBAREA RUNOFF(CFS) =      0.58
  TOTAL AREA(ACRES) =      0.19   TOTAL RUNOFF(CFS) =      0.58

****************************************************************************
  FLOW PROCESS FROM NODE   4041.00 TO NODE   4042.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    362.00  DOWNSTREAM(FEET) =    258.47
  CHANNEL LENGTH THRU SUBAREA(FEET) =   715.00   CHANNEL SLOPE =  0.1448
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   5.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.190
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3300
  S.C.S. CURVE NUMBER (AMC II) =  88
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       5.78
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.45
  AVERAGE FLOW DEPTH(FEET) =   0.16   TRAVEL TIME(MIN.) =   3.45
  Tc(MIN.) =    8.47
  SUBAREA AREA(ACRES) =     4.93       SUBAREA RUNOFF(CFS) =   10.07
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.331
  TOTAL AREA(ACRES) =        5.1          PEAK FLOW RATE(CFS) =      10.48

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.22   FLOW VELOCITY(FEET/SEC.) =   4.33
  LONGEST FLOWPATH FROM NODE   4040.00 TO NODE   4042.00 =     779.00 FEET.

+--------------------------------------------------------------------------+
| COMPOSITE C FOR C & D SOILS                                              |
| SUBAREA - NATURAL                                                        |
| (2.81*0.3+2.12*0.35)/4.93=0.33                                           |
+--------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   4042.00 TO NODE   4043.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   256.61  DOWNSTREAM(FEET) =   254.80
  FLOW LENGTH(FEET) =    41.02   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   8.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  12.10
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      10.48
  PIPE TRAVEL TIME(MIN.) =   0.06    Tc(MIN.) =    8.52
  LONGEST FLOWPATH FROM NODE   4040.00 TO NODE   4043.00 =     820.02 FEET.
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)      =        5.1  TC(MIN.) =      8.52
  PEAK FLOW RATE(CFS)    =      10.48
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

```
**************************************************************************

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                        Analysis prepared by:




 ************************** DESCRIPTION OF STUDY **************************
* OCEAN BREEZE RANCH - W. LILAC                                          *
* SYSTEM 4050 EXISTING CONDITIONS - 100 YR                               *
* SOUTHWEST QUADRANT                                                     *
 **************************************************************************

  FILE NAME: 4050E100.DAT
  TIME/DATE OF STUDY: 09:11 05/31/2024
--------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
--------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) = 100.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   3.300
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  ========  ================  ======  =====  ====== =====  =======
  1   18.0     12.0    0.020/0.020/0.015   0.50    1.50 0.0313 0.125 0.0150
  2   20.0     13.0    0.020/0.020/0.015   0.50    1.50 0.0313 0.125 0.0150
  3   16.0     11.0    0.020/0.020/0.015   0.50    1.50 0.0313 0.125 0.0150
  4   12.0      7.0    0.020/0.020/0.015   0.50    1.50 0.0100 0.010 0.0160
  5   17.0     12.0    0.020/0.020/0.015   0.33    1.50 0.0100 0.010 0.0160

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth = -0.10 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

**************************************************************************
  FLOW PROCESS FROM NODE   4050.00 TO NODE   4051.00 IS CODE =  21
--------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==========================================================================
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  88
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    352.00
```



```
  DOWNSTREAM ELEVATION(FEET) =    339.00
  ELEVATION DIFFERENCE(FEET) =     13.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.267
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.516
  SUBAREA RUNOFF(CFS) =      0.13
  TOTAL AREA(ACRES) =      0.05   TOTAL RUNOFF(CFS) =      0.13

**************************************************************************
  FLOW PROCESS FROM NODE   4051.00 TO NODE   4052.00 IS CODE =  51
--------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
==========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    339.00  DOWNSTREAM(FEET) =    257.20
  CHANNEL LENGTH THRU SUBAREA(FEET) =   522.00   CHANNEL SLOPE =  0.1567
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   5.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.548
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  88
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.76
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   2.31
  AVERAGE FLOW DEPTH(FEET) =   0.07   TRAVEL TIME(MIN.) =   3.77
  Tc(MIN.) =   10.03
  SUBAREA AREA(ACRES) =     1.64       SUBAREA RUNOFF(CFS) =    3.18
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.350
  TOTAL AREA(ACRES) =        1.7         PEAK FLOW RATE(CFS) =       3.28

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.11   FLOW VELOCITY(FEET/SEC.) =   2.84
  LONGEST FLOWPATH FROM NODE   4050.00 TO NODE   4052.00 =     622.00 FEET.

+------------------------------------------------------------------------+
| NATURAL                                                                |
| MOSTLY SOIL TYPE D                                                     |
|                                                                        |
+------------------------------------------------------------------------+


**************************************************************************
  FLOW PROCESS FROM NODE   4052.00 TO NODE   4052.00 IS CODE =  81
--------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.548
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3924
  SUBAREA AREA(ACRES) =     0.15   SUBAREA RUNOFF(CFS) =    0.72
  TOTAL AREA(ACRES) =        1.8   TOTAL RUNOFF(CFS) =       4.01
  TC(MIN.) =   10.03

**************************************************************************
  FLOW PROCESS FROM NODE   4052.00 TO NODE   4053.00 IS CODE =  31
--------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   250.51  DOWNSTREAM(FEET) =   249.59
  FLOW LENGTH(FEET) =    41.05   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
```

```
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   6.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.30
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =        4.01
  PIPE TRAVEL TIME(MIN.) =   0.09    Tc(MIN.) =   10.13
  LONGEST FLOWPATH FROM NODE   4050.00 TO NODE   4053.00 =     663.05 FEET.
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =        1.8  TC(MIN.) =     10.13
  PEAK FLOW RATE(CFS)   =       4.01
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

```
 ************************************************************************

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                        Analysis prepared by:




 ************************** DESCRIPTION OF STUDY **************************
* OCEAN BREEZE RANCH - W. LILAC                                           *
* SYSTEM 4060 EXISTING CONDITIONS - 100 YR                                *
* SOUTHWEST QUADRANT                                                      *
 ************************************************************************

  FILE NAME: 4060E100.DAT
  TIME/DATE OF STUDY: 09:11 05/31/2024
------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) = 100.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   3.300
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  =====  ====  =====  =======
  1   18.0     12.0    0.020/0.020/0.015   0.50    1.50 0.0313 0.125 0.0150
  2   20.0     13.0    0.020/0.020/0.015   0.50    1.50 0.0313 0.125 0.0150
  3   16.0     11.0    0.020/0.020/0.015   0.50    1.50 0.0313 0.125 0.0150
  4   12.0      7.0    0.020/0.020/0.015   0.50    1.50 0.0100 0.010 0.0160
  5   17.0     12.0    0.020/0.020/0.015   0.33    1.50 0.0100 0.010 0.0160

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth = -0.10 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

************************************************************************
  FLOW PROCESS FROM NODE   4060.00 TO NODE   4061.00 IS CODE =  21
------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
========================================================================
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  88
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    356.00
```



```
  DOWNSTREAM ELEVATION(FEET) =    338.00
  ELEVATION DIFFERENCE(FEET) =     18.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.267
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.516
  SUBAREA RUNOFF(CFS) =      0.34
  TOTAL AREA(ACRES) =      0.13   TOTAL RUNOFF(CFS) =      0.34

************************************************************************
  FLOW PROCESS FROM NODE   4061.00 TO NODE   4062.00 IS CODE =  51
------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    338.00  DOWNSTREAM(FEET) =    248.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   548.00   CHANNEL SLOPE =  0.1642
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   5.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.159
  RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .4100
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  82
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       7.56
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.03
  AVERAGE FLOW DEPTH(FEET) =   0.17   TRAVEL TIME(MIN.) =   2.27
  Tc(MIN.) =    8.53
  SUBAREA AREA(ACRES) =     5.71       SUBAREA RUNOFF(CFS) =   14.42
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.409
  TOTAL AREA(ACRES) =        5.8          PEAK FLOW RATE(CFS) =      14.70

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.26   FLOW VELOCITY(FEET/SEC.) =   5.08
  LONGEST FLOWPATH FROM NODE   4060.00 TO NODE   4062.00 =     648.00 FEET.

+----------------------------------------------------------------------+
| NATURAL AREA W/ PAVED ROAD                                           |
| USE 1DU/A                                                            |
|                                                                      |
+----------------------------------------------------------------------+
========================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =        5.8  TC(MIN.) =      8.53
  PEAK FLOW RATE(CFS)   =      14.70
========================================================================
========================================================================
  END OF RATIONAL METHOD ANALYSIS
```

```
****************************************************************************

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                          Analysis prepared by:




 ************************** DESCRIPTION OF STUDY **************************
* OCEAN BREEZE RANCH - W. LILAC                                           *
* SYSTEM 4080 EXISTING CONDITIONS - 100 YR                                *
* SOUTHWEST QUADRANT                                                      *
 ****************************************************************************

  FILE NAME: 4080E100.DAT
  TIME/DATE OF STUDY: 09:32 05/31/2024
----------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
----------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) = 100.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   3.300
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  ================  ======  =====  ====  ====  =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0312 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

****************************************************************************
  FLOW PROCESS FROM NODE   4080.00 TO NODE   4081.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  STREETS & ROADS (CURBS/STORM DRAINS) RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  98
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    82.00
  UPSTREAM ELEVATION(FEET) =    203.00
  DOWNSTREAM ELEVATION(FEET) =    199.00
  ELEVATION DIFFERENCE(FEET) =      4.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.211
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
```



```
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.23
  TOTAL AREA(ACRES) =      0.03   TOTAL RUNOFF(CFS) =      0.23

****************************************************************************
  FLOW PROCESS FROM NODE   4081.00 TO NODE   4083.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  199.00  DOWNSTREAM ELEVATION(FEET) =  184.50
  STREET LENGTH(FEET) =   492.00   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 30.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.018
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.018

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.44
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.26
    HALFSTREET FLOOD WIDTH(FEET) =    5.41
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.16
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.82
  STREET FLOW TRAVEL TIME(MIN.) =   2.59   Tc(MIN.) =    4.81
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  STREETS & ROADS (CURBS/STORM DRAINS) RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "C"
  S.C.S. CURVE NUMBER (AMC II) =  98
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    0.32      SUBAREA RUNOFF(CFS) =    2.42
  TOTAL AREA(ACRES) =       0.3        PEAK FLOW RATE(CFS) =       2.65

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.31   HALFSTREET FLOOD WIDTH(FEET) =   8.03
  FLOW VELOCITY(FEET/SEC.) =  3.44   DEPTH*VELOCITY(FT*FT/SEC.) =   1.05
  LONGEST FLOWPATH FROM NODE   4080.00 TO NODE   4083.00 =     574.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   4082.00 TO NODE   4083.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3000
  S.C.S. CURVE NUMBER (AMC II) =  98
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3542
  SUBAREA AREA(ACRES) =    3.33   SUBAREA RUNOFF(CFS) =    8.69
  TOTAL AREA(ACRES) =       3.7   TOTAL RUNOFF(CFS) =      11.33
  TC(MIN.) =    4.81

+----------------------------------------------------------------------------+
| OPEN SPACE                                                                 |
| COMPOSITE C FOR TYPE A, C, D SOILS                                         |
| C=0.08*0.2+3.21*0.3+0.04*0.35)/3.33=0.3                                    |
```

```
+---------------------------------------------------------------------------+
===============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)      =         3.7  TC(MIN.) =      4.81
  PEAK FLOW RATE(CFS)    =       11.33
===============================================================================
===============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

Southeast Quadrant

```
************************************************************************

          RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT
                       2003,1985,1981 HYDROLOGY MANUAL
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           Ver. 23.0 Release Date: 07/01/2016  License ID 1509

                          Analysis prepared by:




 ************************** DESCRIPTION OF STUDY **************************
* OCEAN BREEZE RANCH                                                     *
* SYSTEM 1100 - EXISTING 100 YR                                          *
* SOUTHEAST QUADRANT                                                     *
 ************************************************************************

  FILE NAME: 1100E100.DAT
  TIME/DATE OF STUDY: 09:34 05/31/2024
------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) = 100.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   3.300
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  ==================  ======  =====  ====== =====  =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0312 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

************************************************************************
  FLOW PROCESS FROM NODE   1100.00 TO NODE   1101.00 IS CODE =  21
------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
========================================================================
  USER-SPECIFIED RUNOFF COEFFICIENT = .3000
  S.C.S. CURVE NUMBER (AMC II) =  85
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    86.00
  UPSTREAM ELEVATION(FEET) =    742.00
  DOWNSTREAM ELEVATION(FEET) =    734.00
  ELEVATION DIFFERENCE(FEET) =      8.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.350
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.452
  SUBAREA RUNOFF(CFS) =      0.94
```



```
  TOTAL AREA(ACRES) =      0.42   TOTAL RUNOFF(CFS) =      0.94

************************************************************************
  FLOW PROCESS FROM NODE   1101.00 TO NODE   1110.00 IS CODE =  51
------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    734.00  DOWNSTREAM(FEET) =    620.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1247.00   CHANNEL SLOPE =  0.0914
  CHANNEL BASE(FEET) =    4.00   "Z" FACTOR =   4.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.515
  USER-SPECIFIED RUNOFF COEFFICIENT = .3000
  S.C.S. CURVE NUMBER (AMC II) =  85
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      19.94
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.50
  AVERAGE FLOW DEPTH(FEET) =   0.58   TRAVEL TIME(MIN.) =   3.78
  Tc(MIN.) =   10.13
  SUBAREA AREA(ACRES) =    22.53       SUBAREA RUNOFF(CFS) =   37.28
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.300
  TOTAL AREA(ACRES) =       23.0          PEAK FLOW RATE(CFS) =      37.97

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.80   FLOW VELOCITY(FEET/SEC.) =   6.64
  LONGEST FLOWPATH FROM NODE   1100.00 TO NODE   1110.00 =    1333.00 FEET.

************************************************************************
  FLOW PROCESS FROM NODE   1110.00 TO NODE   1115.00 IS CODE =  41
------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED PIPESIZE (EXISTING ELEMENT)<<<<<
========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   613.50  DOWNSTREAM(FEET) =   606.37
  FLOW LENGTH(FEET) =   105.60   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  14.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  19.50
  GIVEN PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      37.97
  PIPE TRAVEL TIME(MIN.) =   0.09    Tc(MIN.) =   10.22
  LONGEST FLOWPATH FROM NODE   1100.00 TO NODE   1115.00 =    1438.60 FEET.

************************************************************************
  FLOW PROCESS FROM NODE   1115.00 TO NODE   1115.00 IS CODE =  81
------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
========================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.484
  USER-SPECIFIED RUNOFF COEFFICIENT = .5400
  S.C.S. CURVE NUMBER (AMC II) =  84
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3093
  SUBAREA AREA(ACRES) =    0.92   SUBAREA RUNOFF(CFS) =    2.72
  TOTAL AREA(ACRES) =       23.9   TOTAL RUNOFF(CFS) =      40.48
  TC(MIN.) =   10.22

+------------------------------------------------------------------------+
| CALCULATED IMPERVIOUS ~40%                                             |
| THEREFORE LANDUSE FOR SUBAREA 7.3 DU/AC                                |
|                                                                        |
+------------------------------------------------------------------------+
========================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =       23.9  TC(MIN.) =     10.22
```

```
  PEAK FLOW RATE(CFS)    =      40.48
================================================================================
================================================================================
  END OF RATIONAL METHOD ANALYSIS
```

```
****************************************************************************

          RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
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                       2003,1985,1981 HYDROLOGY MANUAL
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            Ver. 23.0 Release Date: 07/01/2016  License ID 1509

                        Analysis prepared by:




 ************************** DESCRIPTION OF STUDY **************************
* OCEAN BREEZE RANCH                                                      *
* SYSTEM 1800 - EXISTING 100 YR                                           *
* SOUTHEAST QUADRANT                                                      *
 ****************************************************************************

  FILE NAME: 1800E100.DAT
  TIME/DATE OF STUDY: 09:35 05/31/2024
----------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
----------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) = 100.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   3.300
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  ================  ======  =====  ====  ====  =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0312 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

****************************************************************************
  FLOW PROCESS FROM NODE   1800.00 TO NODE   1801.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  USER-SPECIFIED RUNOFF COEFFICIENT = .4200
  S.C.S. CURVE NUMBER (AMC II) =  79
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    50.00
  UPSTREAM ELEVATION(FEET) =    688.00
  DOWNSTREAM ELEVATION(FEET) =    687.03
  ELEVATION DIFFERENCE(FEET) =      0.97
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.940
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.038
  SUBAREA RUNOFF(CFS) =      0.21
```



```
  TOTAL AREA(ACRES) =      0.07   TOTAL RUNOFF(CFS) =      0.21

****************************************************************************
  FLOW PROCESS FROM NODE   1801.00 TO NODE   1802.00 IS CODE =  61
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STANDARD CURB SECTION USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  687.03  DOWNSTREAM ELEVATION(FEET) =  648.91
  STREET LENGTH(FEET) =   558.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 13.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   8.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.015
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.53
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.22
    HALFSTREET FLOOD WIDTH(FEET) =    4.81
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.39
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.98
  STREET FLOW TRAVEL TIME(MIN.) =   2.12   Tc(MIN.) =    9.06
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.927
  USER-SPECIFIED RUNOFF COEFFICIENT = .6000
  S.C.S. CURVE NUMBER (AMC II) =  86
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.585
  SUBAREA AREA(ACRES) =    0.75      SUBAREA RUNOFF(CFS) =    2.67
  TOTAL AREA(ACRES) =        0.8        PEAK FLOW RATE(CFS) =       2.84

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.26   HALFSTREET FLOOD WIDTH(FEET) =   6.78
  FLOW VELOCITY(FEET/SEC.) =  4.92   DEPTH*VELOCITY(FT*FT/SEC.) =   1.29
  LONGEST FLOWPATH FROM NODE   1800.00 TO NODE   1802.00 =     608.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1803.00 TO NODE   1802.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.927
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .6000
  S.C.S. CURVE NUMBER (AMC II) =  86
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.5921
  SUBAREA AREA(ACRES) =    0.78   SUBAREA RUNOFF(CFS) =    2.77
  TOTAL AREA(ACRES) =        1.6   TOTAL RUNOFF(CFS) =       5.61
  TC(MIN.) =    9.06

+----------------------------------------------------------------------------+
| COMPOSITE B AND C SOILS                                                    |
| ROUGHLY 50% IMPERV, USE MDR                                                |
| (0.01*.58)+(0.77*0.6)/.78= 0.6                                             |
+----------------------------------------------------------------------------+
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)      =        1.6  TC(MIN.) =      9.06
  PEAK FLOW RATE(CFS)    =       5.61
```

```
================================================================================
================================================================================
  END OF RATIONAL METHOD ANALYSIS
```

APPENDIX 3

100-year Proposed Conditions Rational Method Computer Output

PA-1

```
**************************************************************************

          RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
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                        Analysis prepared by:




 ************************** DESCRIPTION OF STUDY **************************
* OCEAN BREEZE RANCH - PA1                                                *
* SYSTEM 1000 - PROPOSED CONDITIONS                                       *
* NORTHWEST QUADRANT                                                      *
 *************************************************************************

  FILE NAME: 1000P100.DAT
  TIME/DATE OF STUDY: 10:53 05/31/2024
-------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
-------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) = 100.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   3.300
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  ========  ================  ======  ===== ====== ===== =======
  1   18.0     12.0    0.020/0.020/0.015   0.50    1.50 0.0313 0.125 0.0150
  2   20.0     13.0    0.020/0.020/0.015   0.50    1.50 0.0313 0.125 0.0150
  3   16.0     11.0    0.020/0.020/0.015   0.50    1.50 0.0313 0.125 0.0150
  4   12.0      7.0    0.020/0.020/0.015   0.50    1.50 0.0100 0.010 0.0160
  5   17.0     12.0    0.020/0.020/0.015   0.33    1.50 0.0100 0.010 0.0160

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth = -0.10 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

**************************************************************************
  FLOW PROCESS FROM NODE   1000.00 TO NODE   1001.00 IS CODE =  21
-------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
=========================================================================
  STREETS & ROADS (CURBS/STORM DRAINS) RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  98
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    61.00
  UPSTREAM ELEVATION(FEET) =    351.30
```



```
  DOWNSTREAM ELEVATION(FEET) =    350.60
  ELEVATION DIFFERENCE(FEET) =      0.70
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.089
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.15
  TOTAL AREA(ACRES) =      0.02   TOTAL RUNOFF(CFS) =      0.15

**************************************************************************
  FLOW PROCESS FROM NODE   1001.00 TO NODE   1002.00 IS CODE =  62
-------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
=========================================================================
  UPSTREAM ELEVATION(FEET) =  350.60  DOWNSTREAM ELEVATION(FEET) =  336.00
  STREET LENGTH(FEET) =   404.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  12.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.015
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       2.64
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.28
    HALFSTREET FLOOD WIDTH(FEET) =    7.64
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.76
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.05
  STREET FLOW TRAVEL TIME(MIN.) =   1.79   Tc(MIN.) =    4.88
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .6220
  S.C.S. CURVE NUMBER (AMC II) =  98
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.627
  SUBAREA AREA(ACRES) =    0.92      SUBAREA RUNOFF(CFS) =    4.98
  TOTAL AREA(ACRES) =        0.9        PEAK FLOW RATE(CFS) =       5.13

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.33   HALFSTREET FLOOD WIDTH(FEET) =  10.27
  FLOW VELOCITY(FEET/SEC.) =  4.37   DEPTH*VELOCITY(FT*FT/SEC.) =   1.45
  LONGEST FLOWPATH FROM NODE   1000.00 TO NODE   1002.00 =     465.00 FEET.

+-----------------------------------------------------------------------+
| COMPOSITE C FOR C & D SOILS                                           |
| SUBAREA - MDR 14.5 DU/A OR LESS (~50% IMP)                            |
| ((0.60*0.26)+(0.63*0.66))/0.92 = 0.622                                |
+-----------------------------------------------------------------------+

**************************************************************************
  FLOW PROCESS FROM NODE   1002.00 TO NODE   1003.00 IS CODE =  31
-------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
=========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   328.72  DOWNSTREAM(FEET) =   325.73
  FLOW LENGTH(FEET) =    59.79   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
```

```
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   5.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  10.44
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       5.13
  PIPE TRAVEL TIME(MIN.) =   0.10    Tc(MIN.) =    4.98
  LONGEST FLOWPATH FROM NODE   1000.00 TO NODE   1003.00 =     524.79 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1004.00 TO NODE   1003.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .7800
  SOIL CLASSIFICATION IS "C"
  S.C.S. CURVE NUMBER (AMC II) =  93
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.6696
  SUBAREA AREA(ACRES) =    0.36   SUBAREA RUNOFF(CFS) =    2.44
  TOTAL AREA(ACRES) =        1.3   TOTAL RUNOFF(CFS) =       7.57
  TC(MIN.) =    4.98

+--------------------------------------------------------------------------+
| PREDOMINANT HSG - C                                                      |
| LAND USE - NEIGHBORHOOD COMMERCIAL                                       |
|                                                                          |
+--------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   1084.00 TO NODE   1003.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3000
  SOIL CLASSIFICATION IS "C"
  S.C.S. CURVE NUMBER (AMC II) =  85
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.5714
  SUBAREA AREA(ACRES) =    0.47   SUBAREA RUNOFF(CFS) =    1.23
  TOTAL AREA(ACRES) =        1.8   TOTAL RUNOFF(CFS) =       8.79
  TC(MIN.) =    4.98

****************************************************************************
  FLOW PROCESS FROM NODE   1003.00 TO NODE   1005.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   325.40  DOWNSTREAM(FEET) =   318.87
  FLOW LENGTH(FEET) =   261.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   9.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   9.35
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       8.79
  PIPE TRAVEL TIME(MIN.) =   0.47    Tc(MIN.) =    5.44
  LONGEST FLOWPATH FROM NODE   1000.00 TO NODE   1005.00 =     785.79 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1003.00 TO NODE   1005.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
```



```
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =    5.44
  RAINFALL INTENSITY(INCH/HR) =   8.23
  TOTAL STREAM AREA(ACRES) =     1.77
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      8.79

****************************************************************************
  FLOW PROCESS FROM NODE   1006.00 TO NODE   1007.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  STREETS & ROADS (CURBS/STORM DRAINS) RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "C"
  S.C.S. CURVE NUMBER (AMC II) =  98
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    60.00
  UPSTREAM ELEVATION(FEET) =    333.23
  DOWNSTREAM ELEVATION(FEET) =    332.35
  ELEVATION DIFFERENCE(FEET) =      0.88
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.823
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.15
  TOTAL AREA(ACRES) =      0.02   TOTAL RUNOFF(CFS) =      0.15

****************************************************************************
  FLOW PROCESS FROM NODE   1007.00 TO NODE   1008.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  332.35  DOWNSTREAM ELEVATION(FEET) =  324.60
  STREET LENGTH(FEET) =   235.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 16.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  11.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.015
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       2.77
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.29
    HALFSTREET FLOOD WIDTH(FEET) =    7.96
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.68
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.05
  STREET FLOW TRAVEL TIME(MIN.) =   1.07   Tc(MIN.) =    3.89
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .6200
  S.C.S. CURVE NUMBER (AMC II) =  98
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.625
  SUBAREA AREA(ACRES) =    0.97      SUBAREA RUNOFF(CFS) =    5.23
  TOTAL AREA(ACRES) =        1.0        PEAK FLOW RATE(CFS) =       5.38

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.34   HALFSTREET FLOOD WIDTH(FEET) =  10.71
```

```
  FLOW VELOCITY(FEET/SEC.) =  4.25   DEPTH*VELOCITY(FT*FT/SEC.) =   1.45
  LONGEST FLOWPATH FROM NODE   1006.00 TO NODE   1008.00 =     295.00 FEET.

+----------------------------------------------------------------------------+
| COMPOSITE C FOR C & D SOILS                                                |
| SUBAREA - MDR 14.5 DU/A OR LESS (~50% IMP)                                 |
| ((0.60*0.32)+(0.63*0.65)/0.97 = 0.620                                      |
+----------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   1008.00 TO NODE   1005.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   319.08  DOWNSTREAM(FEET) =   318.87
  FLOW LENGTH(FEET) =     4.25   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   6.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  10.54
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       5.38
  PIPE TRAVEL TIME(MIN.) =   0.01    Tc(MIN.) =    3.89
  LONGEST FLOWPATH FROM NODE   1006.00 TO NODE   1005.00 =     299.25 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1009.00 TO NODE   1005.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (24. DU/AC OR LESS) RUNOFF COEFFICIENT = .7030
  S.C.S. CURVE NUMBER (AMC II) =  98
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.6611
  SUBAREA AREA(ACRES) =    0.85   SUBAREA RUNOFF(CFS) =    5.20
  TOTAL AREA(ACRES) =        1.8   TOTAL RUNOFF(CFS) =     10.58
  TC(MIN.) =    3.89

+----------------------------------------------------------------------------+
| COMPOSITE C FOR C & D SOILS                                                |
| SUBAREA - HDR 24.0 DU/A OR LESS (~65% IMP)                                 |
| ((0.69*0.26)+(0.71*0.59))/0.85 - 0.703                                     |
+----------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   1009.00 TO NODE   1005.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    3.89
  RAINFALL INTENSITY(INCH/HR) =   8.69
  TOTAL STREAM AREA(ACRES) =     1.84
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     10.58

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        8.79     5.44        8.234          1.77
```



```
      2       10.58     3.89        8.695          1.84

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF       Tc      INTENSITY
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)
      1       16.87     3.89        8.695
      2       18.81     5.44        8.234

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      18.81   Tc(MIN.) =    5.44
  TOTAL AREA(ACRES) =        3.6
  LONGEST FLOWPATH FROM NODE   1000.00 TO NODE   1005.00 =     785.79 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1005.00 TO NODE   1010.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   318.54  DOWNSTREAM(FEET) =   311.62
  FLOW LENGTH(FEET) =   276.93   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  13.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  11.20
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      18.81
  PIPE TRAVEL TIME(MIN.) =   0.41    Tc(MIN.) =    5.85
  LONGEST FLOWPATH FROM NODE   1000.00 TO NODE   1010.00 =    1062.72 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1005.00 TO NODE   1010.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =    5.85
  RAINFALL INTENSITY(INCH/HR) =   7.86
  TOTAL STREAM AREA(ACRES) =     3.61
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     18.81

****************************************************************************
  FLOW PROCESS FROM NODE   1011.00 TO NODE   1012.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  STREETS & ROADS (CURBS/STORM DRAINS) RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  98
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    70.00
  UPSTREAM ELEVATION(FEET) =    324.60
  DOWNSTREAM ELEVATION(FEET) =    323.00
  ELEVATION DIFFERENCE(FEET) =      1.60
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.630
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.30
  TOTAL AREA(ACRES) =      0.04   TOTAL RUNOFF(CFS) =      0.30

****************************************************************************
  FLOW PROCESS FROM NODE   1012.00 TO NODE   1013.00 IS CODE =  62
```

```
--------------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
================================================================================
  UPSTREAM ELEVATION(FEET) =  323.00  DOWNSTREAM ELEVATION(FEET) =  317.00
  STREET LENGTH(FEET) =   221.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 16.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  11.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.015
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       2.69
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.29
    HALFSTREET FLOOD WIDTH(FEET) =    8.22
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.38
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.98
  STREET FLOW TRAVEL TIME(MIN.) =   1.09   Tc(MIN.) =    3.72
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  RESIDENTIAL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .6300
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  89
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.641
  SUBAREA AREA(ACRES) =    0.87      SUBAREA RUNOFF(CFS) =    4.77
  TOTAL AREA(ACRES) =        0.9        PEAK FLOW RATE(CFS) =       5.07

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.34   HALFSTREET FLOOD WIDTH(FEET) =  10.89
  FLOW VELOCITY(FEET/SEC.) =  3.89   DEPTH*VELOCITY(FT*FT/SEC.) =   1.34
  LONGEST FLOWPATH FROM NODE   1011.00 TO NODE   1013.00 =     291.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1013.00 TO NODE   1010.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   311.66  DOWNSTREAM(FEET) =   311.62
  FLOW LENGTH(FEET) =     4.25   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   9.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.65
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       5.07
  PIPE TRAVEL TIME(MIN.) =   0.01    Tc(MIN.) =    3.73
  LONGEST FLOWPATH FROM NODE   1011.00 TO NODE   1010.00 =     295.25 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1014.00 TO NODE   1010.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  RESIDENTIAL (7.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5700
  SOIL CLASSIFICATION IS "D"
```



```
  S.C.S. CURVE NUMBER (AMC II) =  87
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.5974
  SUBAREA AREA(ACRES) =    1.43   SUBAREA RUNOFF(CFS) =    7.09
  TOTAL AREA(ACRES) =        2.3   TOTAL RUNOFF(CFS) =      12.16
  TC(MIN.) =    3.73

****************************************************************************
  FLOW PROCESS FROM NODE   1014.00 TO NODE   1010.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    3.73
  RAINFALL INTENSITY(INCH/HR) =   8.69
  TOTAL STREAM AREA(ACRES) =     2.34
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     12.16

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc       INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       18.81     5.85        7.855          3.61
      2       12.16     3.73        8.695          2.34

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF       Tc       INTENSITY
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)
      1       29.15     3.73        8.695
      2       29.79     5.85        7.855

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      29.79   Tc(MIN.) =    5.85
  TOTAL AREA(ACRES) =        5.9
  LONGEST FLOWPATH FROM NODE   1000.00 TO NODE   1010.00 =    1062.72 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1010.00 TO NODE   1015.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   311.12  DOWNSTREAM(FEET) =   305.10
  FLOW LENGTH(FEET) =   270.17   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  17.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  11.86
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      29.79
  PIPE TRAVEL TIME(MIN.) =   0.38    Tc(MIN.) =    6.23
  LONGEST FLOWPATH FROM NODE   1000.00 TO NODE   1015.00 =    1332.89 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1010.00 TO NODE   1015.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =    6.23
  RAINFALL INTENSITY(INCH/HR) =   7.54
```

```
  TOTAL STREAM AREA(ACRES) =     5.95
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     29.79

****************************************************************************
  FLOW PROCESS FROM NODE   1016.00 TO NODE   1017.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  STREETS & ROADS (CURBS/STORM DRAINS) RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  98
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    60.00
  UPSTREAM ELEVATION(FEET) =    318.00
  DOWNSTREAM ELEVATION(FEET) =    317.20
  ELEVATION DIFFERENCE(FEET) =      0.80
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.914
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.23
  TOTAL AREA(ACRES) =      0.03   TOTAL RUNOFF(CFS) =      0.23

****************************************************************************
  FLOW PROCESS FROM NODE   1017.00 TO NODE   1015.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  317.20  DOWNSTREAM ELEVATION(FEET) =  310.10
  STREET LENGTH(FEET) =   277.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 16.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  11.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.015
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       3.99
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.33
    HALFSTREET FLOOD WIDTH(FEET) =    9.94
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.61
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.17
  STREET FLOW TRAVEL TIME(MIN.) =   1.28   Tc(MIN.) =    4.19
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  RESIDENTIAL (7.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  87
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.576
  SUBAREA AREA(ACRES) =    1.52      SUBAREA RUNOFF(CFS) =    7.53
  TOTAL AREA(ACRES) =        1.5        PEAK FLOW RATE(CFS) =       7.76

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.39   HALFSTREET FLOOD WIDTH(FEET) =  13.12
  FLOW VELOCITY(FEET/SEC.) =  4.22   DEPTH*VELOCITY(FT*FT/SEC.) =   1.64
  LONGEST FLOWPATH FROM NODE   1016.00 TO NODE   1015.00 =     337.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1018.00 TO NODE   1015.00 IS CODE =  81
```



```
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  RESIDENTIAL (24. DU/AC OR LESS) RUNOFF COEFFICIENT = .7100
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  92
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.6261
  SUBAREA AREA(ACRES) =    0.93   SUBAREA RUNOFF(CFS) =    5.74
  TOTAL AREA(ACRES) =        2.5   TOTAL RUNOFF(CFS) =      13.50
  TC(MIN.) =    4.19

****************************************************************************
  FLOW PROCESS FROM NODE   1018.00 TO NODE   1015.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    4.19
  RAINFALL INTENSITY(INCH/HR) =   8.69
  TOTAL STREAM AREA(ACRES) =     2.48
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     13.50

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc       INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)    (INCH/HOUR)    (ACRE)
      1       29.79     6.23        7.543          5.95
      2       13.50     4.19        8.695          2.48

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF       Tc      INTENSITY
  NUMBER      (CFS)     (MIN.)    (INCH/HOUR)
      1       39.35     4.19        8.695
      2       41.50     6.23        7.543

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      41.50   Tc(MIN.) =    6.23
  TOTAL AREA(ACRES) =        8.4
  LONGEST FLOWPATH FROM NODE   1000.00 TO NODE   1015.00 =    1332.89 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1015.00 TO NODE   1019.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   305.05  DOWNSTREAM(FEET) =   300.28
  FLOW LENGTH(FEET) =   247.89   MANNING'S N =  0.013
  DEPTH OF FLOW IN  27.0 INCH PIPE IS  21.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  12.01
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      41.50
  PIPE TRAVEL TIME(MIN.) =   0.34    Tc(MIN.) =    6.58
  LONGEST FLOWPATH FROM NODE   1000.00 TO NODE   1019.00 =    1580.78 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1019.00 TO NODE   1019.00 IS CODE =  81
```

```
------------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.286
  RESIDENTIAL (7.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  87
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.6103
  SUBAREA AREA(ACRES) =    0.83   SUBAREA RUNOFF(CFS) =    3.45
  TOTAL AREA(ACRES) =        9.3   TOTAL RUNOFF(CFS) =      41.50
  TC(MIN.) =    6.58
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE   1019.00 TO NODE   1020.00 IS CODE =  31
------------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   299.95  DOWNSTREAM(FEET) =   299.45
  FLOW LENGTH(FEET) =     6.25   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  16.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  20.66
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      41.50
  PIPE TRAVEL TIME(MIN.) =   0.01    Tc(MIN.) =    6.58
  LONGEST FLOWPATH FROM NODE   1000.00 TO NODE   1020.00 =    1587.03 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1019.00 TO NODE   1020.00 IS CODE =  10
------------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
==============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE   1021.00 TO NODE   1022.00 IS CODE =  21
------------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==============================================================================
  NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .7900
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  94
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    60.00
  UPSTREAM ELEVATION(FEET) =    356.46
  DOWNSTREAM ELEVATION(FEET) =    355.40
  ELEVATION DIFFERENCE(FEET) =      1.06
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.575
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.34
  TOTAL AREA(ACRES) =      0.05   TOTAL RUNOFF(CFS) =      0.34

+----------------------------------------------------------------------------+
| IMPERVIOUS % CALCULATED AT ~80%                                            |
| THEREFORE, SUBAREA CLASS - N. COM                                          |
|                                                                            |
+----------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   1022.00 TO NODE   1023.00 IS CODE =  62
------------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
```



```
==============================================================================
  UPSTREAM ELEVATION(FEET) =  355.40  DOWNSTREAM ELEVATION(FEET) =  335.84
  STREET LENGTH(FEET) =   345.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  12.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.015
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       3.22
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.28
    HALFSTREET FLOOD WIDTH(FEET) =    7.55
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.68
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.30
  STREET FLOW TRAVEL TIME(MIN.) =   1.23   Tc(MIN.) =    4.80
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  RESIDENTIAL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .6300
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  89
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.637
  SUBAREA AREA(ACRES) =    1.05      SUBAREA RUNOFF(CFS) =    5.75
  TOTAL AREA(ACRES) =        1.1        PEAK FLOW RATE(CFS) =       6.09

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.33   HALFSTREET FLOOD WIDTH(FEET) =  10.08
  FLOW VELOCITY(FEET/SEC.) =  5.38   DEPTH*VELOCITY(FT*FT/SEC.) =   1.76
  LONGEST FLOWPATH FROM NODE   1021.00 TO NODE   1023.00 =     405.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1023.00 TO NODE   1086.00 IS CODE =  31
------------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   326.00  DOWNSTREAM(FEET) =   325.49
  FLOW LENGTH(FEET) =     6.25   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   5.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  13.07
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       6.09
  PIPE TRAVEL TIME(MIN.) =   0.01    Tc(MIN.) =    4.81
  LONGEST FLOWPATH FROM NODE   1021.00 TO NODE   1086.00 =     411.25 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1024.00 TO NODE   1086.00 IS CODE =  81
------------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  88
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.5463
  SUBAREA AREA(ACRES) =    0.51   SUBAREA RUNOFF(CFS) =    1.55
```

```
  TOTAL AREA(ACRES) =        1.6   TOTAL RUNOFF(CFS) =       7.65
  TC(MIN.) =    4.81

****************************************************************************
  FLOW PROCESS FROM NODE   1086.00 TO NODE   1020.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   319.10  DOWNSTREAM(FEET) =   295.50
  FLOW LENGTH(FEET) =   282.10   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   6.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  14.05
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       7.65
  PIPE TRAVEL TIME(MIN.) =   0.33    Tc(MIN.) =    5.15
  LONGEST FLOWPATH FROM NODE   1021.00 TO NODE   1020.00 =     693.35 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1025.00 TO NODE   1020.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.534
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.6182
  SUBAREA AREA(ACRES) =    0.46   SUBAREA RUNOFF(CFS) =    3.42
  TOTAL AREA(ACRES) =        2.1   TOTAL RUNOFF(CFS) =      10.92
  TC(MIN.) =    5.15

****************************************************************************
  FLOW PROCESS FROM NODE   1083.00 TO NODE   1020.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.534
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  88
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.5279
  SUBAREA AREA(ACRES) =    1.05   SUBAREA RUNOFF(CFS) =    3.14
  TOTAL AREA(ACRES) =        3.1   TOTAL RUNOFF(CFS) =      14.06
  TC(MIN.) =    5.15

****************************************************************************
  FLOW PROCESS FROM NODE   1083.00 TO NODE   1020.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM     RUNOFF       Tc       INTENSITY     AREA
  NUMBER       (CFS)     (MIN.)    (INCH/HOUR)    (ACRE)
      1       14.06      5.15        8.534         3.12
  LONGEST FLOWPATH FROM NODE   1021.00 TO NODE   1020.00 =     693.35 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
  STREAM     RUNOFF       Tc       INTENSITY     AREA
  NUMBER       (CFS)     (MIN.)    (INCH/HOUR)    (ACRE)
      1       41.50      6.58        7.282         9.26
```



```
  LONGEST FLOWPATH FROM NODE   1000.00 TO NODE   1020.00 =    1587.03 FEET.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF       Tc       INTENSITY
  NUMBER       (CFS)     (MIN.)    (INCH/HOUR)
      1       46.51      5.15        8.534
      2       53.50      6.58        7.282

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      53.50   Tc(MIN.) =    6.58
  TOTAL AREA(ACRES) =       12.4

****************************************************************************
  FLOW PROCESS FROM NODE   1020.00 TO NODE   1026.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   299.45  DOWNSTREAM(FEET) =   264.34
  FLOW LENGTH(FEET) =   468.17   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  17.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  21.71
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      53.50
  PIPE TRAVEL TIME(MIN.) =   0.36    Tc(MIN.) =    6.94
  LONGEST FLOWPATH FROM NODE   1000.00 TO NODE   1026.00 =    2055.20 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1027.00 TO NODE   1026.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.037
  RESIDENTIAL (10.9 DU/AC OR LESS) RUNOFF COEFFICIENT = .6000
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  88
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.5907
  SUBAREA AREA(ACRES) =    1.49   SUBAREA RUNOFF(CFS) =    6.29
  TOTAL AREA(ACRES) =       13.9   TOTAL RUNOFF(CFS) =      57.65
  TC(MIN.) =    6.94

****************************************************************************
  FLOW PROCESS FROM NODE   1028.00 TO NODE   1026.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.037
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =  88
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.5655
  SUBAREA AREA(ACRES) =    1.62   SUBAREA RUNOFF(CFS) =    3.99
  TOTAL AREA(ACRES) =       15.5   TOTAL RUNOFF(CFS) =      61.64
  TC(MIN.) =    6.94

+--------------------------------------------------------------------------+
| COMPOSITE C FOR C & D SOILS                                              |
| SUBAREA - NATURAL                                                        |
| (0.30*0.16)+(0.35*1.46)/1.62 = 0.35                                      |
+--------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   1026.00 TO NODE   1081.00 IS CODE =  31
```

```
--------------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   264.01  DOWNSTREAM(FEET) =   257.58
  FLOW LENGTH(FEET) =    61.67   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  17.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  25.51
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      61.64
  PIPE TRAVEL TIME(MIN.) =   0.04    Tc(MIN.) =    6.98
  LONGEST FLOWPATH FROM NODE   1000.00 TO NODE   1081.00 =    2116.87 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1082.00 TO NODE   1081.00 IS CODE =  81
--------------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.011
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  88
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.5541
  SUBAREA AREA(ACRES) =    0.87   SUBAREA RUNOFF(CFS) =    2.13
  TOTAL AREA(ACRES) =       16.4   TOTAL RUNOFF(CFS) =      63.55
  TC(MIN.) =    6.98

****************************************************************************
  FLOW PROCESS FROM NODE   1081.00 TO NODE   1029.00 IS CODE =  31
--------------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   257.25  DOWNSTREAM(FEET) =   252.01
  FLOW LENGTH(FEET) =    74.88   MANNING'S N =  0.013
  DEPTH OF FLOW IN  27.0 INCH PIPE IS  18.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  22.29
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      63.55
  PIPE TRAVEL TIME(MIN.) =   0.06    Tc(MIN.) =    7.04
  LONGEST FLOWPATH FROM NODE   1000.00 TO NODE   1029.00 =    2191.75 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1081.00 TO NODE   1029.00 IS CODE =  10
--------------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 2 <<<<<
================================================================================

****************************************************************************
  FLOW PROCESS FROM NODE   1030.00 TO NODE   1031.00 IS CODE =  21
--------------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
================================================================================
  STREETS & ROADS (CURBS/STORM DRAINS) RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "C"
  S.C.S. CURVE NUMBER (AMC II) =  98
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    60.00
  UPSTREAM ELEVATION(FEET) =    306.10
  DOWNSTREAM ELEVATION(FEET) =    305.00
  ELEVATION DIFFERENCE(FEET) =      1.10
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.620
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
```



```
  SUBAREA RUNOFF(CFS) =      0.15
  TOTAL AREA(ACRES) =      0.02   TOTAL RUNOFF(CFS) =      0.15

****************************************************************************
  FLOW PROCESS FROM NODE   1031.00 TO NODE   1032.00 IS CODE =  62
--------------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
================================================================================
  UPSTREAM ELEVATION(FEET) =  305.00  DOWNSTREAM ELEVATION(FEET) =  303.50
  STREET LENGTH(FEET) =    82.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 16.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  11.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.015
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       2.93
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.31
    HALFSTREET FLOOD WIDTH(FEET) =    9.34
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.96
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.93
  STREET FLOW TRAVEL TIME(MIN.) =   0.46   Tc(MIN.) =    3.08
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .6200
  S.C.S. CURVE NUMBER (AMC II) =  98
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.625
  SUBAREA AREA(ACRES) =    1.03      SUBAREA RUNOFF(CFS) =    5.55
  TOTAL AREA(ACRES) =        1.0        PEAK FLOW RATE(CFS) =       5.70

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.37   HALFSTREET FLOOD WIDTH(FEET) =  12.43
  FLOW VELOCITY(FEET/SEC.) =  3.43   DEPTH*VELOCITY(FT*FT/SEC.) =   1.29
  LONGEST FLOWPATH FROM NODE   1030.00 TO NODE   1032.00 =     142.00 FEET.

+------------------------------------------------------------------------------+
| COMPOSITE C FOR C & D SOILS                                                  |
| SUBAREA - MDR 14.5 DU/A OR LESS (~50% IMP)                                   |
| ((0.60*0.33)+(0.63*0.70))/1.03 = 0.620                                       |
+------------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   1032.00 TO NODE   1033.00 IS CODE =  31
--------------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   298.02  DOWNSTREAM(FEET) =   297.78
  FLOW LENGTH(FEET) =    24.25   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   9.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.93
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       5.70
  PIPE TRAVEL TIME(MIN.) =   0.07    Tc(MIN.) =    3.15
```

```
  LONGEST FLOWPATH FROM NODE   1030.00 TO NODE   1033.00 =     166.25 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1034.00 TO NODE   1033.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .6250
  S.C.S. CURVE NUMBER (AMC II) =  98
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.6249
  SUBAREA AREA(ACRES) =    1.42   SUBAREA RUNOFF(CFS) =    7.72
  TOTAL AREA(ACRES) =        2.5   TOTAL RUNOFF(CFS) =      13.42
  TC(MIN.) =    3.15

+--------------------------------------------------------------------------+
| COMPOSITE C FOR C & D SOILS                                              |
| SUBAREA - MDR 14.5 DU/A OR LESS (~50% IMP)                               |
| ((0.60*0.22)+(0.63*1.20))/1.42 - 0.625                                   |
+--------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   1033.00 TO NODE   1035.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   297.45  DOWNSTREAM(FEET) =   296.77
  FLOW LENGTH(FEET) =   135.68   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  17.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.59
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      13.42
  PIPE TRAVEL TIME(MIN.) =   0.40    Tc(MIN.) =    3.56
  LONGEST FLOWPATH FROM NODE   1030.00 TO NODE   1035.00 =     301.93 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1033.00 TO NODE   1035.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =    3.56
  RAINFALL INTENSITY(INCH/HR) =   8.69
  TOTAL STREAM AREA(ACRES) =     2.47
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     13.42

****************************************************************************
  FLOW PROCESS FROM NODE   1036.00 TO NODE   1037.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  STREETS & ROADS (CURBS/STORM DRAINS) RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "C"
  S.C.S. CURVE NUMBER (AMC II) =  98
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    60.00
  UPSTREAM ELEVATION(FEET) =    333.23
  DOWNSTREAM ELEVATION(FEET) =    331.00
  ELEVATION DIFFERENCE(FEET) =      2.23
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.070
```



```
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.15
  TOTAL AREA(ACRES) =      0.02   TOTAL RUNOFF(CFS) =      0.15

****************************************************************************
  FLOW PROCESS FROM NODE   1037.00 TO NODE   1038.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  331.00  DOWNSTREAM ELEVATION(FEET) =  313.00
  STREET LENGTH(FEET) =   265.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  12.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.015
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.00
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.20
    HALFSTREET FLOOD WIDTH(FEET) =    3.50
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.15
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.81
  STREET FLOW TRAVEL TIME(MIN.) =   1.07   Tc(MIN.) =    3.14
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .7800
  SOIL CLASSIFICATION IS "C"
  S.C.S. CURVE NUMBER (AMC II) =  93
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.787
  SUBAREA AREA(ACRES) =    0.25      SUBAREA RUNOFF(CFS) =    1.70
  TOTAL AREA(ACRES) =        0.3        PEAK FLOW RATE(CFS) =       1.85

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.23   HALFSTREET FLOOD WIDTH(FEET) =   5.40
  FLOW VELOCITY(FEET/SEC.) =  4.50   DEPTH*VELOCITY(FT*FT/SEC.) =   1.06
  LONGEST FLOWPATH FROM NODE   1036.00 TO NODE   1038.00 =     325.00 FEET.

+--------------------------------------------------------------------------+
| IMPERVIOUS % CALCULATED AT ~80%                                          |
| SUBAREA - N. COM                                                         |
|                                                                          |
+--------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   1038.00 TO NODE   1039.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   310.35  DOWNSTREAM(FEET) =   307.28
  FLOW LENGTH(FEET) =    61.50   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   3.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.77
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
```

```
  PIPE-FLOW(CFS) =       1.85
  PIPE TRAVEL TIME(MIN.) =   0.13    Tc(MIN.) =    3.27
  LONGEST FLOWPATH FROM NODE   1036.00 TO NODE   1039.00 =     386.50 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1040.00 TO NODE   1039.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (24. DU/AC OR LESS) RUNOFF COEFFICIENT = .7410
  S.C.S. CURVE NUMBER (AMC II) =  93
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.7609
  SUBAREA AREA(ACRES) =    0.35   SUBAREA RUNOFF(CFS) =    2.25
  TOTAL AREA(ACRES) =        0.6   TOTAL RUNOFF(CFS) =       4.10
  TC(MIN.) =    3.27

+--------------------------------------------------------------------------+
| COMPOSITE C FOR C & D SOILS                                              |
| SUBAREA (~65% IMPERVIOUS) - HDR 24.0 DU/A/ OR LESS                       |
| ((0.69*0.24)+(0.71*0.08))/0.30 = 0.741                                   |
+--------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   1039.00 TO NODE   1035.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   306.95  DOWNSTREAM(FEET) =   296.77
  FLOW LENGTH(FEET) =   127.28   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   4.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  11.59
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       4.10
  PIPE TRAVEL TIME(MIN.) =   0.18    Tc(MIN.) =    3.45
  LONGEST FLOWPATH FROM NODE   1036.00 TO NODE   1035.00 =     513.78 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1039.00 TO NODE   1035.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    3.45
  RAINFALL INTENSITY(INCH/HR) =   8.69
  TOTAL STREAM AREA(ACRES) =     0.62
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.10

  ** CONFLUENCE DATA **
  STREAM      RUNOFF        Tc       INTENSITY       AREA
  NUMBER       (CFS)      (MIN.)    (INCH/HOUR)     (ACRE)
      1        13.42      3.56         8.695          2.47
      2         4.10      3.45         8.695          0.62

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.
```



```
  ** PEAK FLOW RATE TABLE **
  STREAM      RUNOFF        Tc       INTENSITY
  NUMBER       (CFS)      (MIN.)    (INCH/HOUR)
      1        17.13      3.45         8.695
      2        17.52      3.56         8.695

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      17.52   Tc(MIN.) =    3.56
  TOTAL AREA(ACRES) =        3.1
  LONGEST FLOWPATH FROM NODE   1036.00 TO NODE   1035.00 =     513.78 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1035.00 TO NODE   1041.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   296.44  DOWNSTREAM(FEET) =   292.03
  FLOW LENGTH(FEET) =   293.94   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  16.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.93
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      17.52
  PIPE TRAVEL TIME(MIN.) =   0.55    Tc(MIN.) =    4.10
  LONGEST FLOWPATH FROM NODE   1036.00 TO NODE   1041.00 =     807.72 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1035.00 TO NODE   1041.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =    4.10
  RAINFALL INTENSITY(INCH/HR) =   8.69
  TOTAL STREAM AREA(ACRES) =     3.09
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     17.52

****************************************************************************
  FLOW PROCESS FROM NODE   1042.00 TO NODE   1043.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  STREETS & ROADS (CURBS/STORM DRAINS) RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "C"
  S.C.S. CURVE NUMBER (AMC II) =  98
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    60.00
  UPSTREAM ELEVATION(FEET) =    306.00
  DOWNSTREAM ELEVATION(FEET) =    304.80
  ELEVATION DIFFERENCE(FEET) =      1.20
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.545
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.15
  TOTAL AREA(ACRES) =      0.02   TOTAL RUNOFF(CFS) =      0.15

****************************************************************************
  FLOW PROCESS FROM NODE   1043.00 TO NODE   1044.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  304.80  DOWNSTREAM ELEVATION(FEET) =  297.00
```

```
  STREET LENGTH(FEET) =   239.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  12.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.015
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.29
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.24
    HALFSTREET FLOOD WIDTH(FEET) =    5.47
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.09
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.73
  STREET FLOW TRAVEL TIME(MIN.) =   1.29   Tc(MIN.) =    3.84
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (24. DU/AC OR LESS) RUNOFF COEFFICIENT = .7078
  S.C.S. CURVE NUMBER (AMC II) =  98
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.716
  SUBAREA AREA(ACRES) =    0.37      SUBAREA RUNOFF(CFS) =    2.28
  TOTAL AREA(ACRES) =        0.4        PEAK FLOW RATE(CFS) =       2.43

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.28   HALFSTREET FLOOD WIDTH(FEET) =   7.55
  FLOW VELOCITY(FEET/SEC.) =  3.53   DEPTH*VELOCITY(FT*FT/SEC.) =   0.98
  LONGEST FLOWPATH FROM NODE   1042.00 TO NODE   1044.00 =     299.00 FEET.

+----------------------------------------------------------------------------+
| IMPERVIOUS % CALCULATED AT ~58%, THEREFORE SUBAREA - HDR 24 DU/A           |
| COMPOSITE C FOR C & D SOILS                                                |
| ((0.69*0.04)+(0.71*0.33))/0.37 = 0.7078                                    |
+----------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   1044.00 TO NODE   1041.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   292.34  DOWNSTREAM(FEET) =   292.03
  FLOW LENGTH(FEET) =     6.22   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   4.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.43
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       2.43
  PIPE TRAVEL TIME(MIN.) =   0.01    Tc(MIN.) =    3.85
  LONGEST FLOWPATH FROM NODE   1042.00 TO NODE   1041.00 =     305.22 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1045.00 TO NODE   1041.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  *USER SPECIFIED(SUBAREA):
```



```
  RESIDENTIAL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .6140
  S.C.S. CURVE NUMBER (AMC II) =  98
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.6370
  SUBAREA AREA(ACRES) =    1.34   SUBAREA RUNOFF(CFS) =    7.15
  TOTAL AREA(ACRES) =        1.7   TOTAL RUNOFF(CFS) =       9.58
  TC(MIN.) =    3.85

+----------------------------------------------------------------------------+
| COMPOSITE C FOR C & D SOILS                                                |
| SUBAREA -MDR 14.5 DU/A OR LESS (~50%IMP)                                   |
| ((0.60*0.71)+(0.63*0.63))/1.34 = 0.614                                     |
+----------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   1045.00 TO NODE   1041.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    3.85
  RAINFALL INTENSITY(INCH/HR) =   8.69
  TOTAL STREAM AREA(ACRES) =     1.73
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      9.58

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc       INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       17.52     4.10        8.695          3.09
      2        9.58     3.85        8.695          1.73

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF       Tc      INTENSITY
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)
      1       27.10     3.85        8.695
      2       27.10     4.10        8.695

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      27.10   Tc(MIN.) =    4.10
  TOTAL AREA(ACRES) =        4.8
  LONGEST FLOWPATH FROM NODE   1036.00 TO NODE   1041.00 =     807.72 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1041.00 TO NODE   1046.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   291.70  DOWNSTREAM(FEET) =   282.34
  FLOW LENGTH(FEET) =   340.13   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  15.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  12.75
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      27.10
  PIPE TRAVEL TIME(MIN.) =   0.44    Tc(MIN.) =    4.55
  LONGEST FLOWPATH FROM NODE   1036.00 TO NODE   1046.00 =    1147.85 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1041.00 TO NODE   1046.00 IS CODE =   1
```

```
------------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =    4.55
  RAINFALL INTENSITY(INCH/HR) =   8.69
  TOTAL STREAM AREA(ACRES) =     4.82
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     27.10

****************************************************************************
  FLOW PROCESS FROM NODE   1047.00 TO NODE   1048.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  STREETS & ROADS (CURBS/STORM DRAINS) RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  98
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    60.00
  UPSTREAM ELEVATION(FEET) =    298.00
  DOWNSTREAM ELEVATION(FEET) =    296.00
  ELEVATION DIFFERENCE(FEET) =      2.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.147
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.15
  TOTAL AREA(ACRES) =      0.02   TOTAL RUNOFF(CFS) =      0.15

****************************************************************************
  FLOW PROCESS FROM NODE   1048.00 TO NODE   1049.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  296.00  DOWNSTREAM ELEVATION(FEET) =  288.00
  STREET LENGTH(FEET) =   308.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  12.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.015
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       3.55
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.31
    HALFSTREET FLOOD WIDTH(FEET) =    9.42
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.53
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.11
  STREET FLOW TRAVEL TIME(MIN.) =   1.46   Tc(MIN.) =    3.60
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  RESIDENTIAL (24. DU/AC OR LESS) RUNOFF COEFFICIENT = .7100
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  92
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.713
  SUBAREA AREA(ACRES) =    1.10      SUBAREA RUNOFF(CFS) =    6.79
  TOTAL AREA(ACRES) =        1.1        PEAK FLOW RATE(CFS) =       6.94
```



```
  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.38   HALFSTREET FLOOD WIDTH(FEET) =  12.52
  FLOW VELOCITY(FEET/SEC.) =  4.12   DEPTH*VELOCITY(FT*FT/SEC.) =   1.55
  LONGEST FLOWPATH FROM NODE   1047.00 TO NODE   1049.00 =     368.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1049.00 TO NODE   1046.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   282.65  DOWNSTREAM(FEET) =   282.34
  FLOW LENGTH(FEET) =     6.25   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   6.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  11.32
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       6.94
  PIPE TRAVEL TIME(MIN.) =   0.01    Tc(MIN.) =    3.61
  LONGEST FLOWPATH FROM NODE   1047.00 TO NODE   1046.00 =     374.25 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1050.00 TO NODE   1046.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  RESIDENTIAL (24. DU/AC OR LESS) RUNOFF COEFFICIENT = .7100
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  92
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.7114
  SUBAREA AREA(ACRES) =    1.10   SUBAREA RUNOFF(CFS) =    6.79
  TOTAL AREA(ACRES) =        2.2   TOTAL RUNOFF(CFS) =      13.73
  TC(MIN.) =    3.61

****************************************************************************
  FLOW PROCESS FROM NODE   1050.00 TO NODE   1046.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    3.61
  RAINFALL INTENSITY(INCH/HR) =   8.69
  TOTAL STREAM AREA(ACRES) =     2.22
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     13.73

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       27.10     4.55        8.695          4.82
      2       13.73     3.61        8.695          2.22

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF       Tc      INTENSITY
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)
      1       40.84     3.61        8.695
      2       40.84     4.55        8.695
```

```
  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      40.84   Tc(MIN.) =    4.55
  TOTAL AREA(ACRES) =        7.0
  LONGEST FLOWPATH FROM NODE   1036.00 TO NODE   1046.00 =    1147.85 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1046.00 TO NODE   1051.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   281.84  DOWNSTREAM(FEET) =   269.53
  FLOW LENGTH(FEET) =   302.81   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  18.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  16.05
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      40.84
  PIPE TRAVEL TIME(MIN.) =   0.31    Tc(MIN.) =    4.86
  LONGEST FLOWPATH FROM NODE   1036.00 TO NODE   1051.00 =    1450.66 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1046.00 TO NODE   1051.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =    4.86
  RAINFALL INTENSITY(INCH/HR) =   8.69
  TOTAL STREAM AREA(ACRES) =     7.04
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     40.84

****************************************************************************
  FLOW PROCESS FROM NODE   1052.00 TO NODE   1053.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  STREETS & ROADS (CURBS/STORM DRAINS) RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  98
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    60.00
  UPSTREAM ELEVATION(FEET) =    288.50
  DOWNSTREAM ELEVATION(FEET) =    287.20
  ELEVATION DIFFERENCE(FEET) =      1.30
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.478
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.15
  TOTAL AREA(ACRES) =      0.02   TOTAL RUNOFF(CFS) =      0.15

****************************************************************************
  FLOW PROCESS FROM NODE   1053.00 TO NODE   1054.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  287.20  DOWNSTREAM ELEVATION(FEET) =  277.00
  STREET LENGTH(FEET) =   382.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  12.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
```



```
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.015
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       3.33
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.31
    HALFSTREET FLOOD WIDTH(FEET) =    9.14
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.50
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.08
  STREET FLOW TRAVEL TIME(MIN.) =   1.82   Tc(MIN.) =    4.30
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (24. DU/AC OR LESS) RUNOFF COEFFICIENT = .7040
  S.C.S. CURVE NUMBER (AMC II) =  98
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.707
  SUBAREA AREA(ACRES) =    1.04      SUBAREA RUNOFF(CFS) =    6.37
  TOTAL AREA(ACRES) =        1.1        PEAK FLOW RATE(CFS) =       6.52

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.37   HALFSTREET FLOOD WIDTH(FEET) =  12.14
  FLOW VELOCITY(FEET/SEC.) =  4.09   DEPTH*VELOCITY(FT*FT/SEC.) =   1.51
  LONGEST FLOWPATH FROM NODE   1052.00 TO NODE   1054.00 =     442.00 FEET.

+--------------------------------------------------------------------------+
| COMPOSITE C FOR A & D SOILS                                              |
| SUBAREA - HDR 24.0 DU/A OR LESS                                          |
| (0.69*0.31)+(0.71*0.73)/1.04 = 0.704                                     |
+--------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   1054.00 TO NODE   1051.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   270.17  DOWNSTREAM(FEET) =   270.03
  FLOW LENGTH(FEET) =    13.75   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  10.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.18
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       6.52
  PIPE TRAVEL TIME(MIN.) =   0.04    Tc(MIN.) =    4.34
  LONGEST FLOWPATH FROM NODE   1052.00 TO NODE   1051.00 =     455.75 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1055.00 TO NODE   1051.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  RESIDENTIAL (24. DU/AC OR LESS) RUNOFF COEFFICIENT = .7100
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  92
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.7086
  SUBAREA AREA(ACRES) =    1.17   SUBAREA RUNOFF(CFS) =    7.22
  TOTAL AREA(ACRES) =        2.2   TOTAL RUNOFF(CFS) =      13.74
  TC(MIN.) =    4.34
```

```
****************************************************************************
  FLOW PROCESS FROM NODE   1055.00 TO NODE   1051.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    4.34
  RAINFALL INTENSITY(INCH/HR) =   8.69
  TOTAL STREAM AREA(ACRES) =     2.23
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     13.74

  ** CONFLUENCE DATA **
  STREAM      RUNOFF       Tc       INTENSITY      AREA
  NUMBER       (CFS)     (MIN.)    (INCH/HOUR)    (ACRE)
      1        40.84     4.86        8.695          7.04
      2        13.74     4.34        8.695          2.23

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM      RUNOFF       Tc       INTENSITY
  NUMBER       (CFS)     (MIN.)    (INCH/HOUR)
      1        54.58     4.34        8.695
      2        54.58     4.86        8.695

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      54.58   Tc(MIN.) =    4.86
  TOTAL AREA(ACRES) =        9.3
  LONGEST FLOWPATH FROM NODE   1036.00 TO NODE   1051.00 =    1450.66 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1051.00 TO NODE   1029.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   269.20  DOWNSTREAM(FEET) =   252.01
  FLOW LENGTH(FEET) =   269.45   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  19.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  20.21
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      54.58
  PIPE TRAVEL TIME(MIN.) =   0.22    Tc(MIN.) =    5.09
  LONGEST FLOWPATH FROM NODE   1036.00 TO NODE   1029.00 =    1720.11 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1051.00 TO NODE   1029.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM      RUNOFF       Tc       INTENSITY     AREA
  NUMBER       (CFS)     (MIN.)    (INCH/HOUR)    (ACRE)
      1        54.58     5.09        8.600         9.27
  LONGEST FLOWPATH FROM NODE   1036.00 TO NODE   1029.00 =    1720.11 FEET.

  ** MEMORY BANK #  2 CONFLUENCE DATA **
  STREAM      RUNOFF       Tc       INTENSITY     AREA
```



```
  NUMBER       (CFS)     (MIN.)    (INCH/HOUR)    (ACRE)
      1        63.55     7.04        6.975         16.36
  LONGEST FLOWPATH FROM NODE   1000.00 TO NODE   1029.00 =    2191.75 FEET.

  ** PEAK FLOW RATE TABLE **
  STREAM      RUNOFF       Tc       INTENSITY
  NUMBER       (CFS)     (MIN.)    (INCH/HOUR)
      1       100.50      5.09        8.600
      2       107.81      7.04        6.975

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     107.81   Tc(MIN.) =    7.04
  TOTAL AREA(ACRES) =       25.6

****************************************************************************
  FLOW PROCESS FROM NODE   1029.00 TO NODE   1056.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   251.01  DOWNSTREAM(FEET) =   248.71
  FLOW LENGTH(FEET) =    46.06   MANNING'S N =  0.013
  DEPTH OF FLOW IN  33.0 INCH PIPE IS  25.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  22.04
  ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     107.81
  PIPE TRAVEL TIME(MIN.) =   0.03    Tc(MIN.) =    7.07
  LONGEST FLOWPATH FROM NODE   1000.00 TO NODE   1056.00 =    2237.81 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1029.00 TO NODE   1056.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =    7.07
  RAINFALL INTENSITY(INCH/HR) =   6.95
  TOTAL STREAM AREA(ACRES) =    25.63
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    107.81

****************************************************************************
  FLOW PROCESS FROM NODE   1057.00 TO NODE   1058.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  RESIDENTIAL (24. DU/AC OR LESS) RUNOFF COEFFICIENT = .7100
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  92
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    94.00
  UPSTREAM ELEVATION(FEET) =    310.00
  DOWNSTREAM ELEVATION(FEET) =    303.00
  ELEVATION DIFFERENCE(FEET) =      7.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.486
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.12
  TOTAL AREA(ACRES) =      0.02   TOTAL RUNOFF(CFS) =      0.12

****************************************************************************
  FLOW PROCESS FROM NODE   1058.00 TO NODE   1059.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
```

```
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
================================================================================
  UPSTREAM ELEVATION(FEET) =  303.00  DOWNSTREAM ELEVATION(FEET) =  255.90
  STREET LENGTH(FEET) =   655.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  12.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.015
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.60
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.22
    HALFSTREET FLOOD WIDTH(FEET) =    4.91
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.45
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.00
  STREET FLOW TRAVEL TIME(MIN.) =   2.45   Tc(MIN.) =    5.94
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.783
  RESIDENTIAL (43. DU/AC OR LESS) RUNOFF COEFFICIENT = .7900
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  94
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.787
  SUBAREA AREA(ACRES) =    0.48      SUBAREA RUNOFF(CFS) =    2.95
  TOTAL AREA(ACRES) =        0.5        PEAK FLOW RATE(CFS) =       3.06

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.27   HALFSTREET FLOOD WIDTH(FEET) =   6.98
  FLOW VELOCITY(FEET/SEC.) =  5.05   DEPTH*VELOCITY(FT*FT/SEC.) =   1.34
  LONGEST FLOWPATH FROM NODE   1057.00 TO NODE   1059.00 =     749.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1059.00 TO NODE   1056.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   251.52  DOWNSTREAM(FEET) =   250.21
  FLOW LENGTH(FEET) =    26.25   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   4.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   9.01
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       3.06
  PIPE TRAVEL TIME(MIN.) =   0.05    Tc(MIN.) =    5.99
  LONGEST FLOWPATH FROM NODE   1057.00 TO NODE   1056.00 =     775.25 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1060.00 TO NODE   1056.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.742
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .6280
  S.C.S. CURVE NUMBER (AMC II) =  94
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.6631
  SUBAREA AREA(ACRES) =    1.76   SUBAREA RUNOFF(CFS) =    8.56
  TOTAL AREA(ACRES) =        2.3   TOTAL RUNOFF(CFS) =      11.60
```



```
  TC(MIN.) =    5.99

+----------------------------------------------------------------------------+
| COMPOSITE C FOR C & D SOILS                                                |
| LAND USE - MDR 14.5 DU/A (~50%IMP)                                         |
| (0.6*0.13+.63*1.63)/1.76=0.628                                             |
+----------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   1060.00 TO NODE   1056.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    5.99
  RAINFALL INTENSITY(INCH/HR) =   7.74
  TOTAL STREAM AREA(ACRES) =     2.26
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     11.60

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1      107.81     7.07        6.953         25.63
      2       11.60     5.99        7.742          2.26

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1      102.85     5.99       7.742
      2      118.23     7.07       6.953

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     118.23   Tc(MIN.) =    7.07
  TOTAL AREA(ACRES) =       27.9
  LONGEST FLOWPATH FROM NODE   1000.00 TO NODE   1056.00 =    2237.81 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1056.00 TO NODE   1061.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   248.38  DOWNSTREAM(FEET) =   242.40
  FLOW LENGTH(FEET) =   119.57   MANNING'S N =  0.013
  DEPTH OF FLOW IN  36.0 INCH PIPE IS  24.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  22.92
  ESTIMATED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     118.23
  PIPE TRAVEL TIME(MIN.) =   0.09    Tc(MIN.) =    7.16
  LONGEST FLOWPATH FROM NODE   1000.00 TO NODE   1061.00 =    2357.38 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1062.00 TO NODE   1061.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.898
  *USER SPECIFIED(SUBAREA):
```

```
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3200
  S.C.S. CURVE NUMBER (AMC II) =  94
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.5875
  SUBAREA AREA(ACRES) =    1.70   SUBAREA RUNOFF(CFS) =    3.75
  TOTAL AREA(ACRES) =       29.6   TOTAL RUNOFF(CFS) =     119.91
  TC(MIN.) =    7.16

+---------------------------------------------------------------------------+
| COMPOSITE C FOR A, C, & D SOILS                                           |
| SUBAREA - NATURAL 0% IMPERVIOUS                                           |
| (0.2*0.28+0.15+0.35*1.27)/1.7 = 0.32                                      |
+---------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   1061.00 TO NODE   1063.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   242.07  DOWNSTREAM(FEET) =   233.13
  FLOW LENGTH(FEET) =   148.92   MANNING'S N =  0.013
  DEPTH OF FLOW IN  33.0 INCH PIPE IS  25.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  24.20
  ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     119.91
  PIPE TRAVEL TIME(MIN.) =   0.10    Tc(MIN.) =    7.26
  LONGEST FLOWPATH FROM NODE   1000.00 TO NODE   1063.00 =    2506.30 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1061.00 TO NODE   1063.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 3 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE   1064.00 TO NODE   1065.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  STREETS & ROADS (CURBS/STORM DRAINS) RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  98
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    55.00
  UPSTREAM ELEVATION(FEET) =    264.84
  DOWNSTREAM ELEVATION(FEET) =    264.34
  ELEVATION DIFFERENCE(FEET) =      0.50
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.169
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.15
  TOTAL AREA(ACRES) =      0.02   TOTAL RUNOFF(CFS) =      0.15

****************************************************************************
  FLOW PROCESS FROM NODE   1065.00 TO NODE   1066.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  264.34  DOWNSTREAM ELEVATION(FEET) =  257.00
  STREET LENGTH(FEET) =   315.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  12.00
```



```
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.015
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       3.15
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.31
    HALFSTREET FLOOD WIDTH(FEET) =    9.14
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.30
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.02
  STREET FLOW TRAVEL TIME(MIN.) =   1.59   Tc(MIN.) =    4.76
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (24. DU/AC OR LESS) RUNOFF COEFFICIENT = .6970
  S.C.S. CURVE NUMBER (AMC II) =  98
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.700
  SUBAREA AREA(ACRES) =    0.99      SUBAREA RUNOFF(CFS) =    6.00
  TOTAL AREA(ACRES) =        1.0        PEAK FLOW RATE(CFS) =       6.15

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.37   HALFSTREET FLOOD WIDTH(FEET) =  12.23
  FLOW VELOCITY(FEET/SEC.) =  3.81   DEPTH*VELOCITY(FT*FT/SEC.) =   1.41
  LONGEST FLOWPATH FROM NODE   1064.00 TO NODE   1066.00 =     370.00 FEET.

+---------------------------------------------------------------------------+
| COMPOSITE C FOR A & D SOILS                                               |
| SUBAREA - HDR 24.0 DU/A OR LESS (~65% IMP)                                |
| ((0.66*0.25)+(0.71*0.74))/0.99 = 0.697                                    |
+---------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   1066.00 TO NODE   1067.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   252.05  DOWNSTREAM(FEET) =   251.74
  FLOW LENGTH(FEET) =     6.28   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   6.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  10.94
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       6.15
  PIPE TRAVEL TIME(MIN.) =   0.01    Tc(MIN.) =    4.77
  LONGEST FLOWPATH FROM NODE   1064.00 TO NODE   1067.00 =     376.28 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1068.00 TO NODE   1067.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (24. DU/AC OR LESS) RUNOFF COEFFICIENT = .7030
  S.C.S. CURVE NUMBER (AMC II) =  98
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.7019
  SUBAREA AREA(ACRES) =    1.40   SUBAREA RUNOFF(CFS) =    8.56
```

```
  TOTAL AREA(ACRES) =        2.4   TOTAL RUNOFF(CFS) =      14.71
  TC(MIN.) =    4.77

+-------------------------------------------------------------------------+
| COMPOSITE C FOR A & D SOILS                                             |
| SUBAREA - HDR 24.0 DU/A OR LESS (~65% IMP)                              |
| ((0.66*0.21)+(0.71*1.19)/1.4 = 0.703                                    |
+-------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   1067.00 TO NODE   1069.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   251.41  DOWNSTREAM(FEET) =   241.49
  FLOW LENGTH(FEET) =   330.61   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  12.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  11.22
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      14.71
  PIPE TRAVEL TIME(MIN.) =   0.49    Tc(MIN.) =    5.26
  LONGEST FLOWPATH FROM NODE   1064.00 TO NODE   1069.00 =     706.89 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1067.00 TO NODE   1069.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =    5.26
  RAINFALL INTENSITY(INCH/HR) =   8.42
  TOTAL STREAM AREA(ACRES) =     2.41
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     14.71

****************************************************************************
  FLOW PROCESS FROM NODE   1070.00 TO NODE   1071.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  STREETS & ROADS (CURBS/STORM DRAINS) RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "A"
  S.C.S. CURVE NUMBER (AMC II) =  98
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    60.00
  UPSTREAM ELEVATION(FEET) =    257.30
  DOWNSTREAM ELEVATION(FEET) =    256.00
  ELEVATION DIFFERENCE(FEET) =      1.30
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.478
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.15
  TOTAL AREA(ACRES) =      0.02   TOTAL RUNOFF(CFS) =      0.15

****************************************************************************
  FLOW PROCESS FROM NODE   1071.00 TO NODE   1072.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  256.00  DOWNSTREAM ELEVATION(FEET) =  248.88
  STREET LENGTH(FEET) =   297.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00
```



```
  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  12.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.015
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       3.04
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.31
    HALFSTREET FLOOD WIDTH(FEET) =    8.95
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.30
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.01
  STREET FLOW TRAVEL TIME(MIN.) =   1.50   Tc(MIN.) =    3.98
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (24. DU/AC OR LESS) RUNOFF COEFFICIENT = .6710
  S.C.S. CURVE NUMBER (AMC II) =  98
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.675
  SUBAREA AREA(ACRES) =    0.99      SUBAREA RUNOFF(CFS) =    5.78
  TOTAL AREA(ACRES) =        1.0        PEAK FLOW RATE(CFS) =       5.93

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.37   HALFSTREET FLOOD WIDTH(FEET) =  11.95
  FLOW VELOCITY(FEET/SEC.) =  3.83   DEPTH*VELOCITY(FT*FT/SEC.) =   1.40
  LONGEST FLOWPATH FROM NODE   1070.00 TO NODE   1072.00 =     357.00 FEET.

+-------------------------------------------------------------------------+
| COMPOSITE C FOR A & C SOILS                                             |
| SUBAREA - HDR 24.0 DU/A OR LESS                                         |
| ((0.66*0.64)+(0.69*0.35)/0.99 = 0.671                                   |
+-------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   1072.00 TO NODE   1069.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   241.80  DOWNSTREAM(FEET) =   241.49
  FLOW LENGTH(FEET) =     6.25   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   6.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  10.84
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =        5.93
  PIPE TRAVEL TIME(MIN.) =   0.01    Tc(MIN.) =    3.99
  LONGEST FLOWPATH FROM NODE   1070.00 TO NODE   1069.00 =     363.25 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1073.00 TO NODE   1069.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (24. DU/AC OR LESS) RUNOFF COEFFICIENT = .6680
  S.C.S. CURVE NUMBER (AMC II) =  98
```

```
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.6715
  SUBAREA AREA(ACRES) =    1.01   SUBAREA RUNOFF(CFS) =    5.87
  TOTAL AREA(ACRES) =        2.0   TOTAL RUNOFF(CFS) =      11.79
  TC(MIN.) =    3.99

+----------------------------------------------------------------------------+
| COMPOSITE C FOR A, C, & D SOILS                                            |
| SUBAREA - HDR 24.0 DU/A OR LESS (65% IMP)                                  |
| ((0.66*.80)+(0.69*0.10)+(0.71*0.11))/1.01 = 0.668                          |
+----------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   1073.00 TO NODE   1069.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    3.99
  RAINFALL INTENSITY(INCH/HR) =   8.69
  TOTAL STREAM AREA(ACRES) =     2.02
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     11.79

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       14.71     5.26        8.416         2.41
      2       11.79     3.99        8.695         2.02

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF       Tc      INTENSITY
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)
      1       22.94     3.99        8.695
      2       26.12     5.26        8.416

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      26.12   Tc(MIN.) =    5.26
  TOTAL AREA(ACRES) =        4.4
  LONGEST FLOWPATH FROM NODE   1064.00 TO NODE   1069.00 =     706.89 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1069.00 TO NODE   1063.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   241.16  DOWNSTREAM(FEET) =   234.63
  FLOW LENGTH(FEET) =   186.45   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  15.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  13.61
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      26.12
  PIPE TRAVEL TIME(MIN.) =   0.23    Tc(MIN.) =    5.49
  LONGEST FLOWPATH FROM NODE   1064.00 TO NODE   1063.00 =     893.34 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1069.00 TO NODE   1063.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
```



```
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       26.12     5.49        8.188         4.43
  LONGEST FLOWPATH FROM NODE   1064.00 TO NODE   1063.00 =     893.34 FEET.

  ** MEMORY BANK #  3 CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1      119.91     7.26        6.835        29.59
  LONGEST FLOWPATH FROM NODE   1000.00 TO NODE   1063.00 =    2506.30 FEET.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF       Tc      INTENSITY
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)
      1      116.74       5.49        8.188
      2      141.72       7.26        6.835

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     141.72   Tc(MIN.) =    7.26
  TOTAL AREA(ACRES) =       34.0

****************************************************************************
  FLOW PROCESS FROM NODE   1063.00 TO NODE   1074.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   232.13  DOWNSTREAM(FEET) =   231.38
  FLOW LENGTH(FEET) =    50.15   MANNING'S N =  0.013
  DEPTH OF FLOW IN  45.0 INCH PIPE IS  36.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  14.88
  ESTIMATED PIPE DIAMETER(INCH) =  45.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     141.72
  PIPE TRAVEL TIME(MIN.) =   0.06    Tc(MIN.) =    7.32
  LONGEST FLOWPATH FROM NODE   1000.00 TO NODE   1074.00 =    2556.45 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1063.00 TO NODE   1074.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =    7.32
  RAINFALL INTENSITY(INCH/HR) =   6.80
  TOTAL STREAM AREA(ACRES) =    34.02
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    141.72

****************************************************************************
  FLOW PROCESS FROM NODE   1075.00 TO NODE   1076.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  STREETS & ROADS (CURBS/STORM DRAINS) RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "C"
  S.C.S. CURVE NUMBER (AMC II) =  98
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    60.00
  UPSTREAM ELEVATION(FEET) =    249.82
  DOWNSTREAM ELEVATION(FEET) =    248.50
  ELEVATION DIFFERENCE(FEET) =      1.32
```

```
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.466
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.15
  TOTAL AREA(ACRES) =      0.02   TOTAL RUNOFF(CFS) =      0.15

****************************************************************************
  FLOW PROCESS FROM NODE   1076.00 TO NODE   1077.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  248.50  DOWNSTREAM ELEVATION(FEET) =  246.00
  STREET LENGTH(FEET) =   247.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  12.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.015
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       4.43
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.31
    HALFSTREET FLOOD WIDTH(FEET) =    9.42
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.20
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.69
  STREET FLOW TRAVEL TIME(MIN.) =   1.87   Tc(MIN.) =    4.33
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (24. DU/AC OR LESS) RUNOFF COEFFICIENT = .6840
  S.C.S. CURVE NUMBER (AMC II) =  98
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.687
  SUBAREA AREA(ACRES) =    1.44      SUBAREA RUNOFF(CFS) =    8.56
  TOTAL AREA(ACRES) =        1.5        PEAK FLOW RATE(CFS) =       8.72

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.38   HALFSTREET FLOOD WIDTH(FEET) =  12.61
  FLOW VELOCITY(FEET/SEC.) =  2.55   DEPTH*VELOCITY(FT*FT/SEC.) =   0.97
  LONGEST FLOWPATH FROM NODE   1075.00 TO NODE   1077.00 =     307.00 FEET.

+--------------------------------------------------------------------------+
| COMPOSITE C FOR A, C, & D SOILS                                          |
| SUBAREA - HDR 24.0 DU/A OR LESS (~65% IMP)                               |
| (0.66*0.30+0.69*1.11+0.71*0.03)/1.44 = 0.684                             |
+--------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   1077.00 TO NODE   1074.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   234.17  DOWNSTREAM(FEET) =   233.88
  FLOW LENGTH(FEET) =     5.75   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   7.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  12.11
```



```
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =        8.72
  PIPE TRAVEL TIME(MIN.) =   0.01    Tc(MIN.) =    4.34
  LONGEST FLOWPATH FROM NODE   1075.00 TO NODE   1074.00 =     312.75 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1078.00 TO NODE   1074.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  *USER SPECIFIED(SUBAREA):
  NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .7700
  S.C.S. CURVE NUMBER (AMC II) =  98
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.6979
  SUBAREA AREA(ACRES) =    0.23   SUBAREA RUNOFF(CFS) =    1.54
  TOTAL AREA(ACRES) =        1.7   TOTAL RUNOFF(CFS) =      10.25
  TC(MIN.) =    4.34

+--------------------------------------------------------------------------+
| COMPOSITE C FOR A, C, & D SOILS                                          |
| SUBAREA - N.COM                                                          |
| (0.76*0.1+0.78*0.08+0.79*0.05)/0.23=0.77                                 |
+--------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   1078.00 TO NODE   1074.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    4.34
  RAINFALL INTENSITY(INCH/HR) =   8.69
  TOTAL STREAM AREA(ACRES) =     1.69
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     10.25

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1      141.72     7.32        6.801         34.02
      2       10.25     4.34        8.695          1.69

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF       Tc      INTENSITY
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)
      1       94.34     4.34        8.695
      2      149.74     7.32        6.801

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     149.74   Tc(MIN.) =    7.32
  TOTAL AREA(ACRES) =       35.7
  LONGEST FLOWPATH FROM NODE   1000.00 TO NODE   1074.00 =    2556.45 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1074.00 TO NODE   1079.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
```

```
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   231.05  DOWNSTREAM(FEET) =   228.00
  FLOW LENGTH(FEET) =   188.45   MANNING'S N =  0.013
  DEPTH OF FLOW IN  45.0 INCH PIPE IS  36.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  15.48
  ESTIMATED PIPE DIAMETER(INCH) =  45.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     149.74
  PIPE TRAVEL TIME(MIN.) =   0.20    Tc(MIN.) =    7.52
  LONGEST FLOWPATH FROM NODE   1000.00 TO NODE   1079.00 =    2744.90 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1074.00 TO NODE   1079.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
================================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =    7.52
  RAINFALL INTENSITY(INCH/HR) =   6.68
  TOTAL STREAM AREA(ACRES) =    35.71
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    149.74

****************************************************************************
  FLOW PROCESS FROM NODE   1105.00 TO NODE   1079.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<
================================================================================
  USER-SPECIFIED VALUES ARE AS FOLLOWS:
  TC(MIN) =   9.14   RAIN INTENSITY(INCH/HOUR) =  5.89
  TOTAL AREA(ACRES) =     3.60   TOTAL RUNOFF(CFS) =     18.44

****************************************************************************
  FLOW PROCESS FROM NODE   1105.00 TO NODE   1079.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
================================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    9.14
  RAINFALL INTENSITY(INCH/HR) =   5.89
  TOTAL STREAM AREA(ACRES) =     3.60
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     18.44

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1      149.74     7.52        6.682         35.71
      2       18.44     9.14        5.892          3.60

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF       Tc      INTENSITY
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)
      1      164.91     7.52        6.682
      2      150.48     9.14        5.892

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     164.91   Tc(MIN.) =    7.52
  TOTAL AREA(ACRES) =       39.3
```



```
  LONGEST FLOWPATH FROM NODE   1000.00 TO NODE   1079.00 =    2744.90 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1079.00 TO NODE   1215.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.682
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .2800
  S.C.S. CURVE NUMBER (AMC II) =  98
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.6050
  SUBAREA AREA(ACRES) =     2.95   SUBAREA RUNOFF(CFS) =     5.52
  TOTAL AREA(ACRES) =       42.3   TOTAL RUNOFF(CFS) =     170.84
  TC(MIN.) =    7.52

+----------------------------------------------------------------------------+
| COMPOSITE C FOR A, C, & D SOILS                                            |
| SUBAREA - NATURAL 0% IMPERVIOUS                                            |
| (0.2*1.17+0.30*0.59+0.35*1.19)/2.95 =0.28                                  |
+----------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   1084.00 TO NODE   1215.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.682
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .2570
  S.C.S. CURVE NUMBER (AMC II) =  98
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.6026
  SUBAREA AREA(ACRES) =     0.29   SUBAREA RUNOFF(CFS) =     0.50
  TOTAL AREA(ACRES) =       42.5   TOTAL RUNOFF(CFS) =     171.34
  TC(MIN.) =    7.52

+----------------------------------------------------------------------------+
| COMPOSITE C FOR A & D SOILS                                                |
| SUBAREA - NATURAL 0% IMP                                                   |
| (0.2*.18+0.35*0.11)/0.29=0.257                                             |
+----------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   1079.00 TO NODE   1215.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
================================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =    7.52
  RAINFALL INTENSITY(INCH/HR) =   6.68
  TOTAL STREAM AREA(ACRES) =    42.55
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    171.34

****************************************************************************
  FLOW PROCESS FROM NODE   1211.00 TO NODE   1215.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<
================================================================================
  USER-SPECIFIED VALUES ARE AS FOLLOWS:
  TC(MIN) =   5.60   RAIN INTENSITY(INCH/HOUR) =  8.08
  TOTAL AREA(ACRES) =     6.70   TOTAL RUNOFF(CFS) =     36.60
```

```
****************************************************************************
  FLOW PROCESS FROM NODE   1211.00 TO NODE   1215.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    5.60
  RAINFALL INTENSITY(INCH/HR) =   8.08
  TOTAL STREAM AREA(ACRES) =     6.70
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     36.60

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1      171.34     7.52        6.682         42.55
      2       36.60     5.60        8.082          6.70

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF       Tc      INTENSITY
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)
      1      178.26     5.60       8.082
      2      201.60     7.52       6.682

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     201.60   Tc(MIN.) =    7.52
  TOTAL AREA(ACRES) =       49.2
  LONGEST FLOWPATH FROM NODE   1000.00 TO NODE   1215.00 =    2744.90 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1215.00 TO NODE   1216.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   218.65  DOWNSTREAM(FEET) =   218.00
  FLOW LENGTH(FEET) =    64.78   MANNING'S N =  0.013
  DEPTH OF FLOW IN  57.0 INCH PIPE IS  42.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  14.18
  ESTIMATED PIPE DIAMETER(INCH) =  57.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     201.60
  PIPE TRAVEL TIME(MIN.) =   0.08    Tc(MIN.) =    7.60
  LONGEST FLOWPATH FROM NODE   1000.00 TO NODE   1216.00 =    2809.68 FEET.
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =       49.2  TC(MIN.) =      7.60
  PEAK FLOW RATE(CFS)   =     201.60
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

```
****************************************************************************

          RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT
                       2003,1985,1981 HYDROLOGY MANUAL
        (c) Copyright 1982-2016 Advanced Engineering Software (aes)
            Ver. 23.0 Release Date: 07/01/2016  License ID 1509

                        Analysis prepared by:




 ************************** DESCRIPTION OF STUDY **************************
* OCEAN BREEZE RANCH - PA1                                                *
* SYSTEM 1100 - PROPOSED CONDITIONS                                       *
* NORTHWEST QUADRANT                                                      *
 ***************************************************************************

  FILE NAME: 1100P100.DAT
  TIME/DATE OF STUDY: 10:53 05/31/2024
----------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
----------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) = 100.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   3.300
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  ========  ================  ======  =====  ====  =====  =======
  1   18.0     12.0    0.020/0.020/0.015   0.50    1.50 0.0313 0.125 0.0150
  2   20.0     13.0    0.020/0.020/0.015   0.50    1.50 0.0313 0.125 0.0150
  3   16.0     11.0    0.020/0.020/0.015   0.50    1.50 0.0313 0.125 0.0150
  4   12.0      7.0    0.020/0.020/0.015   0.50    1.50 0.0100 0.010 0.0160
  5   17.0     12.0    0.020/0.020/0.015   0.33    1.50 0.0100 0.010 0.0160

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth = -0.10 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

****************************************************************************
  FLOW PROCESS FROM NODE   1100.00 TO NODE   1101.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  STREETS & ROADS (CURBS/STORM DRAINS) RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "B"
  S.C.S. CURVE NUMBER (AMC II) =  98
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    60.00
  UPSTREAM ELEVATION(FEET) =    302.83
```



```
  DOWNSTREAM ELEVATION(FEET) =    301.51
  ELEVATION DIFFERENCE(FEET) =      1.32
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.466
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.23
  TOTAL AREA(ACRES) =      0.03   TOTAL RUNOFF(CFS) =      0.23

****************************************************************************
  FLOW PROCESS FROM NODE   1101.00 TO NODE   1102.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  301.51  DOWNSTREAM ELEVATION(FEET) =  262.61
  STREET LENGTH(FEET) =  1224.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 20.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.015
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       2.57
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.28
    HALFSTREET FLOOD WIDTH(FEET) =    7.79
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.54
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.00
  STREET FLOW TRAVEL TIME(MIN.) =   5.76   Tc(MIN.) =    8.22
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.309
  *USER SPECIFIED(SUBAREA):
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  S.C.S. CURVE NUMBER (AMC II) =  98
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    0.83      SUBAREA RUNOFF(CFS) =    4.56
  TOTAL AREA(ACRES) =        0.9        PEAK FLOW RATE(CFS) =       4.72

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.33   HALFSTREET FLOOD WIDTH(FEET) =  10.22
  FLOW VELOCITY(FEET/SEC.) =  4.06   DEPTH*VELOCITY(FT*FT/SEC.) =   1.34
  LONGEST FLOWPATH FROM NODE   1100.00 TO NODE   1102.00 =    1284.00 FEET.

+--------------------------------------------------------------------------+
| COMPOSITE C FOR B, C, & D SOILS                                          |
| SUBAREA - FOR GENERAL INDUSTRIAL                                         |
| C = 0.8700                                                               |
+--------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   1102.00 TO NODE   1108.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   256.59  DOWNSTREAM(FEET) =   256.18
  FLOW LENGTH(FEET) =    40.50   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   8.6 INCHES
```

```
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.70
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       4.72
  PIPE TRAVEL TIME(MIN.) =   0.12    Tc(MIN.) =    8.34
  LONGEST FLOWPATH FROM NODE   1100.00 TO NODE   1108.00 =    1324.50 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1108.00 TO NODE   1108.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.251
  *USER SPECIFIED(SUBAREA):
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  S.C.S. CURVE NUMBER (AMC II) =  98
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.8700
  SUBAREA AREA(ACRES) =    1.55   SUBAREA RUNOFF(CFS) =    8.43
  TOTAL AREA(ACRES) =        2.4   TOTAL RUNOFF(CFS) =      13.11
  TC(MIN.) =    8.34

+--------------------------------------------------------------------------+
| COMPOSITE C FOR A-D SOILS                                                |
| SUBAREA - ROAD/STREET                                                    |
| C=0.87                                                                   |
+--------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   1108.00 TO NODE   1103.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   255.85  DOWNSTREAM(FEET) =   234.66
  FLOW LENGTH(FEET) =   541.11   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  10.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  12.19
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      13.11
  PIPE TRAVEL TIME(MIN.) =   0.74    Tc(MIN.) =    9.08
  LONGEST FLOWPATH FROM NODE   1100.00 TO NODE   1103.00 =    1865.61 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1104.00 TO NODE   1103.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.918
  *USER SPECIFIED(SUBAREA):
  NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .7800
  S.C.S. CURVE NUMBER (AMC II) =  98
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.8509
  SUBAREA AREA(ACRES) =    0.65   SUBAREA RUNOFF(CFS) =    3.00
  TOTAL AREA(ACRES) =        3.1   TOTAL RUNOFF(CFS) =      15.41
  TC(MIN.) =    9.08

+--------------------------------------------------------------------------+
| COMPOSITE C FOR A & D SOILS                                              |
| SUBAREA - ROAD/STREET - LESS IMPERVIOUS, SO USED COMMERCIAL              |
| (0.37*0.79+0.28*0.76)/0.65=0.78                                          |
+--------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   1103.00 TO NODE   1105.00 IS CODE =  31
```



```
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   234.33  DOWNSTREAM(FEET) =   232.26
  FLOW LENGTH(FEET) =    21.75   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   8.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  17.76
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      15.41
  PIPE TRAVEL TIME(MIN.) =   0.02    Tc(MIN.) =    9.10
  LONGEST FLOWPATH FROM NODE   1100.00 TO NODE   1105.00 =    1887.36 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1103.00 TO NODE   1105.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =    9.10
  RAINFALL INTENSITY(INCH/HR) =   5.91
  TOTAL STREAM AREA(ACRES) =     3.06
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     15.41

****************************************************************************
  FLOW PROCESS FROM NODE   1106.00 TO NODE   1107.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  STREETS & ROADS (CURBS/STORM DRAINS) RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "A"
  S.C.S. CURVE NUMBER (AMC II) =  98
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    55.00
  UPSTREAM ELEVATION(FEET) =    259.84
  DOWNSTREAM ELEVATION(FEET) =    258.45
  ELEVATION DIFFERENCE(FEET) =      1.39
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.254
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.15
  TOTAL AREA(ACRES) =      0.02   TOTAL RUNOFF(CFS) =      0.15

****************************************************************************
  FLOW PROCESS FROM NODE   1107.00 TO NODE   1105.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  258.45  DOWNSTREAM ELEVATION(FEET) =  243.74
  STREET LENGTH(FEET) =   460.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  12.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.015
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
```

```
    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       2.31
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.27
    HALFSTREET FLOOD WIDTH(FEET) =    7.36
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.50
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.96
  STREET FLOW TRAVEL TIME(MIN.) =   2.19   Tc(MIN.) =    4.45
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  *USER SPECIFIED(SUBAREA):
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  S.C.S. CURVE NUMBER (AMC II) =  98
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    0.57      SUBAREA RUNOFF(CFS) =    4.31
  TOTAL AREA(ACRES) =        0.6        PEAK FLOW RATE(CFS) =       4.46

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.33   HALFSTREET FLOOD WIDTH(FEET) =   9.98
  FLOW VELOCITY(FEET/SEC.) =  4.00   DEPTH*VELOCITY(FT*FT/SEC.) =   1.30
  LONGEST FLOWPATH FROM NODE   1106.00 TO NODE   1105.00 =     515.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1107.00 TO NODE   1105.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    4.45
  RAINFALL INTENSITY(INCH/HR) =   8.69
  TOTAL STREAM AREA(ACRES) =     0.59
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.46

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       15.41     9.10        5.909          3.06
      2        4.46     4.45        8.695          0.59

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       11.99     4.45       8.695
      2       18.44     9.10       5.909

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      18.44   Tc(MIN.) =    9.10
  TOTAL AREA(ACRES) =        3.6
  LONGEST FLOWPATH FROM NODE   1100.00 TO NODE   1105.00 =    1887.36 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1105.00 TO NODE   1079.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   231.93  DOWNSTREAM(FEET) =   228.00
  FLOW LENGTH(FEET) =    41.36   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
```



```
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   9.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  18.55
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      18.44
  PIPE TRAVEL TIME(MIN.) =   0.04    Tc(MIN.) =    9.14
  LONGEST FLOWPATH FROM NODE   1100.00 TO NODE   1079.00 =    1928.72 FEET.
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =        3.6  TC(MIN.) =      9.14
  PEAK FLOW RATE(CFS)   =       18.44
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

```
**************************************************************************

          RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT
                       2003,1985,1981 HYDROLOGY MANUAL
        (c) Copyright 1982-2016 Advanced Engineering Software (aes)
            Ver. 23.0 Release Date: 07/01/2016  License ID 1509

                        Analysis prepared by:




 ************************* DESCRIPTION OF STUDY *************************
* OCEAN BREEZE RANCH - PA1                                              *
* SYSTEM 1200 - PROPOSED CONDITIONS                                     *
* NORTHWEST QUADRANT                                                    *
 ************************************************************************

  FILE NAME: 1200P100.DAT
  TIME/DATE OF STUDY: 10:54 05/31/2024
------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) = 100.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   3.300
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  ========  ================  ======  ===== ====== ===== =======
  1   18.0     12.0    0.020/0.020/0.015   0.50    1.50 0.0313 0.125 0.0150
  2   20.0     13.0    0.020/0.020/0.015   0.50    1.50 0.0313 0.125 0.0150
  3   16.0     11.0    0.020/0.020/0.015   0.50    1.50 0.0313 0.125 0.0150
  4   12.0      7.0    0.020/0.020/0.015   0.50    1.50 0.0100 0.010 0.0160
  5   17.0     12.0    0.020/0.020/0.015   0.33    1.50 0.0100 0.010 0.0160

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth = -0.10 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

**************************************************************************
  FLOW PROCESS FROM NODE   1200.00 TO NODE   1201.00 IS CODE =  21
------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
========================================================================
  STREETS & ROADS (CURBS/STORM DRAINS) RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  98
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    90.00
  UPSTREAM ELEVATION(FEET) =    316.00
```



```
  DOWNSTREAM ELEVATION(FEET) =    310.72
  ELEVATION DIFFERENCE(FEET) =      5.28
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.178
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.38
  TOTAL AREA(ACRES) =      0.05   TOTAL RUNOFF(CFS) =      0.38

**************************************************************************
  FLOW PROCESS FROM NODE   1201.00 TO NODE   1202.00 IS CODE =  62
------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
========================================================================
  UPSTREAM ELEVATION(FEET) =  310.72  DOWNSTREAM ELEVATION(FEET) =  270.41
  STREET LENGTH(FEET) =   569.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  12.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.015
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       2.16
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.24
    HALFSTREET FLOOD WIDTH(FEET) =    5.82
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.71
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.14
  STREET FLOW TRAVEL TIME(MIN.) =   2.01   Tc(MIN.) =    4.19
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  *USER SPECIFIED(SUBAREA):
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  S.C.S. CURVE NUMBER (AMC II) =  98
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    0.47      SUBAREA RUNOFF(CFS) =    3.56
  TOTAL AREA(ACRES) =        0.5        PEAK FLOW RATE(CFS) =       3.93

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.28   HALFSTREET FLOOD WIDTH(FEET) =   7.92
  FLOW VELOCITY(FEET/SEC.) =  5.27   DEPTH*VELOCITY(FT*FT/SEC.) =   1.50
  LONGEST FLOWPATH FROM NODE   1200.00 TO NODE   1202.00 =     659.00 FEET.

+------------------------------------------------------------------------+
| COMPOSITE C FOR C & D SOILS                                            |
| STREET & ROADS                                                         |
| (0.87*0.07+0.87*0.4)/0.47=0.87                                         |
+------------------------------------------------------------------------+

**************************************************************************
  FLOW PROCESS FROM NODE   1217.00 TO NODE   1202.00 IS CODE =  81
------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
========================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3480
```

```
  S.C.S. CURVE NUMBER (AMC II) =  98
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.6141
  SUBAREA AREA(ACRES) =     0.50   SUBAREA RUNOFF(CFS) =     1.51
  TOTAL AREA(ACRES) =        1.0   TOTAL RUNOFF(CFS) =       5.45
  TC(MIN.) =    4.19

+----------------------------------------------------------------------------+
| NATURAL SLOPES                                                             |
| COMPOSITE C (C&D)                                                          |
| (0.02*0.3+0.48*0.35)/0.50=0.348                                            |
+----------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   1203.00 TO NODE   1202.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  *USER SPECIFIED(SUBAREA):
  URBAN NEWLY GRADED AREAS RUNOFF COEFFICIENT = .3481
  S.C.S. CURVE NUMBER (AMC II) =  98
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.5601
  SUBAREA AREA(ACRES) =     0.26   SUBAREA RUNOFF(CFS) =     0.79
  TOTAL AREA(ACRES) =        1.3   TOTAL RUNOFF(CFS) =       6.23
  TC(MIN.) =    4.19

+----------------------------------------------------------------------------+
| COMPOSITE C FOR C & D SOILS                                                |
| SUBAREA - OPEN SPACE                                                       |
| ((0.30*0.01)+(0.35*0.25))/0.26 = 0.3481                                    |
+----------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   1202.00 TO NODE   1204.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   263.17  DOWNSTREAM(FEET) =   262.91
  FLOW LENGTH(FEET) =    26.25   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  10.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.05
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       6.23
  PIPE TRAVEL TIME(MIN.) =   0.07    Tc(MIN.) =    4.26
  LONGEST FLOWPATH FROM NODE   1200.00 TO NODE   1204.00 =     685.25 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1205.00 TO NODE   1204.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  *USER SPECIFIED(SUBAREA):
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  S.C.S. CURVE NUMBER (AMC II) =  98
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.6407
  SUBAREA AREA(ACRES) =     0.45   SUBAREA RUNOFF(CFS) =     3.40
  TOTAL AREA(ACRES) =        1.7   TOTAL RUNOFF(CFS) =       9.64
  TC(MIN.) =    4.26
```



```
+----------------------------------------------------------------------------+
| C SOILS                                                                    |
| ROAD & STREET - 0.87                                                       |
|                                                                            |
+----------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   1204.00 TO NODE   1206.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   262.58  DOWNSTREAM(FEET) =   238.08
  FLOW LENGTH(FEET) =   374.53   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   7.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  13.69
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       9.64
  PIPE TRAVEL TIME(MIN.) =   0.46    Tc(MIN.) =    4.72
  LONGEST FLOWPATH FROM NODE   1200.00 TO NODE   1206.00 =    1059.78 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1204.00 TO NODE   1206.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =    4.72
  RAINFALL INTENSITY(INCH/HR) =   8.69
  TOTAL STREAM AREA(ACRES) =     1.73
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      9.64

****************************************************************************
  FLOW PROCESS FROM NODE   1207.00 TO NODE   1208.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  STREETS & ROADS (CURBS/STORM DRAINS) RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  98
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    60.00
  UPSTREAM ELEVATION(FEET) =    270.84
  DOWNSTREAM ELEVATION(FEET) =    268.41
  ELEVATION DIFFERENCE(FEET) =      2.43
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.012
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.23
  TOTAL AREA(ACRES) =      0.03   TOTAL RUNOFF(CFS) =      0.23

****************************************************************************
  FLOW PROCESS FROM NODE   1208.00 TO NODE   1209.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  268.41  DOWNSTREAM ELEVATION(FEET) =  245.00
  STREET LENGTH(FEET) =   476.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00
```

```
  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  12.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.015
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       6.69
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.29
    HALFSTREET FLOOD WIDTH(FEET) =    8.02
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.40
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.26
  STREET FLOW TRAVEL TIME(MIN.) =   1.80   Tc(MIN.) =    3.82
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (24. DU/AC OR LESS) RUNOFF COEFFICIENT = .7010
  S.C.S. CURVE NUMBER (AMC II) =  98
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.703
  SUBAREA AREA(ACRES) =    2.12      SUBAREA RUNOFF(CFS) =   12.92
  TOTAL AREA(ACRES) =        2.1        PEAK FLOW RATE(CFS) =      13.15

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.34   HALFSTREET FLOOD WIDTH(FEET) =  10.73
  FLOW VELOCITY(FEET/SEC.) =  5.17   DEPTH*VELOCITY(FT*FT/SEC.) =   1.76
  LONGEST FLOWPATH FROM NODE   1207.00 TO NODE   1209.00 =     536.00 FEET.

+----------------------------------------------------------------------------+
| COMPOSITE C FOR C & D SOILS                                                |
| SUBARE - HDR 24.0 DU/A OR LESS (~65% IMP)                                  |
| ((0.69*0.95)+(0.71*1.17))/2.12 = 0.701                                     |
+----------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   1209.00 TO NODE   1206.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   242.02  DOWNSTREAM(FEET) =   238.08
  FLOW LENGTH(FEET) =    26.25   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   7.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  20.16
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      13.15
  PIPE TRAVEL TIME(MIN.) =   0.02    Tc(MIN.) =    3.84
  LONGEST FLOWPATH FROM NODE   1207.00 TO NODE   1206.00 =     562.25 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1210.00 TO NODE   1206.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "C"
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.7207
```



```
  SUBAREA AREA(ACRES) =    0.25   SUBAREA RUNOFF(CFS) =    1.89
  TOTAL AREA(ACRES) =       2.4   TOTAL RUNOFF(CFS) =     15.04
  TC(MIN.) =    3.84

+----------------------------------------------------------------------------+
| ROAD & STREET                                                              |
| C=0.87                                                                     |
|                                                                            |
+----------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   1210.00 TO NODE   1206.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    3.84
  RAINFALL INTENSITY(INCH/HR) =   8.69
  TOTAL STREAM AREA(ACRES) =     2.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     15.04

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        9.64     4.72        8.695          1.73
      2       15.04     3.84        8.695          2.40

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF       Tc      INTENSITY
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)
      1       22.88     3.84        8.695
      2       24.68     4.72        8.695

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      24.68   Tc(MIN.) =    4.72
  TOTAL AREA(ACRES) =        4.1
  LONGEST FLOWPATH FROM NODE   1200.00 TO NODE   1206.00 =    1059.78 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1206.00 TO NODE   1211.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   237.75  DOWNSTREAM(FEET) =   230.73
  FLOW LENGTH(FEET) =   352.74   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  16.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  10.98
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      24.68
  PIPE TRAVEL TIME(MIN.) =   0.54    Tc(MIN.) =    5.25
  LONGEST FLOWPATH FROM NODE   1200.00 TO NODE   1211.00 =    1412.52 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1206.00 TO NODE   1211.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
```

```
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =    5.25
  RAINFALL INTENSITY(INCH/HR) =   8.42
  TOTAL STREAM AREA(ACRES) =     4.13
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     24.68

****************************************************************************
  FLOW PROCESS FROM NODE   1212.00 TO NODE   1213.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  STREETS & ROADS (CURBS/STORM DRAINS) RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "C"
  S.C.S. CURVE NUMBER (AMC II) =  98
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    73.00
  UPSTREAM ELEVATION(FEET) =    243.45
  DOWNSTREAM ELEVATION(FEET) =    241.51
  ELEVATION DIFFERENCE(FEET) =      1.94
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.554
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.15
  TOTAL AREA(ACRES) =      0.02   TOTAL RUNOFF(CFS) =      0.15

****************************************************************************
  FLOW PROCESS FROM NODE   1213.00 TO NODE   1211.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  241.51  DOWNSTREAM ELEVATION(FEET) =  235.36
  STREET LENGTH(FEET) =   288.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 16.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  11.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.015
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       4.29
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.34
    HALFSTREET FLOOD WIDTH(FEET) =   10.71
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.39
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.15
  STREET FLOW TRAVEL TIME(MIN.) =   1.42   Tc(MIN.) =    3.97
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (7.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5600
  S.C.S. CURVE NUMBER (AMC II) =  98
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.564
  SUBAREA AREA(ACRES) =    1.70      SUBAREA RUNOFF(CFS) =    8.28
  TOTAL AREA(ACRES) =        1.7        PEAK FLOW RATE(CFS) =       8.43

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.41   HALFSTREET FLOOD WIDTH(FEET) =  14.15
  FLOW VELOCITY(FEET/SEC.) =  3.97   DEPTH*VELOCITY(FT*FT/SEC.) =   1.63
```



```
  LONGEST FLOWPATH FROM NODE   1212.00 TO NODE   1211.00 =     361.00 FEET.

+--------------------------------------------------------------------------+
| COMPOSITE C FOR C & D SOILS                                              |
| SUBAREA - MDR 7.3 DU/A OR LESS (~40% IMP)                                |
| ((0.54*0.54)+(0.57*1.16))/1.70 = 0.560                                   |
+--------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   1214.00 TO NODE   1211.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (7.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5490
  S.C.S. CURVE NUMBER (AMC II) =  98
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.5589
  SUBAREA AREA(ACRES) =    0.81   SUBAREA RUNOFF(CFS) =    3.87
  TOTAL AREA(ACRES) =        2.5   TOTAL RUNOFF(CFS) =      12.29
  TC(MIN.) =    3.97

+--------------------------------------------------------------------------+
| COMPOSTE C FOR C & D SOILS                                               |
| SUBAREA - MDR 7.3 DU/A OR LESS (~40% IMP)                                |
| ((0.54*0.58)+(0.57*0.23))/0.81 = 0.549                                   |
+--------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   1214.00 TO NODE   1211.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    3.97
  RAINFALL INTENSITY(INCH/HR) =   8.69
  TOTAL STREAM AREA(ACRES) =     2.53
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     12.29

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       24.68     5.25        8.422          4.13
      2       12.29     3.97        8.695          2.53

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF       Tc      INTENSITY
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)
      1       36.20     3.97        8.695
      2       36.59     5.25        8.422

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      36.59   Tc(MIN.) =    5.25
  TOTAL AREA(ACRES) =        6.7
  LONGEST FLOWPATH FROM NODE   1200.00 TO NODE   1211.00 =    1412.52 FEET.

****************************************************************************
```

```
  FLOW PROCESS FROM NODE   1211.00 TO NODE   1215.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   230.23  DOWNSTREAM(FEET) =   228.00
  FLOW LENGTH(FEET) =   193.92   MANNING'S N =  0.013
  DEPTH OF FLOW IN  30.0 INCH PIPE IS  21.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   9.81
  ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      36.59
  PIPE TRAVEL TIME(MIN.) =   0.33    Tc(MIN.) =    5.58
  LONGEST FLOWPATH FROM NODE   1200.00 TO NODE   1215.00 =    1606.44 FEET.
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)      =        6.7  TC(MIN.) =      5.58
  PEAK FLOW RATE(CFS)    =      36.59
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

```
****************************************************************************

          RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT
                       2003,1985,1981 HYDROLOGY MANUAL
        (c) Copyright 1982-2016 Advanced Engineering Software (aes)
            Ver. 23.0 Release Date: 07/01/2016  License ID 1509

                          Analysis prepared by:




 ************************** DESCRIPTION OF STUDY **************************
* OCEAN BREEZE RANCH                                                      *
* SYSTEM 1300 (UNMITIGATED) PROPOSED CONDITIONS                           *
* NORTHWEST QUADRANT                                                      *
 ****************************************************************************

  FILE NAME: 1300P100.DAT
  TIME/DATE OF STUDY: 13:28 11/06/2024
----------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
----------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) = 100.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   3.300
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.02
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  ==================  ======  =====  ====  ====  =======
  1   18.0     10.0    0.018/0.018/0.020   0.50    2.00 0.0312 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  1.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint = 10.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

****************************************************************************
  FLOW PROCESS FROM NODE   1300.00 TO NODE   1301.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  USER-SPECIFIED RUNOFF COEFFICIENT = .2500
  S.C.S. CURVE NUMBER (AMC II) =  77
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    658.10
  DOWNSTREAM ELEVATION(FEET) =    646.00
  ELEVATION DIFFERENCE(FEET) =     12.10
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    7.102
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.933
```



```
  SUBAREA RUNOFF(CFS) =      0.29
  TOTAL AREA(ACRES) =      0.17   TOTAL RUNOFF(CFS) =      0.29

****************************************************************************
  FLOW PROCESS FROM NODE   1301.00 TO NODE   1354.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    646.00  DOWNSTREAM(FEET) =    249.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  3773.00   CHANNEL SLOPE =  0.1052
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   2.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.336
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3200
  S.C.S. CURVE NUMBER (AMC II) =  77
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      52.40
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.27
  AVERAGE FLOW DEPTH(FEET) =   0.54   TRAVEL TIME(MIN.) =   7.60
  Tc(MIN.) =   14.70
  SUBAREA AREA(ACRES) =    73.35       SUBAREA RUNOFF(CFS) =  101.77
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.320
  TOTAL AREA(ACRES) =       73.5          PEAK FLOW RATE(CFS) =     101.96

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.80   FLOW VELOCITY(FEET/SEC.) =  10.33
  LONGEST FLOWPATH FROM NODE   1300.00 TO NODE   1354.00 =    3873.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1301.00 TO NODE   1354.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   14.70
  RAINFALL INTENSITY(INCH/HR) =   4.34
  TOTAL STREAM AREA(ACRES) =    73.52
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    101.96

****************************************************************************
  FLOW PROCESS FROM NODE   1355.00 TO NODE   1356.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3300
  S.C.S. CURVE NUMBER (AMC II) =  77
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    57.00
  UPSTREAM ELEVATION(FEET) =    452.00
  DOWNSTREAM ELEVATION(FEET) =    442.00
  ELEVATION DIFFERENCE(FEET) =     10.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    4.857
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      1.09
  TOTAL AREA(ACRES) =      0.38   TOTAL RUNOFF(CFS) =      1.09

****************************************************************************
  FLOW PROCESS FROM NODE   1356.00 TO NODE   1357.00 IS CODE =  51
----------------------------------------------------------------------------
```

```
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    442.00  DOWNSTREAM(FEET) =    249.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1403.00   CHANNEL SLOPE =  0.1376
  CHANNEL BASE(FEET) =    1.00   "Z" FACTOR =   0.750
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   2.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.101
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3300
  S.C.S. CURVE NUMBER (AMC II) =  77
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       3.35
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  11.77
  AVERAGE FLOW DEPTH(FEET) =   0.24   TRAVEL TIME(MIN.) =   1.99
  Tc(MIN.) =    6.84
  SUBAREA AREA(ACRES) =     1.92       SUBAREA RUNOFF(CFS) =    4.50
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.330
  TOTAL AREA(ACRES) =        2.3         PEAK FLOW RATE(CFS) =       5.39

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.32   FLOW VELOCITY(FEET/SEC.) =  13.42
  LONGEST FLOWPATH FROM NODE   1355.00 TO NODE   1357.00 =    1460.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1357.00 TO NODE   1354.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    6.84
  RAINFALL INTENSITY(INCH/HR) =   7.10
  TOTAL STREAM AREA(ACRES) =     2.30
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      5.39

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER       (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1      101.96    14.70        4.336         73.52
      2        5.39     6.84        7.101          2.30

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF       Tc      INTENSITY
  NUMBER       (CFS)     (MIN.)   (INCH/HOUR)
      1       52.85     6.84        7.101
      2      105.25    14.70        4.336

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     105.25   Tc(MIN.) =   14.70
  TOTAL AREA(ACRES) =       75.8
  LONGEST FLOWPATH FROM NODE   1300.00 TO NODE   1354.00 =    3873.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1354.00 TO NODE   1302.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   238.64  DOWNSTREAM(FEET) =   232.08
```



```
  FLOW LENGTH(FEET) =   357.80   MANNING'S N =  0.013
  DEPTH OF FLOW IN  81.0 INCH PIPE IS  66.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.36
  ESTIMATED PIPE DIAMETER(INCH) =  81.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     105.25
  PIPE TRAVEL TIME(MIN.) =   1.78    Tc(MIN.) =   16.48
  LONGEST FLOWPATH FROM NODE   1300.00 TO NODE   1302.00 =    4230.80 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1354.00 TO NODE   1302.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   16.48
  RAINFALL INTENSITY(INCH/HR) =   4.03
  TOTAL STREAM AREA(ACRES) =    75.82
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    105.25

****************************************************************************
  FLOW PROCESS FROM NODE   1358.00 TO NODE   1359.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  USER-SPECIFIED RUNOFF COEFFICIENT = .4100
  S.C.S. CURVE NUMBER (AMC II) =  82
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    70.00
  UPSTREAM ELEVATION(FEET) =    510.00
  DOWNSTREAM ELEVATION(FEET) =    492.00
  ELEVATION DIFFERENCE(FEET) =     18.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    4.824
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.39
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.39

****************************************************************************
  FLOW PROCESS FROM NODE   1359.00 TO NODE   1302.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    492.00  DOWNSTREAM(FEET) =    246.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   700.00   CHANNEL SLOPE =  0.3514
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   2.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.247
  USER-SPECIFIED RUNOFF COEFFICIENT = .4100
  S.C.S. CURVE NUMBER (AMC II) =  82
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       9.03
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.46
  AVERAGE FLOW DEPTH(FEET) =   0.13   TRAVEL TIME(MIN.) =   1.81
  Tc(MIN.) =    6.63
  SUBAREA AREA(ACRES) =     5.75       SUBAREA RUNOFF(CFS) =   17.09
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.410
  TOTAL AREA(ACRES) =        5.9         PEAK FLOW RATE(CFS) =      17.41

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.20   FLOW VELOCITY(FEET/SEC.) =   8.16
  LONGEST FLOWPATH FROM NODE   1358.00 TO NODE   1302.00 =     770.00 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE   1359.00 TO NODE   1302.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    6.63
  RAINFALL INTENSITY(INCH/HR) =   7.25
  TOTAL STREAM AREA(ACRES) =     5.86
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     17.41

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1      105.25    16.48        4.029         75.82
      2       17.41     6.63        7.247          5.86

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF       Tc      INTENSITY
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)
      1       75.92     6.63        7.247
      2      114.93    16.48        4.029

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     114.93   Tc(MIN.) =   16.48
  TOTAL AREA(ACRES) =       81.7
  LONGEST FLOWPATH FROM NODE   1300.00 TO NODE   1302.00 =    4230.80 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1302.00 TO NODE   1339.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   231.98  DOWNSTREAM(FEET) =   227.02
  FLOW LENGTH(FEET) =   244.20   MANNING'S N =  0.013
  DEPTH OF FLOW IN  84.0 INCH PIPE IS  64.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.61
  ESTIMATED PIPE DIAMETER(INCH) =  84.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     114.93
  PIPE TRAVEL TIME(MIN.) =   1.13    Tc(MIN.) =   17.61
  LONGEST FLOWPATH FROM NODE   1300.00 TO NODE   1339.00 =    4475.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1302.00 TO NODE   1339.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   17.61
  RAINFALL INTENSITY(INCH/HR) =   3.86
  TOTAL STREAM AREA(ACRES) =    81.68
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    114.93

****************************************************************************
  FLOW PROCESS FROM NODE   1338.00 TO NODE   1339.00 IS CODE =  21
----------------------------------------------------------------------------
```



```
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  USER-SPECIFIED RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =  88
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    49.00
  UPSTREAM ELEVATION(FEET) =    268.00
  DOWNSTREAM ELEVATION(FEET) =    244.00
  ELEVATION DIFFERENCE(FEET) =     24.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    4.387
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.64
  TOTAL AREA(ACRES) =      0.21   TOTAL RUNOFF(CFS) =      0.64

****************************************************************************
  FLOW PROCESS FROM NODE   1338.00 TO NODE   1339.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    4.39
  RAINFALL INTENSITY(INCH/HR) =   8.69
  TOTAL STREAM AREA(ACRES) =     0.21
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      0.64

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1      114.93    17.61        3.860         81.68
      2        0.64     4.39        8.695          0.21

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF       Tc      INTENSITY
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)
      1       51.67     4.39        8.695
      2      115.21    17.61        3.860

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     115.21   Tc(MIN.) =   17.61
  TOTAL AREA(ACRES) =       81.9
  LONGEST FLOWPATH FROM NODE   1300.00 TO NODE   1339.00 =    4475.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1339.00 TO NODE   1303.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   227.25  DOWNSTREAM(FEET) =   224.02
  FLOW LENGTH(FEET) =   290.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  93.0 INCH PIPE IS  73.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   2.87
  ESTIMATED PIPE DIAMETER(INCH) =  93.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     115.21
  PIPE TRAVEL TIME(MIN.) =   1.68    Tc(MIN.) =   19.29
  LONGEST FLOWPATH FROM NODE   1300.00 TO NODE   1303.00 =    4765.00 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE   1339.00 TO NODE   1303.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE   1304.00 TO NODE   1305.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3300
  S.C.S. CURVE NUMBER (AMC II) =  88
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    640.00
  DOWNSTREAM ELEVATION(FEET) =    600.00
  ELEVATION DIFFERENCE(FEET) =     40.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.434
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.390
  SUBAREA RUNOFF(CFS) =      1.68
  TOTAL AREA(ACRES) =      0.69   TOTAL RUNOFF(CFS) =      1.68

****************************************************************************
  FLOW PROCESS FROM NODE   1305.00 TO NODE   1306.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    600.00  DOWNSTREAM(FEET) =    330.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  3361.00   CHANNEL SLOPE =  0.0803
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   3.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.869
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3300
  S.C.S. CURVE NUMBER (AMC II) =  88
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      93.44
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   9.57
  AVERAGE FLOW DEPTH(FEET) =   0.84   TRAVEL TIME(MIN.) =   5.85
  Tc(MIN.) =   12.29
  SUBAREA AREA(ACRES) =   110.14       SUBAREA RUNOFF(CFS) =  176.96
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.330
  TOTAL AREA(ACRES) =      110.8         PEAK FLOW RATE(CFS) =     178.07

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.21   FLOW VELOCITY(FEET/SEC.) =  11.85
  LONGEST FLOWPATH FROM NODE   1304.00 TO NODE   1306.00 =    3461.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1306.00 TO NODE   1342.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    313.00  DOWNSTREAM(FEET) =    262.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   503.00   CHANNEL SLOPE =  0.1014
  CHANNEL BASE(FEET) =    8.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   3.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.708
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3200
```



```
  S.C.S. CURVE NUMBER (AMC II) =  88
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     184.35
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  12.78
  AVERAGE FLOW DEPTH(FEET) =   1.23   TRAVEL TIME(MIN.) =   0.66
  Tc(MIN.) =   12.94
  SUBAREA AREA(ACRES) =     8.34       SUBAREA RUNOFF(CFS) =   12.56
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.329
  TOTAL AREA(ACRES) =      119.2         PEAK FLOW RATE(CFS) =     184.76

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.24   FLOW VELOCITY(FEET/SEC.) =  12.73
  LONGEST FLOWPATH FROM NODE   1304.00 TO NODE   1342.00 =    3964.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1306.00 TO NODE   1342.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   12.94
  RAINFALL INTENSITY(INCH/HR) =   4.71
  TOTAL STREAM AREA(ACRES) =   119.17
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    184.76

****************************************************************************
  FLOW PROCESS FROM NODE   1343.00 TO NODE   1344.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  USER-SPECIFIED RUNOFF COEFFICIENT = .3200
  S.C.S. CURVE NUMBER (AMC II) =  65
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    85.00
  UPSTREAM ELEVATION(FEET) =    482.00
  DOWNSTREAM ELEVATION(FEET) =    480.00
  ELEVATION DIFFERENCE(FEET) =      2.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    9.732
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.658
  SUBAREA RUNOFF(CFS) =      0.13
  TOTAL AREA(ACRES) =      0.07   TOTAL RUNOFF(CFS) =      0.13

****************************************************************************
  FLOW PROCESS FROM NODE   1344.00 TO NODE   1327.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    480.00  DOWNSTREAM(FEET) =    350.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1075.00   CHANNEL SLOPE =  0.1209
  CHANNEL BASE(FEET) =    8.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   3.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.433
  USER-SPECIFIED RUNOFF COEFFICIENT = .3200
  S.C.S. CURVE NUMBER (AMC II) =  65
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       4.79
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.00
  AVERAGE FLOW DEPTH(FEET) =   0.14   TRAVEL TIME(MIN.) =   4.48
  Tc(MIN.) =   14.21
  SUBAREA AREA(ACRES) =     6.49       SUBAREA RUNOFF(CFS) =    9.21
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.320
  TOTAL AREA(ACRES) =        6.6         PEAK FLOW RATE(CFS) =       9.31

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
```

```
  DEPTH(FEET) =  0.22   FLOW VELOCITY(FEET/SEC.) =   4.97
  LONGEST FLOWPATH FROM NODE   1343.00 TO NODE   1327.00 =    1160.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1327.00 TO NODE   1345.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   350.00  DOWNSTREAM(FEET) =   346.00
  FLOW LENGTH(FEET) =    40.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  19.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.48
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       9.31
  PIPE TRAVEL TIME(MIN.) =   0.19    Tc(MIN.) =   14.40
  LONGEST FLOWPATH FROM NODE   1343.00 TO NODE   1345.00 =    1200.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1345.00 TO NODE   1342.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    346.00  DOWNSTREAM(FEET) =    262.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   422.00   CHANNEL SLOPE =  0.1991
  CHANNEL BASE(FEET) =    8.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   3.00
  CHANNEL FLOW THRU SUBAREA(CFS) =       9.31
  FLOW VELOCITY(FEET/SEC.) =   5.85   FLOW DEPTH(FEET) =   0.19
  TRAVEL TIME(MIN.) =   1.20   Tc(MIN.) =   15.60
  LONGEST FLOWPATH FROM NODE   1343.00 TO NODE   1342.00 =    1622.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1345.00 TO NODE   1342.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   15.60
  RAINFALL INTENSITY(INCH/HR) =   4.17
  TOTAL STREAM AREA(ACRES) =     6.56
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      9.31

****************************************************************************
  FLOW PROCESS FROM NODE   1324.00 TO NODE   1325.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  USER-SPECIFIED RUNOFF COEFFICIENT = .8700
  S.C.S. CURVE NUMBER (AMC II) =  96
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    65.00
  UPSTREAM ELEVATION(FEET) =    351.50
  DOWNSTREAM ELEVATION(FEET) =    348.50
  ELEVATION DIFFERENCE(FEET) =      3.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.005
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.15
  TOTAL AREA(ACRES) =      0.02   TOTAL RUNOFF(CFS) =      0.15

****************************************************************************
```



```
  FLOW PROCESS FROM NODE   1325.00 TO NODE   1326.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  348.50  DOWNSTREAM ELEVATION(FEET) =  343.00
  STREET LENGTH(FEET) =    85.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.018
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.018

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       0.42
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.20
    HALFSTREET FLOOD WIDTH(FEET) =    2.00
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.52
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.09
  STREET FLOW TRAVEL TIME(MIN.) =   0.26   Tc(MIN.) =    2.26
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  USER-SPECIFIED RUNOFF COEFFICIENT = .8700
  S.C.S. CURVE NUMBER (AMC II) =  96
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    0.07      SUBAREA RUNOFF(CFS) =    0.53
  TOTAL AREA(ACRES) =        0.1        PEAK FLOW RATE(CFS) =       0.68

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.20   HALFSTREET FLOOD WIDTH(FEET) =   2.00
  FLOW VELOCITY(FEET/SEC.) =  5.52   DEPTH*VELOCITY(FT*FT/SEC.) =   1.09
  LONGEST FLOWPATH FROM NODE   1324.00 TO NODE   1326.00 =     150.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1326.00 TO NODE   1340.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    343.00  DOWNSTREAM(FEET) =    321.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =    60.00   CHANNEL SLOPE =  0.3667
  CHANNEL BASE(FEET) =    0.50   "Z" FACTOR =   0.750
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =       0.68
  FLOW VELOCITY(FEET/SEC.) =  11.33   FLOW DEPTH(FEET) =   0.10
  TRAVEL TIME(MIN.) =   0.09   Tc(MIN.) =    2.35
  LONGEST FLOWPATH FROM NODE   1324.00 TO NODE   1340.00 =     210.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1340.00 TO NODE   1341.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    321.00  DOWNSTREAM(FEET) =    309.50
  CHANNEL LENGTH THRU SUBAREA(FEET) =    92.00   CHANNEL SLOPE =  0.1250
  CHANNEL BASE(FEET) =    0.50   "Z" FACTOR =   0.750
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   2.00
```

```
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
USER-SPECIFIED RUNOFF COEFFICIENT = .2500
S.C.S. CURVE NUMBER (AMC II) =  77
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       0.92
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.47
AVERAGE FLOW DEPTH(FEET) =   0.17   TRAVEL TIME(MIN.) =   0.18
Tc(MIN.) =    2.53
SUBAREA AREA(ACRES) =     0.22       SUBAREA RUNOFF(CFS) =    0.48
AREA-AVERAGE RUNOFF COEFFICIENT =  0.430
TOTAL AREA(ACRES) =        0.3         PEAK FLOW RATE(CFS) =       1.16

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) =  0.20   FLOW VELOCITY(FEET/SEC.) =   8.85
LONGEST FLOWPATH FROM NODE   1324.00 TO NODE   1341.00 =     302.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE   1351.00 TO NODE   1341.00 IS CODE =  81
----------------------------------------------------------------------------
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
USER-SPECIFIED RUNOFF COEFFICIENT = .2500
S.C.S. CURVE NUMBER (AMC II) =  77
AREA-AVERAGE RUNOFF COEFFICIENT = 0.3713
SUBAREA AREA(ACRES) =    0.15   SUBAREA RUNOFF(CFS) =    0.33
TOTAL AREA(ACRES) =        0.5   TOTAL RUNOFF(CFS) =       1.49
TC(MIN.) =    2.53

****************************************************************************
FLOW PROCESS FROM NODE   1351.00 TO NODE   1342.00 IS CODE =  51
----------------------------------------------------------------------------
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
ELEVATION DATA: UPSTREAM(FEET) =    302.00  DOWNSTREAM(FEET) =    262.00
CHANNEL LENGTH THRU SUBAREA(FEET) =   117.00   CHANNEL SLOPE =  0.3419
CHANNEL BASE(FEET) =    8.00   "Z" FACTOR =   3.000
MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   1.00
CHANNEL FLOW THRU SUBAREA(CFS) =       1.49
FLOW VELOCITY(FEET/SEC.) =   3.60   FLOW DEPTH(FEET) =   0.05
TRAVEL TIME(MIN.) =   0.54   Tc(MIN.) =    3.07
LONGEST FLOWPATH FROM NODE   1324.00 TO NODE   1342.00 =     419.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE   1351.00 TO NODE   1342.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  3
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
TIME OF CONCENTRATION(MIN.) =    3.07
RAINFALL INTENSITY(INCH/HR) =   8.69
TOTAL STREAM AREA(ACRES) =     0.46
PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.49

** CONFLUENCE DATA **
STREAM     RUNOFF       Tc      INTENSITY      AREA
NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
    1      184.76    12.94        4.708       119.17
    2        9.31    15.60        4.173         6.56
```



```
    3        1.49     3.07        8.695          0.46

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR  3 STREAMS.

** PEAK FLOW RATE TABLE **
STREAM     RUNOFF       Tc      INTENSITY
NUMBER      (CFS)     (MIN.)   (INCH/HOUR)
    1       47.17     3.07        8.695
    2      193.28    12.94        4.708
    3      173.78    15.60        4.173

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =     193.28   Tc(MIN.) =   12.94
TOTAL AREA(ACRES) =      126.2
LONGEST FLOWPATH FROM NODE   1304.00 TO NODE   1342.00 =    3964.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE   1342.00 TO NODE   1307.00 IS CODE =  51
----------------------------------------------------------------------------
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
ELEVATION DATA: UPSTREAM(FEET) =    262.00  DOWNSTREAM(FEET) =    242.00
CHANNEL LENGTH THRU SUBAREA(FEET) =   310.00   CHANNEL SLOPE =  0.0645
CHANNEL BASE(FEET) =    8.00   "Z" FACTOR =   3.000
MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   3.00
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.601
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .3300
S.C.S. CURVE NUMBER (AMC II) =  77
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     195.50
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  11.05
AVERAGE FLOW DEPTH(FEET) =   1.44   TRAVEL TIME(MIN.) =   0.47
Tc(MIN.) =   13.41
SUBAREA AREA(ACRES) =     2.92       SUBAREA RUNOFF(CFS) =    4.43
AREA-AVERAGE RUNOFF COEFFICIENT =  0.329
TOTAL AREA(ACRES) =      129.1         PEAK FLOW RATE(CFS) =     195.45

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) =  1.44   FLOW VELOCITY(FEET/SEC.) =  11.05
LONGEST FLOWPATH FROM NODE   1304.00 TO NODE   1307.00 =    4274.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE   1342.00 TO NODE   1307.00 IS CODE =  10
----------------------------------------------------------------------------
>>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
FLOW PROCESS FROM NODE   1346.00 TO NODE   1347.00 IS CODE =  21
----------------------------------------------------------------------------
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
USER-SPECIFIED RUNOFF COEFFICIENT = .8700
S.C.S. CURVE NUMBER (AMC II) =  98
INITIAL SUBAREA FLOW-LENGTH(FEET) =    49.00
UPSTREAM ELEVATION(FEET) =    351.50
DOWNSTREAM ELEVATION(FEET) =    349.80
ELEVATION DIFFERENCE(FEET) =      1.70
SUBAREA OVERLAND TIME OF FLOW(MIN.) =    1.914
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
```

```
  SUBAREA RUNOFF(CFS) =      0.15
  TOTAL AREA(ACRES) =      0.02   TOTAL RUNOFF(CFS) =      0.15

****************************************************************************
  FLOW PROCESS FROM NODE   1349.00 TO NODE   1330.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  349.80  DOWNSTREAM ELEVATION(FEET) =  333.00
  STREET LENGTH(FEET) =   280.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.018
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.018

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       0.64
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.20
    HALFSTREET FLOOD WIDTH(FEET) =    2.00
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.32
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.05
  STREET FLOW TRAVEL TIME(MIN.) =   0.88   Tc(MIN.) =    2.79
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  USER-SPECIFIED RUNOFF COEFFICIENT = .8700
  S.C.S. CURVE NUMBER (AMC II) =  98
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    0.13      SUBAREA RUNOFF(CFS) =    0.98
  TOTAL AREA(ACRES) =        0.1        PEAK FLOW RATE(CFS) =       1.13

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.20   HALFSTREET FLOOD WIDTH(FEET) =   2.00
  FLOW VELOCITY(FEET/SEC.) =  5.32   DEPTH*VELOCITY(FT*FT/SEC.) =   1.05
  LONGEST FLOWPATH FROM NODE   1346.00 TO NODE   1330.00 =     329.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1349.00 TO NODE   1330.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =    2.79
  RAINFALL INTENSITY(INCH/HR) =   8.69
  TOTAL STREAM AREA(ACRES) =     0.15
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.13

****************************************************************************
  FLOW PROCESS FROM NODE   1352.00 TO NODE   1353.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  USER-SPECIFIED RUNOFF COEFFICIENT = .3200
  S.C.S. CURVE NUMBER (AMC II) =  65
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    75.00
  UPSTREAM ELEVATION(FEET) =    445.00
```



```
  DOWNSTREAM ELEVATION(FEET) =    425.00
  ELEVATION DIFFERENCE(FEET) =     20.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    5.644
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.041
  SUBAREA RUNOFF(CFS) =      0.15
  TOTAL AREA(ACRES) =      0.06   TOTAL RUNOFF(CFS) =      0.15

****************************************************************************
  FLOW PROCESS FROM NODE   1353.00 TO NODE   1330.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    425.00  DOWNSTREAM(FEET) =    333.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   528.00   CHANNEL SLOPE =  0.1742
  CHANNEL BASE(FEET) =    8.00   "Z" FACTOR =   4.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   2.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.079
  USER-SPECIFIED RUNOFF COEFFICIENT = .3200
  S.C.S. CURVE NUMBER (AMC II) =  65
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.56
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   2.87
  AVERAGE FLOW DEPTH(FEET) =   0.07   TRAVEL TIME(MIN.) =   3.06
  Tc(MIN.) =    8.71
  SUBAREA AREA(ACRES) =     1.41       SUBAREA RUNOFF(CFS) =    2.74
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.320
  TOTAL AREA(ACRES) =        1.5         PEAK FLOW RATE(CFS) =       2.86

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.09   FLOW VELOCITY(FEET/SEC.) =   3.62
  LONGEST FLOWPATH FROM NODE   1352.00 TO NODE   1330.00 =     603.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1353.00 TO NODE   1330.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    8.71
  RAINFALL INTENSITY(INCH/HR) =   6.08
  TOTAL STREAM AREA(ACRES) =     1.47
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.86

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        1.13     2.79        8.695          0.15
      2        2.86     8.71        6.079          1.47

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)
      1        2.05     2.79       8.695
      2        3.65     8.71       6.079

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       3.65   Tc(MIN.) =    8.71
```

```
  TOTAL AREA(ACRES) =        1.6
  LONGEST FLOWPATH FROM NODE   1352.00 TO NODE   1330.00 =     603.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1330.00 TO NODE   1333.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  333.00  DOWNSTREAM ELEVATION(FEET) =  315.00
  STREET LENGTH(FEET) =   323.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.018
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.018

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       5.19
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.33
    HALFSTREET FLOOD WIDTH(FEET) =    9.60
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.11
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.71
  STREET FLOW TRAVEL TIME(MIN.) =   1.05   Tc(MIN.) =    9.76
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.647
  USER-SPECIFIED RUNOFF COEFFICIENT = .5100
  S.C.S. CURVE NUMBER (AMC II) =  76
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.426
  SUBAREA AREA(ACRES) =    1.07      SUBAREA RUNOFF(CFS) =    3.08
  TOTAL AREA(ACRES) =        2.7        PEAK FLOW RATE(CFS) =       6.47

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.35   HALFSTREET FLOOD WIDTH(FEET) =  10.70
  FLOW VELOCITY(FEET/SEC.) =  5.33   DEPTH*VELOCITY(FT*FT/SEC.) =   1.88
  LONGEST FLOWPATH FROM NODE   1352.00 TO NODE   1333.00 =     926.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1333.00 TO NODE   1334.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   305.92  DOWNSTREAM(FEET) =   305.18
  FLOW LENGTH(FEET) =    97.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  36.0 INCH PIPE IS  25.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   1.24
  ESTIMATED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       6.47
  PIPE TRAVEL TIME(MIN.) =   1.31    Tc(MIN.) =   11.07
  LONGEST FLOWPATH FROM NODE   1352.00 TO NODE   1334.00 =    1023.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1333.00 TO NODE   1334.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
```



```
  TIME OF CONCENTRATION(MIN.) =   11.07
  RAINFALL INTENSITY(INCH/HR) =   5.21
  TOTAL STREAM AREA(ACRES) =     2.69
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      6.47

****************************************************************************
  FLOW PROCESS FROM NODE   1308.00 TO NODE   1321.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  USER-SPECIFIED RUNOFF COEFFICIENT = .2500
  S.C.S. CURVE NUMBER (AMC II) =  77
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    96.00
  UPSTREAM ELEVATION(FEET) =    455.00
  DOWNSTREAM ELEVATION(FEET) =    440.00
  ELEVATION DIFFERENCE(FEET) =     15.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.959
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.025
  SUBAREA RUNOFF(CFS) =      0.14
  TOTAL AREA(ACRES) =      0.08   TOTAL RUNOFF(CFS) =      0.14

****************************************************************************
  FLOW PROCESS FROM NODE   1321.00 TO NODE   1322.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    440.00  DOWNSTREAM(FEET) =    312.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   820.00   CHANNEL SLOPE =  0.1561
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   5.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.218
  USER-SPECIFIED RUNOFF COEFFICIENT = .3200
  S.C.S. CURVE NUMBER (AMC II) =  65
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       3.25
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.35
  AVERAGE FLOW DEPTH(FEET) =   0.09   TRAVEL TIME(MIN.) =   4.08
  Tc(MIN.) =   11.04
  SUBAREA AREA(ACRES) =     3.71       SUBAREA RUNOFF(CFS) =    6.19
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.319
  TOTAL AREA(ACRES) =        3.8         PEAK FLOW RATE(CFS) =       6.30

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.14   FLOW VELOCITY(FEET/SEC.) =   4.31
  LONGEST FLOWPATH FROM NODE   1308.00 TO NODE   1322.00 =     916.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1323.00 TO NODE   1322.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.218
  USER-SPECIFIED RUNOFF COEFFICIENT = .2500
  S.C.S. CURVE NUMBER (AMC II) =  77
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3094
  SUBAREA AREA(ACRES) =    0.58   SUBAREA RUNOFF(CFS) =    0.76
  TOTAL AREA(ACRES) =        4.4   TOTAL RUNOFF(CFS) =       7.06
  TC(MIN.) =   11.04

****************************************************************************
  FLOW PROCESS FROM NODE   1322.00 TO NODE   1334.00 IS CODE =  31
----------------------------------------------------------------------------
```

```
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   308.92  DOWNSTREAM(FEET) =   305.78
  FLOW LENGTH(FEET) =    34.02   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  15.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.24
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       7.06
  PIPE TRAVEL TIME(MIN.) =   0.18    Tc(MIN.) =   11.21
  LONGEST FLOWPATH FROM NODE   1308.00 TO NODE   1334.00 =     950.02 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1322.00 TO NODE   1334.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
================================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   11.21
  RAINFALL INTENSITY(INCH/HR) =   5.16
  TOTAL STREAM AREA(ACRES) =     4.37
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      7.06

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        6.47    11.07        5.208          2.69
      2        7.06    11.21        5.165          4.37

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF       Tc      INTENSITY
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)
      1       13.44    11.07       5.208
      2       13.48    11.21       5.165

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      13.48   Tc(MIN.) =   11.21
  TOTAL AREA(ACRES) =       7.1
  LONGEST FLOWPATH FROM NODE   1352.00 TO NODE   1334.00 =    1023.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1334.00 TO NODE   1335.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   305.08  DOWNSTREAM(FEET) =   301.06
  FLOW LENGTH(FEET) =    43.84   MANNING'S N =  0.013
  DEPTH OF FLOW IN  30.0 INCH PIPE IS  20.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.78
  ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      13.48
  PIPE TRAVEL TIME(MIN.) =   0.19    Tc(MIN.) =   11.40
  LONGEST FLOWPATH FROM NODE   1352.00 TO NODE   1335.00 =    1066.84 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1335.00 TO NODE   1328.00 IS CODE =  81
----------------------------------------------------------------------------
```



```
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.108
  USER-SPECIFIED RUNOFF COEFFICIENT = .2500
  S.C.S. CURVE NUMBER (AMC II) =  77
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3511
  SUBAREA AREA(ACRES) =    0.20   SUBAREA RUNOFF(CFS) =    0.26
  TOTAL AREA(ACRES) =        7.3   TOTAL RUNOFF(CFS) =      13.48
  TC(MIN.) =   11.40
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE   1328.00 TO NODE   1329.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   298.50  DOWNSTREAM(FEET) =   296.00
  FLOW LENGTH(FEET) =    38.70   MANNING'S N =  0.013
  DEPTH OF FLOW IN  30.0 INCH PIPE IS  23.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.25
  ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      13.48
  PIPE TRAVEL TIME(MIN.) =   0.20    Tc(MIN.) =   11.60
  LONGEST FLOWPATH FROM NODE   1352.00 TO NODE   1329.00 =    1105.54 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1329.00 TO NODE   1307.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    296.00  DOWNSTREAM(FEET) =    242.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   620.00   CHANNEL SLOPE =  0.0871
  CHANNEL BASE(FEET) =   12.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   5.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.547
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3300
  S.C.S. CURVE NUMBER (AMC II) =  77
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      17.38
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.03
  AVERAGE FLOW DEPTH(FEET) =   0.27   TRAVEL TIME(MIN.) =   2.06
  Tc(MIN.) =   13.66
  SUBAREA AREA(ACRES) =     5.19       SUBAREA RUNOFF(CFS) =    7.79
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.342
  TOTAL AREA(ACRES) =       12.4         PEAK FLOW RATE(CFS) =      19.38

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.29   FLOW VELOCITY(FEET/SEC.) =   5.25
  LONGEST FLOWPATH FROM NODE   1352.00 TO NODE   1307.00 =    1725.54 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1309.00 TO NODE   1307.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.547
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3100
  S.C.S. CURVE NUMBER (AMC II) =  77
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3346
  SUBAREA AREA(ACRES) =    3.89   SUBAREA RUNOFF(CFS) =    5.48
```

```
  TOTAL AREA(ACRES) =       16.3   TOTAL RUNOFF(CFS) =      24.86
  TC(MIN.) =   13.66

****************************************************************************
  FLOW PROCESS FROM NODE   1309.00 TO NODE   1307.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
      1       24.86    13.66       4.547       16.34
  LONGEST FLOWPATH FROM NODE   1352.00 TO NODE   1307.00 =    1725.54 FEET.

  ** MEMORY BANK #  2 CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
      1      195.45    13.41       4.601      129.11
  LONGEST FLOWPATH FROM NODE   1304.00 TO NODE   1307.00 =    4274.00 FEET.

  ** PEAK FLOW RATE TABLE **
  STREAM    RUNOFF       Tc      INTENSITY
  NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
      1     219.86      13.41        4.601
      2     218.01      13.66        4.547

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     219.86   Tc(MIN.) =   13.41
  TOTAL AREA(ACRES) =      145.4

****************************************************************************
  FLOW PROCESS FROM NODE   1307.00 TO NODE   1310.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    266.00  DOWNSTREAM(FEET) =    228.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   590.00   CHANNEL SLOPE =  0.0644
  CHANNEL BASE(FEET) =    8.00   "Z" FACTOR =   4.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   5.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.412
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =  77
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     224.09
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  10.91
  AVERAGE FLOW DEPTH(FEET) =   1.48   TRAVEL TIME(MIN.) =   0.90
  Tc(MIN.) =   14.31
  SUBAREA AREA(ACRES) =     5.48       SUBAREA RUNOFF(CFS) =    8.46
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.330
  TOTAL AREA(ACRES) =      150.9         PEAK FLOW RATE(CFS) =     220.01

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.46   FLOW VELOCITY(FEET/SEC.) =  10.87
  LONGEST FLOWPATH FROM NODE   1304.00 TO NODE   1310.00 =    4864.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1307.00 TO NODE   1310.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
```



```
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   14.31
  RAINFALL INTENSITY(INCH/HR) =   4.41
  TOTAL STREAM AREA(ACRES) =   150.93
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    220.01

****************************************************************************
  FLOW PROCESS FROM NODE   1348.00 TO NODE   1349.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .2700
  S.C.S. CURVE NUMBER (AMC II) =  77
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    75.00
  UPSTREAM ELEVATION(FEET) =    268.00
  DOWNSTREAM ELEVATION(FEET) =    236.00
  ELEVATION DIFFERENCE(FEET) =     32.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.006
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.725
  SUBAREA RUNOFF(CFS) =      0.35
  TOTAL AREA(ACRES) =      0.17   TOTAL RUNOFF(CFS) =      0.35

****************************************************************************
  FLOW PROCESS FROM NODE   1349.00 TO NODE   1310.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    236.00  DOWNSTREAM(FEET) =    228.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   155.00   CHANNEL SLOPE =  0.0516
  CHANNEL BASE(FEET) =    0.50   "Z" FACTOR =   0.750
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   1.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.341
  USER-SPECIFIED RUNOFF COEFFICIENT = .2000
  S.C.S. CURVE NUMBER (AMC II) =  63
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       0.51
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.23
  AVERAGE FLOW DEPTH(FEET) =   0.16   TRAVEL TIME(MIN.) =   0.49
  Tc(MIN.) =    6.50
  SUBAREA AREA(ACRES) =     0.21       SUBAREA RUNOFF(CFS) =    0.31
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.231
  TOTAL AREA(ACRES) =        0.4         PEAK FLOW RATE(CFS) =       0.65

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.18   FLOW VELOCITY(FEET/SEC.) =   5.64
  LONGEST FLOWPATH FROM NODE   1348.00 TO NODE   1310.00 =     230.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1350.00 TO NODE   1310.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.341
  USER-SPECIFIED RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =  88
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3277
  SUBAREA AREA(ACRES) =    1.64   SUBAREA RUNOFF(CFS) =    4.21
  TOTAL AREA(ACRES) =        2.0   TOTAL RUNOFF(CFS) =       4.86
  TC(MIN.) =    6.50

****************************************************************************
```

```
  FLOW PROCESS FROM NODE   1350.00 TO NODE   1310.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    6.50
  RAINFALL INTENSITY(INCH/HR) =   7.34
  TOTAL STREAM AREA(ACRES) =     2.02
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.86

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER       (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1      220.01    14.31        4.412        150.93
      2        4.86     6.50        7.341          2.02

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF       Tc      INTENSITY
  NUMBER       (CFS)     (MIN.)   (INCH/HOUR)
      1      104.78     6.50        7.341
      2      222.93    14.31        4.412

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     222.93   Tc(MIN.) =   14.31
  TOTAL AREA(ACRES) =      152.9
  LONGEST FLOWPATH FROM NODE   1304.00 TO NODE   1310.00 =    4864.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1310.00 TO NODE   1303.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   224.11  DOWNSTREAM(FEET) =   223.02
  FLOW LENGTH(FEET) =    78.32   MANNING'S N =  0.013
  DEPTH OF FLOW IN 114.0 INCH PIPE IS  91.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.67
  ESTIMATED PIPE DIAMETER(INCH) = 114.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     222.93
  PIPE TRAVEL TIME(MIN.) =   0.36    Tc(MIN.) =   14.67
  LONGEST FLOWPATH FROM NODE   1304.00 TO NODE   1303.00 =    4942.32 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1310.00 TO NODE   1303.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY     AREA
  NUMBER       (CFS)     (MIN.)   (INCH/HOUR)   (ACRE)
      1      222.93    14.67        4.343       152.95
  LONGEST FLOWPATH FROM NODE   1304.00 TO NODE   1303.00 =    4942.32 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY     AREA
  NUMBER       (CFS)     (MIN.)   (INCH/HOUR)   (ACRE)
      1      115.21    19.29        3.639        81.89
```



```
  LONGEST FLOWPATH FROM NODE   1300.00 TO NODE   1303.00 =    4765.00 FEET.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF       Tc      INTENSITY
  NUMBER       (CFS)     (MIN.)   (INCH/HOUR)
      1      310.52     14.67        4.343
      2      302.02     19.29        3.639

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     310.52   Tc(MIN.) =   14.67
  TOTAL AREA(ACRES) =      234.8

****************************************************************************
  FLOW PROCESS FROM NODE   1303.00 TO NODE   1311.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   222.69  DOWNSTREAM(FEET) =   221.09
  FLOW LENGTH(FEET) =   131.09   MANNING'S N =  0.013
  DEPTH OF FLOW IN 132.0 INCH PIPE IS 106.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.80
  ESTIMATED PIPE DIAMETER(INCH) = 132.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     310.52
  PIPE TRAVEL TIME(MIN.) =   0.58    Tc(MIN.) =   15.24
  LONGEST FLOWPATH FROM NODE   1304.00 TO NODE   1311.00 =    5073.41 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1303.00 TO NODE   1311.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   15.24
  RAINFALL INTENSITY(INCH/HR) =   4.24
  TOTAL STREAM AREA(ACRES) =   234.84
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    310.52

****************************************************************************
  FLOW PROCESS FROM NODE   1312.00 TO NODE   1313.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  USER-SPECIFIED RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =  88
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    378.00
  DOWNSTREAM ELEVATION(FEET) =    360.00
  ELEVATION DIFFERENCE(FEET) =     18.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.267
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.516
  SUBAREA RUNOFF(CFS) =      0.58
  TOTAL AREA(ACRES) =      0.22   TOTAL RUNOFF(CFS) =      0.58

****************************************************************************
  FLOW PROCESS FROM NODE   1313.00 TO NODE   1314.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    360.00  DOWNSTREAM(FEET) =    238.00
```

```
  CHANNEL LENGTH THRU SUBAREA(FEET) =   298.00   CHANNEL SLOPE =  0.4094
  CHANNEL BASE(FEET) =    5.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   5.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.883
  USER-SPECIFIED RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =  88
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       2.76
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.42
  AVERAGE FLOW DEPTH(FEET) =   0.10   TRAVEL TIME(MIN.) =   0.92
  Tc(MIN.) =    7.18
  SUBAREA AREA(ACRES) =     1.81       SUBAREA RUNOFF(CFS) =    4.36
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.350
  TOTAL AREA(ACRES) =        2.0         PEAK FLOW RATE(CFS) =       4.89

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.13   FLOW VELOCITY(FEET/SEC.) =   6.73
  LONGEST FLOWPATH FROM NODE   1312.00 TO NODE   1314.00 =     398.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1315.00 TO NODE   1314.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.883
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3200
  S.C.S. CURVE NUMBER (AMC II) =  88
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3359
  SUBAREA AREA(ACRES) =    1.81   SUBAREA RUNOFF(CFS) =    3.99
  TOTAL AREA(ACRES) =        3.8   TOTAL RUNOFF(CFS) =       8.88
  TC(MIN.) =    7.18

****************************************************************************
  FLOW PROCESS FROM NODE   1314.00 TO NODE   1311.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   233.50  DOWNSTREAM(FEET) =   220.96
  FLOW LENGTH(FEET) =   156.13   MANNING'S N =  0.013
  DEPTH OF FLOW IN  27.0 INCH PIPE IS  17.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.26
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       8.88
  PIPE TRAVEL TIME(MIN.) =   0.80    Tc(MIN.) =    7.98
  LONGEST FLOWPATH FROM NODE   1312.00 TO NODE   1311.00 =     554.13 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1314.00 TO NODE   1311.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    7.98
  RAINFALL INTENSITY(INCH/HR) =   6.43
  TOTAL STREAM AREA(ACRES) =     3.84
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      8.88

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER       (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
```



```
       1      310.52    15.24        4.237        234.84
       2        8.88     7.98        6.430          3.84

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF       Tc      INTENSITY
  NUMBER       (CFS)    (MIN.)   (INCH/HOUR)
       1      171.49     7.98        6.430
       2      316.37    15.24        4.237

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     316.37   Tc(MIN.) =   15.24
  TOTAL AREA(ACRES) =      238.7
  LONGEST FLOWPATH FROM NODE   1304.00 TO NODE   1311.00 =    5073.41 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1311.00 TO NODE   1316.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    230.76  DOWNSTREAM(FEET) =    210.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   613.00   CHANNEL SLOPE =  0.0339
  CHANNEL BASE(FEET) =   20.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   5.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     316.37
  FLOW VELOCITY(FEET/SEC.) =   8.89   FLOW DEPTH(FEET) =   1.46
  TRAVEL TIME(MIN.) =   1.15   Tc(MIN.) =   16.39
  LONGEST FLOWPATH FROM NODE   1304.00 TO NODE   1316.00 =    5686.41 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1311.00 TO NODE   1316.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   16.39
  RAINFALL INTENSITY(INCH/HR) =   4.04
  TOTAL STREAM AREA(ACRES) =   238.68
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    316.37

****************************************************************************
  FLOW PROCESS FROM NODE   1216.00 TO NODE   1316.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<
============================================================================
  USER-SPECIFIED VALUES ARE AS FOLLOWS:
  TC(MIN) =   7.60   RAIN INTENSITY(INCH/HOUR) =  6.64
  TOTAL AREA(ACRES) =    49.20   TOTAL RUNOFF(CFS) =    201.60

****************************************************************************
  FLOW PROCESS FROM NODE   1216.00 TO NODE   1316.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    7.60
  RAINFALL INTENSITY(INCH/HR) =   6.64
```

```
  TOTAL STREAM AREA(ACRES) =    49.20
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    201.60

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1      316.37    16.39        4.042        238.68
      2      201.60     7.60        6.637         49.20

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1      394.30     7.60       6.637
      2      439.16    16.39       4.042

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     439.16   Tc(MIN.) =   16.39
  TOTAL AREA(ACRES) =      287.9
  LONGEST FLOWPATH FROM NODE   1304.00 TO NODE   1316.00 =    5686.41 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1316.00 TO NODE   1317.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    210.00  DOWNSTREAM(FEET) =    202.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   595.00   CHANNEL SLOPE =  0.0134
  CHANNEL BASE(FEET) =   20.00   "Z" FACTOR =   4.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   5.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.830
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .2400
  S.C.S. CURVE NUMBER (AMC II) =  88
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     445.08
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.93
  AVERAGE FLOW DEPTH(FEET) =   2.22   TRAVEL TIME(MIN.) =   1.43
  Tc(MIN.) =   17.82
  SUBAREA AREA(ACRES) =    12.87       SUBAREA RUNOFF(CFS) =   11.83
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.372
  TOTAL AREA(ACRES) =      300.8         PEAK FLOW RATE(CFS) =     439.16

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  2.20   FLOW VELOCITY(FEET/SEC.) =   6.92
  LONGEST FLOWPATH FROM NODE   1304.00 TO NODE   1317.00 =    6281.41 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1317.00 TO NODE   1318.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   201.97  DOWNSTREAM(FEET) =   200.85
  FLOW LENGTH(FEET) =   214.40   MANNING'S N =  0.013
  DEPTH OF FLOW IN 138.0 INCH PIPE IS 106.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   2.55
  ESTIMATED PIPE DIAMETER(INCH) = 138.00    NUMBER OF PIPES =   2
  PIPE-FLOW(CFS) =     439.16
  PIPE TRAVEL TIME(MIN.) =   1.40    Tc(MIN.) =   19.22
  LONGEST FLOWPATH FROM NODE   1304.00 TO NODE   1318.00 =    6495.81 FEET.
```



```
****************************************************************************
  FLOW PROCESS FROM NODE   1318.00 TO NODE   1319.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.648
  USER-SPECIFIED RUNOFF COEFFICIENT = .2000
  S.C.S. CURVE NUMBER (AMC II) =  63
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3722
  SUBAREA AREA(ACRES) =    0.47   SUBAREA RUNOFF(CFS) =    0.34
  TOTAL AREA(ACRES) =      301.2   TOTAL RUNOFF(CFS) =     439.16
  TC(MIN.) =   19.22
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE   1319.00 TO NODE   1320.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   199.69  DOWNSTREAM(FEET) =   199.29
  FLOW LENGTH(FEET) =    79.54   MANNING'S N =  0.013
  DEPTH OF FLOW IN 138.0 INCH PIPE IS 108.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   2.51
  ESTIMATED PIPE DIAMETER(INCH) = 138.00    NUMBER OF PIPES =   2
  PIPE-FLOW(CFS) =     439.16
  PIPE TRAVEL TIME(MIN.) =   0.53    Tc(MIN.) =   19.75
  LONGEST FLOWPATH FROM NODE   1304.00 TO NODE   1320.00 =    6575.35 FEET.
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =      301.2  TC(MIN.) =     19.75
  PEAK FLOW RATE(CFS)   =     439.16
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

System 1300 Mitigated

```
****************************************************************************

          RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT
                       2003,1985,1981 HYDROLOGY MANUAL
        (c) Copyright 1982-2016 Advanced Engineering Software (aes)
            Ver. 23.0 Release Date: 07/01/2016  License ID 1509

                        Analysis prepared by:




 ************************** DESCRIPTION OF STUDY **************************
* OCEAN BREEZE RANCH                                                      *
* SYSTEM 1300 (MITIGATED) - PROPOSED CONDITIONS                           *
* NORTHWEST QUADRANT                                                      *
 ****************************************************************************

  FILE NAME: 1300M100.DAT
  TIME/DATE OF STUDY: 13:26 11/06/2024
----------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
----------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) = 100.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   3.300
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.02
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  ==================  ======  =====  ====== =====  =======
  1   18.0     10.0    0.018/0.018/0.020   0.50    2.00 0.0312 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  1.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint = 10.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

****************************************************************************
  FLOW PROCESS FROM NODE   1300.00 TO NODE   1301.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  USER-SPECIFIED RUNOFF COEFFICIENT = .2500
  S.C.S. CURVE NUMBER (AMC II) =  77
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    658.10
  DOWNSTREAM ELEVATION(FEET) =    646.00
  ELEVATION DIFFERENCE(FEET) =     12.10
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    7.102
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.933
```



```
  SUBAREA RUNOFF(CFS) =      0.29
  TOTAL AREA(ACRES) =      0.17   TOTAL RUNOFF(CFS) =      0.29

+----------------------------------------------------------------------------+
| LAND USE - NATURAL                                                         |
| HSG - B                                                                    |
|                                                                            |
+----------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   1301.00 TO NODE   1354.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    646.00  DOWNSTREAM(FEET) =    249.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  3773.00   CHANNEL SLOPE =  0.1052
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   2.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.336
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3200
  S.C.S. CURVE NUMBER (AMC II) =  77
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      52.40
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.27
  AVERAGE FLOW DEPTH(FEET) =   0.54   TRAVEL TIME(MIN.) =   7.60
  Tc(MIN.) =   14.70
  SUBAREA AREA(ACRES) =    73.35       SUBAREA RUNOFF(CFS) =  101.77
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.320
  TOTAL AREA(ACRES) =       73.5         PEAK FLOW RATE(CFS) =     101.96

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.80   FLOW VELOCITY(FEET/SEC.) =  10.33
  LONGEST FLOWPATH FROM NODE   1300.00 TO NODE   1354.00 =    3873.00 FEET.

+----------------------------------------------------------------------------+
| COMPOSITE C FOR A, B, C, & D SOILS                                         |
| LAND USE - NATURAL                                                         |
| (0.2*.246+0.25*13.55+0.3*11.92+0.35*47.42)/73.35=0.32                      |
+----------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   1301.00 TO NODE   1354.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   14.70
  RAINFALL INTENSITY(INCH/HR) =   4.34
  TOTAL STREAM AREA(ACRES) =    73.52
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    101.96

****************************************************************************
  FLOW PROCESS FROM NODE   1355.00 TO NODE   1356.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3300
  S.C.S. CURVE NUMBER (AMC II) =  77
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    57.00
  UPSTREAM ELEVATION(FEET) =    452.00
```

```
  DOWNSTREAM ELEVATION(FEET) =    442.00
  ELEVATION DIFFERENCE(FEET) =     10.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    4.857
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      1.09
  TOTAL AREA(ACRES) =      0.38   TOTAL RUNOFF(CFS) =      1.09

+---------------------------------------------------------------------------+
| LAND USE - NATURAL                                                        |
| COMPOSITE C AND D SOILS                                                   |
| (0.17*0.3+0.21*0.35)/0.38=0.33                                            |
+---------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   1356.00 TO NODE   1357.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    442.00  DOWNSTREAM(FEET) =    249.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1403.00   CHANNEL SLOPE =  0.1376
  CHANNEL BASE(FEET) =    1.00   "Z" FACTOR =   0.750
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   2.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.101
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3300
  S.C.S. CURVE NUMBER (AMC II) =  77
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       3.35
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  11.77
  AVERAGE FLOW DEPTH(FEET) =   0.24   TRAVEL TIME(MIN.) =   1.99
  Tc(MIN.) =    6.84
  SUBAREA AREA(ACRES) =     1.92       SUBAREA RUNOFF(CFS) =    4.50
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.330
  TOTAL AREA(ACRES) =        2.3         PEAK FLOW RATE(CFS) =       5.39

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.32   FLOW VELOCITY(FEET/SEC.) =  13.42
  LONGEST FLOWPATH FROM NODE   1355.00 TO NODE   1357.00 =    1460.00 FEET.

+---------------------------------------------------------------------------+
| LAND USE - NATURAL                                                        |
| COMPOSITE C FOR C & D SOILS                                               |
| (0.24*0.3+1.62*0.35)/1.92=0.33                                            |
+---------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   1357.00 TO NODE   1354.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    6.84
  RAINFALL INTENSITY(INCH/HR) =   7.10
  TOTAL STREAM AREA(ACRES) =     2.30
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      5.39

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
```



```
      1      101.96    14.70        4.336         73.52
      2        5.39     6.84        7.101          2.30

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF       Tc      INTENSITY
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)
      1       52.85     6.84        7.101
      2      105.25    14.70        4.336

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     105.25   Tc(MIN.) =   14.70
  TOTAL AREA(ACRES) =       75.8
  LONGEST FLOWPATH FROM NODE   1300.00 TO NODE   1354.00 =    3873.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1354.00 TO NODE   1302.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   238.64  DOWNSTREAM(FEET) =   232.08
  FLOW LENGTH(FEET) =   357.80   MANNING'S N =  0.013
  DEPTH OF FLOW IN  81.0 INCH PIPE IS  66.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.36
  ESTIMATED PIPE DIAMETER(INCH) =  81.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     105.25
  PIPE TRAVEL TIME(MIN.) =   1.78    Tc(MIN.) =   16.48
  LONGEST FLOWPATH FROM NODE   1300.00 TO NODE   1302.00 =    4230.80 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1354.00 TO NODE   1302.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   16.48
  RAINFALL INTENSITY(INCH/HR) =   4.03
  TOTAL STREAM AREA(ACRES) =    75.82
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    105.25

****************************************************************************
  FLOW PROCESS FROM NODE   1358.00 TO NODE   1359.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  USER-SPECIFIED RUNOFF COEFFICIENT = .4100
  S.C.S. CURVE NUMBER (AMC II) =  82
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    70.00
  UPSTREAM ELEVATION(FEET) =    510.00
  DOWNSTREAM ELEVATION(FEET) =    492.00
  ELEVATION DIFFERENCE(FEET) =     18.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    4.824
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.39
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.39

****************************************************************************
```

```
  FLOW PROCESS FROM NODE   1359.00 TO NODE   1302.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    492.00  DOWNSTREAM(FEET) =    246.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   700.00   CHANNEL SLOPE =  0.3514
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   2.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.247
  USER-SPECIFIED RUNOFF COEFFICIENT = .4100
  S.C.S. CURVE NUMBER (AMC II) =  82
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       9.03
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.46
  AVERAGE FLOW DEPTH(FEET) =   0.13   TRAVEL TIME(MIN.) =   1.81
  Tc(MIN.) =    6.63
  SUBAREA AREA(ACRES) =     5.75       SUBAREA RUNOFF(CFS) =   17.09
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.410
  TOTAL AREA(ACRES) =        5.9         PEAK FLOW RATE(CFS) =      17.41

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.20   FLOW VELOCITY(FEET/SEC.) =   8.16
  LONGEST FLOWPATH FROM NODE   1358.00 TO NODE   1302.00 =     770.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1359.00 TO NODE   1302.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    6.63
  RAINFALL INTENSITY(INCH/HR) =   7.25
  TOTAL STREAM AREA(ACRES) =     5.86
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     17.41

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1      105.25    16.48        4.029         75.82
      2       17.41     6.63        7.247          5.86

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)
      1       75.92     6.63       7.247
      2      114.93    16.48       4.029

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     114.93   Tc(MIN.) =   16.48
  TOTAL AREA(ACRES) =       81.7
  LONGEST FLOWPATH FROM NODE   1300.00 TO NODE   1302.00 =    4230.80 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1302.00 TO NODE   1339.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
```



```
  ELEVATION DATA: UPSTREAM(FEET) =   231.98  DOWNSTREAM(FEET) =   227.02
  FLOW LENGTH(FEET) =   244.20   MANNING'S N =  0.013
  DEPTH OF FLOW IN  84.0 INCH PIPE IS  64.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.61
  ESTIMATED PIPE DIAMETER(INCH) =  84.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     114.93
  PIPE TRAVEL TIME(MIN.) =   1.13    Tc(MIN.) =   17.61
  LONGEST FLOWPATH FROM NODE   1300.00 TO NODE   1339.00 =    4475.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1302.00 TO NODE   1339.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   17.61
  RAINFALL INTENSITY(INCH/HR) =   3.86
  TOTAL STREAM AREA(ACRES) =    81.68
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    114.93

****************************************************************************
  FLOW PROCESS FROM NODE   1338.00 TO NODE   1339.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  USER-SPECIFIED RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =  88
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    49.00
  UPSTREAM ELEVATION(FEET) =    268.00
  DOWNSTREAM ELEVATION(FEET) =    244.00
  ELEVATION DIFFERENCE(FEET) =     24.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    4.387
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.64
  TOTAL AREA(ACRES) =      0.21   TOTAL RUNOFF(CFS) =      0.64

****************************************************************************
  FLOW PROCESS FROM NODE   1338.00 TO NODE   1339.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    4.39
  RAINFALL INTENSITY(INCH/HR) =   8.69
  TOTAL STREAM AREA(ACRES) =     0.21
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      0.64

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1      114.93    17.61        3.860         81.68
      2        0.64     4.39        8.695          0.21

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
```

```
  NUMBER       (CFS)     (MIN.)    (INCH/HOUR)
      1        51.67      4.39        8.695
      2       115.21     17.61        3.860

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     115.21   Tc(MIN.) =   17.61
  TOTAL AREA(ACRES) =        81.9
  LONGEST FLOWPATH FROM NODE   1300.00 TO NODE   1339.00 =    4475.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1339.00 TO NODE   1303.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   227.25  DOWNSTREAM(FEET) =   224.02
  FLOW LENGTH(FEET) =   290.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  93.0 INCH PIPE IS  73.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   2.87
  ESTIMATED PIPE DIAMETER(INCH) =  93.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     115.21
  PIPE TRAVEL TIME(MIN.) =   1.68    Tc(MIN.) =   19.29
  LONGEST FLOWPATH FROM NODE   1300.00 TO NODE   1303.00 =    4765.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1339.00 TO NODE   1303.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE   1304.00 TO NODE   1305.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3300
  S.C.S. CURVE NUMBER (AMC II) =  88
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    640.00
  DOWNSTREAM ELEVATION(FEET) =    600.00
  ELEVATION DIFFERENCE(FEET) =     40.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.434
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.390
  SUBAREA RUNOFF(CFS) =      1.68
  TOTAL AREA(ACRES) =      0.69   TOTAL RUNOFF(CFS) =      1.68

+--------------------------------------------------------------------------+
| COMPOSITE C FOR B & C SOILS                                              |
| LAND USE - 1 DU/A (NATURAL AREA W/ IMPERVIOUSNESS)                       |
| (0.32*0.52)+(0.36*0.17)/0.69 = 0.33                                      |
+--------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   1305.00 TO NODE   1306.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    600.00  DOWNSTREAM(FEET) =    330.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  3361.00   CHANNEL SLOPE =  0.0803
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   2.000
```



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  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   3.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.869
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3300
  S.C.S. CURVE NUMBER (AMC II) =  88
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      93.44
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   9.57
  AVERAGE FLOW DEPTH(FEET) =   0.84   TRAVEL TIME(MIN.) =   5.85
  Tc(MIN.) =   12.29
  SUBAREA AREA(ACRES) =   110.14       SUBAREA RUNOFF(CFS) =  176.96
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.330
  TOTAL AREA(ACRES) =      110.8          PEAK FLOW RATE(CFS) =     178.07

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.21   FLOW VELOCITY(FEET/SEC.) =  11.85
  LONGEST FLOWPATH FROM NODE   1304.00 TO NODE   1306.00 =    3461.00 FEET.

+--------------------------------------------------------------------------+
| COMPOSITE C FOR B, C, & D SOILS                                          |
| LAND USE - 1 DU/A (NATURAL AREA W/ IMPERVIOUSNESS)                       |
| (0.32*89.1+0.36*16.67+0.41*4.37)/110.14=0.33                             |
+--------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   1306.00 TO NODE   1342.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    313.00  DOWNSTREAM(FEET) =    262.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   503.00   CHANNEL SLOPE =  0.1014
  CHANNEL BASE(FEET) =    8.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   3.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.708
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3200
  S.C.S. CURVE NUMBER (AMC II) =  88
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     184.35
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  12.78
  AVERAGE FLOW DEPTH(FEET) =   1.23   TRAVEL TIME(MIN.) =   0.66
  Tc(MIN.) =   12.94
  SUBAREA AREA(ACRES) =     8.34       SUBAREA RUNOFF(CFS) =   12.56
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.329
  TOTAL AREA(ACRES) =      119.2          PEAK FLOW RATE(CFS) =     184.76

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.24   FLOW VELOCITY(FEET/SEC.) =  12.73
  LONGEST FLOWPATH FROM NODE   1304.00 TO NODE   1342.00 =    3964.00 FEET.

+--------------------------------------------------------------------------+
| COMPOSITE C FOR B & D SOILS                                              |
| LAND USE - NATURAL                                                       |
| (0.25*2.26+0.35*6.08)/8.34=0.32                                          |
+--------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   1306.00 TO NODE   1342.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   12.94
```

```
  RAINFALL INTENSITY(INCH/HR) =   4.71
  TOTAL STREAM AREA(ACRES) =   119.17
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    184.76

****************************************************************************
  FLOW PROCESS FROM NODE   1343.00 TO NODE   1344.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  USER-SPECIFIED RUNOFF COEFFICIENT = .3200
  S.C.S. CURVE NUMBER (AMC II) =  65
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    85.00
  UPSTREAM ELEVATION(FEET) =    482.00
  DOWNSTREAM ELEVATION(FEET) =    480.00
  ELEVATION DIFFERENCE(FEET) =      2.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    9.732
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.658
  SUBAREA RUNOFF(CFS) =      0.13
  TOTAL AREA(ACRES) =      0.07   TOTAL RUNOFF(CFS) =      0.13

****************************************************************************
  FLOW PROCESS FROM NODE   1344.00 TO NODE   1327.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    480.00  DOWNSTREAM(FEET) =    350.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1075.00   CHANNEL SLOPE =  0.1209
  CHANNEL BASE(FEET) =    8.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   3.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.433
  USER-SPECIFIED RUNOFF COEFFICIENT = .3200
  S.C.S. CURVE NUMBER (AMC II) =  65
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       4.79
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.00
  AVERAGE FLOW DEPTH(FEET) =   0.14   TRAVEL TIME(MIN.) =   4.48
  Tc(MIN.) =   14.21
  SUBAREA AREA(ACRES) =     6.49       SUBAREA RUNOFF(CFS) =    9.21
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.320
  TOTAL AREA(ACRES) =        6.6         PEAK FLOW RATE(CFS) =       9.31

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.22   FLOW VELOCITY(FEET/SEC.) =   4.97
  LONGEST FLOWPATH FROM NODE   1343.00 TO NODE   1327.00 =    1160.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1327.00 TO NODE   1345.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   350.00  DOWNSTREAM(FEET) =   346.00
  FLOW LENGTH(FEET) =    40.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  19.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.48
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       9.31
  PIPE TRAVEL TIME(MIN.) =   0.19    Tc(MIN.) =   14.40
  LONGEST FLOWPATH FROM NODE   1343.00 TO NODE   1345.00 =    1200.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1345.00 TO NODE   1342.00 IS CODE =  51
----------------------------------------------------------------------------
```



```
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    346.00  DOWNSTREAM(FEET) =    262.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   422.00   CHANNEL SLOPE =  0.1991
  CHANNEL BASE(FEET) =    8.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   3.00
  CHANNEL FLOW THRU SUBAREA(CFS) =       9.31
  FLOW VELOCITY(FEET/SEC.) =   5.85   FLOW DEPTH(FEET) =   0.19
  TRAVEL TIME(MIN.) =   1.20   Tc(MIN.) =   15.60
  LONGEST FLOWPATH FROM NODE   1343.00 TO NODE   1342.00 =    1622.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1345.00 TO NODE   1342.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   15.60
  RAINFALL INTENSITY(INCH/HR) =   4.17
  TOTAL STREAM AREA(ACRES) =     6.56
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      9.31

****************************************************************************
  FLOW PROCESS FROM NODE   1324.00 TO NODE   1325.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  USER-SPECIFIED RUNOFF COEFFICIENT = .8700
  S.C.S. CURVE NUMBER (AMC II) =  96
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    65.00
  UPSTREAM ELEVATION(FEET) =    351.50
  DOWNSTREAM ELEVATION(FEET) =    348.50
  ELEVATION DIFFERENCE(FEET) =      3.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.005
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.15
  TOTAL AREA(ACRES) =      0.02   TOTAL RUNOFF(CFS) =      0.15

****************************************************************************
  FLOW PROCESS FROM NODE   1325.00 TO NODE   1326.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  348.50  DOWNSTREAM ELEVATION(FEET) =  343.00
  STREET LENGTH(FEET) =    85.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.018
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.018

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       0.42
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.20
```

```
    HALFSTREET FLOOD WIDTH(FEET) =    2.00
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.52
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.09
  STREET FLOW TRAVEL TIME(MIN.) =   0.26   Tc(MIN.) =    2.26
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  USER-SPECIFIED RUNOFF COEFFICIENT = .8700
  S.C.S. CURVE NUMBER (AMC II) =  96
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    0.07      SUBAREA RUNOFF(CFS) =    0.53
  TOTAL AREA(ACRES) =        0.1        PEAK FLOW RATE(CFS) =       0.68

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.20   HALFSTREET FLOOD WIDTH(FEET) =   2.00
  FLOW VELOCITY(FEET/SEC.) =  5.52   DEPTH*VELOCITY(FT*FT/SEC.) =   1.09
  LONGEST FLOWPATH FROM NODE   1324.00 TO NODE   1326.00 =     150.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1326.00 TO NODE   1340.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    343.00  DOWNSTREAM(FEET) =    321.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =    60.00   CHANNEL SLOPE =  0.3667
  CHANNEL BASE(FEET) =    0.50   "Z" FACTOR =   0.750
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =       0.68
  FLOW VELOCITY(FEET/SEC.) =  11.33   FLOW DEPTH(FEET) =   0.10
  TRAVEL TIME(MIN.) =   0.09   Tc(MIN.) =    2.35
  LONGEST FLOWPATH FROM NODE   1324.00 TO NODE   1340.00 =     210.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1340.00 TO NODE   1341.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    321.00  DOWNSTREAM(FEET) =    309.50
  CHANNEL LENGTH THRU SUBAREA(FEET) =    92.00   CHANNEL SLOPE =  0.1250
  CHANNEL BASE(FEET) =    0.50   "Z" FACTOR =   0.750
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   2.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  USER-SPECIFIED RUNOFF COEFFICIENT = .2500
  S.C.S. CURVE NUMBER (AMC II) =  77
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       0.92
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.47
  AVERAGE FLOW DEPTH(FEET) =   0.17   TRAVEL TIME(MIN.) =   0.18
  Tc(MIN.) =    2.53
  SUBAREA AREA(ACRES) =     0.22       SUBAREA RUNOFF(CFS) =    0.48
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.430
  TOTAL AREA(ACRES) =        0.3         PEAK FLOW RATE(CFS) =       1.16

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.20   FLOW VELOCITY(FEET/SEC.) =   8.85
  LONGEST FLOWPATH FROM NODE   1324.00 TO NODE   1341.00 =     302.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1351.00 TO NODE   1341.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
```



```
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  USER-SPECIFIED RUNOFF COEFFICIENT = .2500
  S.C.S. CURVE NUMBER (AMC II) =  77
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3713
  SUBAREA AREA(ACRES) =    0.15   SUBAREA RUNOFF(CFS) =    0.33
  TOTAL AREA(ACRES) =        0.5   TOTAL RUNOFF(CFS) =       1.49
  TC(MIN.) =    2.53

****************************************************************************
  FLOW PROCESS FROM NODE   1351.00 TO NODE   1342.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    302.00  DOWNSTREAM(FEET) =    262.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   117.00   CHANNEL SLOPE =  0.3419
  CHANNEL BASE(FEET) =    8.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =       1.49
  FLOW VELOCITY(FEET/SEC.) =   3.60   FLOW DEPTH(FEET) =   0.05
  TRAVEL TIME(MIN.) =   0.54   Tc(MIN.) =    3.07
  LONGEST FLOWPATH FROM NODE   1324.00 TO NODE   1342.00 =     419.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1351.00 TO NODE   1342.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
  TIME OF CONCENTRATION(MIN.) =    3.07
  RAINFALL INTENSITY(INCH/HR) =   8.69
  TOTAL STREAM AREA(ACRES) =     0.46
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.49

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1      184.76    12.94        4.708        119.17
      2        9.31    15.60        4.173          6.56
      3        1.49     3.07        8.695          0.46

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  3 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       47.17     3.07        8.695
      2      193.28    12.94        4.708
      3      173.78    15.60        4.173

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     193.28   Tc(MIN.) =   12.94
  TOTAL AREA(ACRES) =      126.2
  LONGEST FLOWPATH FROM NODE   1304.00 TO NODE   1342.00 =    3964.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1342.00 TO NODE   1307.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
```

```
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    262.00  DOWNSTREAM(FEET) =    242.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   310.00   CHANNEL SLOPE =  0.0645
  CHANNEL BASE(FEET) =    8.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   3.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.601
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3300
  S.C.S. CURVE NUMBER (AMC II) =  77
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     195.50
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  11.05
  AVERAGE FLOW DEPTH(FEET) =   1.44   TRAVEL TIME(MIN.) =   0.47
  Tc(MIN.) =   13.41
  SUBAREA AREA(ACRES) =     2.92       SUBAREA RUNOFF(CFS) =    4.43
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.329
  TOTAL AREA(ACRES) =      129.1         PEAK FLOW RATE(CFS) =     195.45

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.44   FLOW VELOCITY(FEET/SEC.) =  11.05
  LONGEST FLOWPATH FROM NODE   1304.00 TO NODE   1307.00 =    4274.00 FEET.

+------------------------------------------------------------------------------+
| COMPOSITE C FOR B & D SOIL (OPEN SPACE)                                      |
| (0.25*.68+0.35*2.24)/2.92=0.33                                               |
|                                                                              |
+------------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   1342.00 TO NODE   1307.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE   1346.00 TO NODE   1347.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  USER-SPECIFIED RUNOFF COEFFICIENT = .8700
  S.C.S. CURVE NUMBER (AMC II) =  98
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    49.00
  UPSTREAM ELEVATION(FEET) =    351.50
  DOWNSTREAM ELEVATION(FEET) =    349.80
  ELEVATION DIFFERENCE(FEET) =      1.70
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    1.914
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.15
  TOTAL AREA(ACRES) =      0.02   TOTAL RUNOFF(CFS) =      0.15

****************************************************************************
  FLOW PROCESS FROM NODE   1349.00 TO NODE   1330.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  349.80  DOWNSTREAM ELEVATION(FEET) =  333.00
  STREET LENGTH(FEET) =   280.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.018
```



```
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.018

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       0.64
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.20
    HALFSTREET FLOOD WIDTH(FEET) =    2.00
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.32
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.05
  STREET FLOW TRAVEL TIME(MIN.) =   0.88   Tc(MIN.) =    2.79
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  USER-SPECIFIED RUNOFF COEFFICIENT = .8700
  S.C.S. CURVE NUMBER (AMC II) =  98
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    0.13      SUBAREA RUNOFF(CFS) =    0.98
  TOTAL AREA(ACRES) =        0.1        PEAK FLOW RATE(CFS) =       1.13

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.20   HALFSTREET FLOOD WIDTH(FEET) =   2.00
  FLOW VELOCITY(FEET/SEC.) =  5.32   DEPTH*VELOCITY(FT*FT/SEC.) =   1.05
  LONGEST FLOWPATH FROM NODE   1346.00 TO NODE   1330.00 =     329.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1349.00 TO NODE   1330.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =    2.79
  RAINFALL INTENSITY(INCH/HR) =   8.69
  TOTAL STREAM AREA(ACRES) =     0.15
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.13

****************************************************************************
  FLOW PROCESS FROM NODE   1352.00 TO NODE   1353.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  USER-SPECIFIED RUNOFF COEFFICIENT = .3200
  S.C.S. CURVE NUMBER (AMC II) =  65
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    75.00
  UPSTREAM ELEVATION(FEET) =    445.00
  DOWNSTREAM ELEVATION(FEET) =    425.00
  ELEVATION DIFFERENCE(FEET) =     20.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    5.644
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.041
  SUBAREA RUNOFF(CFS) =      0.15
  TOTAL AREA(ACRES) =      0.06   TOTAL RUNOFF(CFS) =      0.15

****************************************************************************
  FLOW PROCESS FROM NODE   1353.00 TO NODE   1330.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    425.00  DOWNSTREAM(FEET) =    333.00
```

```
  CHANNEL LENGTH THRU SUBAREA(FEET) =   528.00   CHANNEL SLOPE =  0.1742
  CHANNEL BASE(FEET) =    8.00   "Z" FACTOR =   4.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   2.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.079
  USER-SPECIFIED RUNOFF COEFFICIENT = .3200
  S.C.S. CURVE NUMBER (AMC II) =  65
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.56
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   2.87
  AVERAGE FLOW DEPTH(FEET) =   0.07   TRAVEL TIME(MIN.) =   3.06
  Tc(MIN.) =    8.71
  SUBAREA AREA(ACRES) =     1.41       SUBAREA RUNOFF(CFS) =    2.74
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.320
  TOTAL AREA(ACRES) =        1.5         PEAK FLOW RATE(CFS) =       2.86

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.09   FLOW VELOCITY(FEET/SEC.) =   3.62
  LONGEST FLOWPATH FROM NODE   1352.00 TO NODE   1330.00 =     603.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1353.00 TO NODE   1330.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    8.71
  RAINFALL INTENSITY(INCH/HR) =   6.08
  TOTAL STREAM AREA(ACRES) =     1.47
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.86

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        1.13     2.79        8.695          0.15
      2        2.86     8.71        6.079          1.47

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF       Tc      INTENSITY
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)
      1        2.05     2.79        8.695
      2        3.65     8.71        6.079

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       3.65   Tc(MIN.) =    8.71
  TOTAL AREA(ACRES) =        1.6
  LONGEST FLOWPATH FROM NODE   1352.00 TO NODE   1330.00 =     603.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1330.00 TO NODE   1333.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  333.00  DOWNSTREAM ELEVATION(FEET) =  315.00
  STREET LENGTH(FEET) =   323.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.018
```



```
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.018

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       5.19
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.33
    HALFSTREET FLOOD WIDTH(FEET) =    9.60
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.11
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.71
  STREET FLOW TRAVEL TIME(MIN.) =   1.05   Tc(MIN.) =    9.76
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.647
  USER-SPECIFIED RUNOFF COEFFICIENT = .5100
  S.C.S. CURVE NUMBER (AMC II) =  76
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.426
  SUBAREA AREA(ACRES) =    1.07      SUBAREA RUNOFF(CFS) =    3.08
  TOTAL AREA(ACRES) =        2.7        PEAK FLOW RATE(CFS) =       6.47

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.35   HALFSTREET FLOOD WIDTH(FEET) =  10.70
  FLOW VELOCITY(FEET/SEC.) =  5.33   DEPTH*VELOCITY(FT*FT/SEC.) =   1.88
  LONGEST FLOWPATH FROM NODE   1352.00 TO NODE   1333.00 =     926.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1333.00 TO NODE   1334.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   305.92  DOWNSTREAM(FEET) =   305.18
  FLOW LENGTH(FEET) =    97.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  36.0 INCH PIPE IS  25.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   1.24
  ESTIMATED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =        6.47
  PIPE TRAVEL TIME(MIN.) =   1.31    Tc(MIN.) =   11.07
  LONGEST FLOWPATH FROM NODE   1352.00 TO NODE   1334.00 =    1023.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1333.00 TO NODE   1334.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   11.07
  RAINFALL INTENSITY(INCH/HR) =   5.21
  TOTAL STREAM AREA(ACRES) =     2.69
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      6.47

****************************************************************************
  FLOW PROCESS FROM NODE   1308.00 TO NODE   1321.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  USER-SPECIFIED RUNOFF COEFFICIENT = .2500
  S.C.S. CURVE NUMBER (AMC II) =  77
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    96.00
  UPSTREAM ELEVATION(FEET) =    455.00
  DOWNSTREAM ELEVATION(FEET) =    440.00
```

```
  ELEVATION DIFFERENCE(FEET) =     15.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.959
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.025
  SUBAREA RUNOFF(CFS) =      0.14
  TOTAL AREA(ACRES) =      0.08   TOTAL RUNOFF(CFS) =      0.14

****************************************************************************
  FLOW PROCESS FROM NODE   1321.00 TO NODE   1322.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    440.00  DOWNSTREAM(FEET) =    312.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   820.00   CHANNEL SLOPE =  0.1561
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   5.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.218
  USER-SPECIFIED RUNOFF COEFFICIENT = .3200
  S.C.S. CURVE NUMBER (AMC II) =  65
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       3.25
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.35
  AVERAGE FLOW DEPTH(FEET) =   0.09   TRAVEL TIME(MIN.) =   4.08
  Tc(MIN.) =   11.04
  SUBAREA AREA(ACRES) =     3.71       SUBAREA RUNOFF(CFS) =    6.19
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.319
  TOTAL AREA(ACRES) =        3.8         PEAK FLOW RATE(CFS) =       6.30

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.14   FLOW VELOCITY(FEET/SEC.) =   4.31
  LONGEST FLOWPATH FROM NODE   1308.00 TO NODE   1322.00 =     916.00 FEET.

+--------------------------------------------------------------------------+
| LAND USE - 1 DU/A                                                        |
| HSG - B                                                                  |
|                                                                          |
+--------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   1323.00 TO NODE   1322.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.218
  USER-SPECIFIED RUNOFF COEFFICIENT = .2500
  S.C.S. CURVE NUMBER (AMC II) =  77
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3094
  SUBAREA AREA(ACRES) =    0.58   SUBAREA RUNOFF(CFS) =    0.76
  TOTAL AREA(ACRES) =        4.4   TOTAL RUNOFF(CFS) =       7.06
  TC(MIN.) =   11.04

+--------------------------------------------------------------------------+
| LAND USE - NATURAL                                                       |
| HSG - B                                                                  |
|                                                                          |
+--------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   1322.00 TO NODE   1334.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
```



```
  ELEVATION DATA: UPSTREAM(FEET) =   308.92  DOWNSTREAM(FEET) =   305.78
  FLOW LENGTH(FEET) =    34.02   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  15.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.24
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       7.06
  PIPE TRAVEL TIME(MIN.) =   0.18    Tc(MIN.) =   11.21
  LONGEST FLOWPATH FROM NODE   1308.00 TO NODE   1334.00 =     950.02 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1322.00 TO NODE   1334.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   11.21
  RAINFALL INTENSITY(INCH/HR) =   5.16
  TOTAL STREAM AREA(ACRES) =     4.37
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      7.06

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        6.47    11.07        5.208          2.69
      2        7.06    11.21        5.165          4.37

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF       Tc       INTENSITY
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)
      1       13.44    11.07       5.208
      2       13.48    11.21       5.165

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      13.48   Tc(MIN.) =   11.21
  TOTAL AREA(ACRES) =        7.1
  LONGEST FLOWPATH FROM NODE   1352.00 TO NODE   1334.00 =    1023.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1334.00 TO NODE   1335.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   305.08  DOWNSTREAM(FEET) =   301.06
  FLOW LENGTH(FEET) =    43.84   MANNING'S N =  0.013
  DEPTH OF FLOW IN  30.0 INCH PIPE IS  20.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.78
  ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      13.48
  PIPE TRAVEL TIME(MIN.) =   0.19    Tc(MIN.) =   11.40
  LONGEST FLOWPATH FROM NODE   1352.00 TO NODE   1335.00 =    1066.84 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1335.00 TO NODE   1328.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.108
```

```
  USER-SPECIFIED RUNOFF COEFFICIENT = .2500
  S.C.S. CURVE NUMBER (AMC II) =  77
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3511
  SUBAREA AREA(ACRES) =     0.20   SUBAREA RUNOFF(CFS) =     0.26
  TOTAL AREA(ACRES) =        7.3   TOTAL RUNOFF(CFS) =      13.48
  TC(MIN.) =   11.40
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE   1328.00 TO NODE   1329.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   298.50  DOWNSTREAM(FEET) =   296.00
  FLOW LENGTH(FEET) =    38.70   MANNING'S N =  0.013
  DEPTH OF FLOW IN  30.0 INCH PIPE IS  23.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.25
  ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      13.48
  PIPE TRAVEL TIME(MIN.) =   0.20    Tc(MIN.) =   11.60
  LONGEST FLOWPATH FROM NODE   1352.00 TO NODE   1329.00 =    1105.54 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1329.00 TO NODE   1307.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    296.00  DOWNSTREAM(FEET) =    242.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   620.00   CHANNEL SLOPE =  0.0871
  CHANNEL BASE(FEET) =   12.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   5.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.547
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3300
  S.C.S. CURVE NUMBER (AMC II) =  77
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      17.38
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.03
  AVERAGE FLOW DEPTH(FEET) =   0.27   TRAVEL TIME(MIN.) =   2.06
  Tc(MIN.) =   13.66
  SUBAREA AREA(ACRES) =     5.19       SUBAREA RUNOFF(CFS) =     7.79
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.342
  TOTAL AREA(ACRES) =       12.4         PEAK FLOW RATE(CFS) =      19.38

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.29   FLOW VELOCITY(FEET/SEC.) =   5.25
  LONGEST FLOWPATH FROM NODE   1352.00 TO NODE   1307.00 =    1725.54 FEET.

+--------------------------------------------------------------------------+
| COMPOSITE C FOR B, C, & D SOILS                                          |
| LAND USE - NATURAL                                                       |
| (0.25*0.81+0.3*.69+.35*3.69)/5.19=0.33                                   |
+--------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   1309.00 TO NODE   1307.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.547
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3100
```



```
  S.C.S. CURVE NUMBER (AMC II) =  77
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3346
  SUBAREA AREA(ACRES) =     3.89   SUBAREA RUNOFF(CFS) =     5.48
  TOTAL AREA(ACRES) =       16.3   TOTAL RUNOFF(CFS) =      24.86
  TC(MIN.) =   13.66

+--------------------------------------------------------------------------+
| COMPOSITE C FOR C & D SOILS                                              |
| LAND USE - NATURAL                                                       |
| (0.30*3.01+0.88*0.35)/3.89 = 0.31                                        |
+--------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   1309.00 TO NODE   1307.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
      1       24.86    13.66       4.547       16.34
  LONGEST FLOWPATH FROM NODE   1352.00 TO NODE   1307.00 =    1725.54 FEET.

  ** MEMORY BANK #  2 CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
      1      195.45    13.41       4.601      129.11
  LONGEST FLOWPATH FROM NODE   1304.00 TO NODE   1307.00 =    4274.00 FEET.

  ** PEAK FLOW RATE TABLE **
  STREAM    RUNOFF       Tc      INTENSITY
  NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
      1     219.86      13.41       4.601
      2     218.01      13.66       4.547

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     219.86   Tc(MIN.) =   13.41
  TOTAL AREA(ACRES) =      145.4

****************************************************************************
  FLOW PROCESS FROM NODE   1307.00 TO NODE   1310.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    266.00  DOWNSTREAM(FEET) =    228.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   590.00   CHANNEL SLOPE =  0.0644
  CHANNEL BASE(FEET) =    8.00   "Z" FACTOR =   4.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   5.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.412
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =  77
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     224.09
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  10.91
  AVERAGE FLOW DEPTH(FEET) =   1.48   TRAVEL TIME(MIN.) =   0.90
  Tc(MIN.) =   14.31
  SUBAREA AREA(ACRES) =     5.48       SUBAREA RUNOFF(CFS) =     8.46
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.330
  TOTAL AREA(ACRES) =      150.9         PEAK FLOW RATE(CFS) =     220.01

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
```

```
  DEPTH(FEET) =  1.46   FLOW VELOCITY(FEET/SEC.) =  10.87
  LONGEST FLOWPATH FROM NODE   1304.00 TO NODE   1310.00 =    4864.00 FEET.

+----------------------------------------------------------------------------+
| COMPOSITE C FOR A, C, & D SOILS                                            |
| LAND USE - NATURAL                                                         |
| (0.20*0.14+0.30*0.04+0.35*5.3)/5.48=0.35                                   |
+----------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   1307.00 TO NODE   1310.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   14.31
  RAINFALL INTENSITY(INCH/HR) =   4.41
  TOTAL STREAM AREA(ACRES) =   150.93
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    220.01

****************************************************************************
  FLOW PROCESS FROM NODE   1348.00 TO NODE   1349.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .2700
  S.C.S. CURVE NUMBER (AMC II) =  77
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    75.00
  UPSTREAM ELEVATION(FEET) =    268.00
  DOWNSTREAM ELEVATION(FEET) =    236.00
  ELEVATION DIFFERENCE(FEET) =     32.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.006
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.725
  SUBAREA RUNOFF(CFS) =      0.35
  TOTAL AREA(ACRES) =      0.17   TOTAL RUNOFF(CFS) =      0.35

+----------------------------------------------------------------------------+
| OPEN SPACE A & D SOILS                                                     |
| (0.2*0.09+0.35*0.08)/0.17=0.27                                             |
|                                                                            |
+----------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   1349.00 TO NODE   1310.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    236.00  DOWNSTREAM(FEET) =    228.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   155.00   CHANNEL SLOPE =  0.0516
  CHANNEL BASE(FEET) =    0.50   "Z" FACTOR =   0.750
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   1.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.341
  USER-SPECIFIED RUNOFF COEFFICIENT = .2000
  S.C.S. CURVE NUMBER (AMC II) =  63
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       0.51
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.23
  AVERAGE FLOW DEPTH(FEET) =   0.16   TRAVEL TIME(MIN.) =   0.49
  Tc(MIN.) =    6.50
  SUBAREA AREA(ACRES) =     0.21       SUBAREA RUNOFF(CFS) =    0.31
```



```
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.231
  TOTAL AREA(ACRES) =        0.4         PEAK FLOW RATE(CFS) =       0.65

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.18   FLOW VELOCITY(FEET/SEC.) =   5.64
  LONGEST FLOWPATH FROM NODE   1348.00 TO NODE   1310.00 =     230.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1350.00 TO NODE   1310.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.341
  USER-SPECIFIED RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =  88
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3277
  SUBAREA AREA(ACRES) =    1.64   SUBAREA RUNOFF(CFS) =    4.21
  TOTAL AREA(ACRES) =        2.0   TOTAL RUNOFF(CFS) =       4.86
  TC(MIN.) =    6.50

****************************************************************************
  FLOW PROCESS FROM NODE   1350.00 TO NODE   1310.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    6.50
  RAINFALL INTENSITY(INCH/HR) =   7.34
  TOTAL STREAM AREA(ACRES) =     2.02
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.86

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc       INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1      220.01    14.31        4.412        150.93
      2        4.86     6.50        7.341          2.02

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF       Tc       INTENSITY
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)
      1      104.78     6.50        7.341
      2      222.93    14.31        4.412

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     222.93   Tc(MIN.) =   14.31
  TOTAL AREA(ACRES) =      152.9
  LONGEST FLOWPATH FROM NODE   1304.00 TO NODE   1310.00 =    4864.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1310.00 TO NODE   1303.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   224.11  DOWNSTREAM(FEET) =   223.02
  FLOW LENGTH(FEET) =    78.32   MANNING'S N =  0.013
  DEPTH OF FLOW IN 114.0 INCH PIPE IS  91.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.67
```

```
  ESTIMATED PIPE DIAMETER(INCH) = 114.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     222.93
  PIPE TRAVEL TIME(MIN.) =   0.36    Tc(MIN.) =   14.67
  LONGEST FLOWPATH FROM NODE   1304.00 TO NODE   1303.00 =    4942.32 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1310.00 TO NODE   1303.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM     RUNOFF       Tc       INTENSITY     AREA
  NUMBER       (CFS)     (MIN.)    (INCH/HOUR)   (ACRE)
      1      222.93    14.67        4.343      152.95
  LONGEST FLOWPATH FROM NODE   1304.00 TO NODE   1303.00 =    4942.32 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
  STREAM     RUNOFF       Tc       INTENSITY     AREA
  NUMBER       (CFS)     (MIN.)    (INCH/HOUR)   (ACRE)
      1      115.21    19.29        3.639       81.89
  LONGEST FLOWPATH FROM NODE   1300.00 TO NODE   1303.00 =    4765.00 FEET.

  ** PEAK FLOW RATE TABLE **
  STREAM    RUNOFF       Tc       INTENSITY
  NUMBER      (CFS)     (MIN.)    (INCH/HOUR)
      1     310.52      14.67        4.343
      2     302.02      19.29        3.639

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     310.52   Tc(MIN.) =   14.67
  TOTAL AREA(ACRES) =      234.8

****************************************************************************
  FLOW PROCESS FROM NODE   1303.00 TO NODE   1311.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   222.69  DOWNSTREAM(FEET) =   221.09
  FLOW LENGTH(FEET) =   131.09   MANNING'S N =  0.013
  DEPTH OF FLOW IN 132.0 INCH PIPE IS 106.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.80
  ESTIMATED PIPE DIAMETER(INCH) = 132.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     310.52
  PIPE TRAVEL TIME(MIN.) =   0.58    Tc(MIN.) =   15.24
  LONGEST FLOWPATH FROM NODE   1304.00 TO NODE   1311.00 =    5073.41 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1303.00 TO NODE   1311.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   15.24
  RAINFALL INTENSITY(INCH/HR) =   4.24
  TOTAL STREAM AREA(ACRES) =   234.84
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    310.52

****************************************************************************
  FLOW PROCESS FROM NODE   1312.00 TO NODE   1313.00 IS CODE =  21
----------------------------------------------------------------------------
```



```
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  USER-SPECIFIED RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =  88
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    378.00
  DOWNSTREAM ELEVATION(FEET) =    360.00
  ELEVATION DIFFERENCE(FEET) =     18.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.267
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.516
  SUBAREA RUNOFF(CFS) =      0.58
  TOTAL AREA(ACRES) =      0.22   TOTAL RUNOFF(CFS) =      0.58

+--------------------------------------------------------------------------+
| LAND USE - NATURAL                                                       |
| PREDOMINANT HSG - D                                                      |
|                                                                          |
+--------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   1313.00 TO NODE   1314.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    360.00  DOWNSTREAM(FEET) =    238.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   298.00   CHANNEL SLOPE =  0.4094
  CHANNEL BASE(FEET) =    5.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   5.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.883
  USER-SPECIFIED RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =  88
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       2.76
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.42
  AVERAGE FLOW DEPTH(FEET) =   0.10   TRAVEL TIME(MIN.) =   0.92
  Tc(MIN.) =    7.18
  SUBAREA AREA(ACRES) =     1.81       SUBAREA RUNOFF(CFS) =    4.36
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.350
  TOTAL AREA(ACRES) =        2.0         PEAK FLOW RATE(CFS) =       4.89

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.13   FLOW VELOCITY(FEET/SEC.) =   6.73
  LONGEST FLOWPATH FROM NODE   1312.00 TO NODE   1314.00 =     398.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1315.00 TO NODE   1314.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.883
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .3200
  S.C.S. CURVE NUMBER (AMC II) =  88
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3359
  SUBAREA AREA(ACRES) =    1.81   SUBAREA RUNOFF(CFS) =    3.99
  TOTAL AREA(ACRES) =        3.8   TOTAL RUNOFF(CFS) =       8.88
  TC(MIN.) =    7.18

+--------------------------------------------------------------------------+
| COMPOSITE C FOR C & D SOILS                                              |
| LAND USE - NATURAL                                                       |
| (0.30*1.12)+(0.35*0.69)/1.81 = 0.32                                      |
```

```
+----------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   1314.00 TO NODE   1311.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   233.50  DOWNSTREAM(FEET) =   220.96
  FLOW LENGTH(FEET) =   156.13   MANNING'S N =  0.013
  DEPTH OF FLOW IN  27.0 INCH PIPE IS  17.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.26
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =        8.88
  PIPE TRAVEL TIME(MIN.) =   0.80    Tc(MIN.) =    7.98
  LONGEST FLOWPATH FROM NODE   1312.00 TO NODE   1311.00 =     554.13 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1314.00 TO NODE   1311.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    7.98
  RAINFALL INTENSITY(INCH/HR) =   6.43
  TOTAL STREAM AREA(ACRES) =     3.84
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      8.88

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1      310.52    15.24        4.237        234.84
      2        8.88     7.98        6.430          3.84

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)
      1      171.49     7.98       6.430
      2      316.37    15.24       4.237

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     316.37   Tc(MIN.) =   15.24
  TOTAL AREA(ACRES) =      238.7
  LONGEST FLOWPATH FROM NODE   1304.00 TO NODE   1311.00 =    5073.41 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1311.00 TO NODE   1316.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    230.76  DOWNSTREAM(FEET) =    210.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   613.00   CHANNEL SLOPE =  0.0339
  CHANNEL BASE(FEET) =   20.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   5.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     316.37
  FLOW VELOCITY(FEET/SEC.) =   8.89   FLOW DEPTH(FEET) =   1.46
  TRAVEL TIME(MIN.) =   1.15   Tc(MIN.) =   16.39
```



```
  LONGEST FLOWPATH FROM NODE   1304.00 TO NODE   1316.00 =    5686.41 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1311.00 TO NODE   1316.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   16.39
  RAINFALL INTENSITY(INCH/HR) =   4.04
  TOTAL STREAM AREA(ACRES) =   238.68
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    316.37

****************************************************************************
  FLOW PROCESS FROM NODE   1216.00 TO NODE   1316.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<
============================================================================
  USER-SPECIFIED VALUES ARE AS FOLLOWS:
  TC(MIN) =  15.60   RAIN INTENSITY(INCH/HOUR) =  4.17
  TOTAL AREA(ACRES) =    49.20   TOTAL RUNOFF(CFS) =     39.80

****************************************************************************
  FLOW PROCESS FROM NODE   1216.00 TO NODE   1316.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   15.60
  RAINFALL INTENSITY(INCH/HR) =   4.17
  TOTAL STREAM AREA(ACRES) =    49.20
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     39.80

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1      316.37    16.39        4.042        238.68
      2       39.80    15.60        4.174         49.20

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)
      1      346.22    15.60       4.174
      2      354.92    16.39       4.042

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     354.92   Tc(MIN.) =   16.39
  TOTAL AREA(ACRES) =      287.9
  LONGEST FLOWPATH FROM NODE   1304.00 TO NODE   1316.00 =    5686.41 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1316.00 TO NODE   1317.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    210.00  DOWNSTREAM(FEET) =    202.00
```

```
  CHANNEL LENGTH THRU SUBAREA(FEET) =   595.00   CHANNEL SLOPE =  0.0134
  CHANNEL BASE(FEET) =   20.00   "Z" FACTOR =   4.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   5.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.818
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .2400
  S.C.S. CURVE NUMBER (AMC II) =  88
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     360.82
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.52
  AVERAGE FLOW DEPTH(FEET) =   1.98   TRAVEL TIME(MIN.) =   1.52
  Tc(MIN.) =   17.91
  SUBAREA AREA(ACRES) =    12.87       SUBAREA RUNOFF(CFS) =   11.79
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.303
  TOTAL AREA(ACRES) =      300.8          PEAK FLOW RATE(CFS) =     354.92

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.96   FLOW VELOCITY(FEET/SEC.) =   6.49
  LONGEST FLOWPATH FROM NODE   1304.00 TO NODE   1317.00 =    6281.41 FEET.

+----------------------------------------------------------------------------+
| COMPOSITE C FOR A, C, & D SOILS                                            |
| LAND USE - NATURAL                                                         |
| (9.36*0.20+0.42*0.30+3.09*0.35)/12.87 = 0.24                               |
+----------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   1317.00 TO NODE   1318.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   201.97  DOWNSTREAM(FEET) =   200.85
  FLOW LENGTH(FEET) =   214.40   MANNING'S N =  0.013
  DEPTH OF FLOW IN 126.0 INCH PIPE IS 100.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   2.41
  ESTIMATED PIPE DIAMETER(INCH) = 126.00    NUMBER OF PIPES =   2
  PIPE-FLOW(CFS) =     354.92
  PIPE TRAVEL TIME(MIN.) =   1.49    Tc(MIN.) =   19.40
  LONGEST FLOWPATH FROM NODE   1304.00 TO NODE   1318.00 =    6495.81 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1318.00 TO NODE   1319.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.627
  USER-SPECIFIED RUNOFF COEFFICIENT = .2000
  S.C.S. CURVE NUMBER (AMC II) =  63
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3030
  SUBAREA AREA(ACRES) =    0.47   SUBAREA RUNOFF(CFS) =    0.34
  TOTAL AREA(ACRES) =      301.2   TOTAL RUNOFF(CFS) =     354.92
  TC(MIN.) =   19.40
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE   1319.00 TO NODE   1320.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   199.69  DOWNSTREAM(FEET) =   199.29
  FLOW LENGTH(FEET) =    79.54   MANNING'S N =  0.013
  DEPTH OF FLOW IN 126.0 INCH PIPE IS 102.1 INCHES
```



```
  PIPE-FLOW VELOCITY(FEET/SEC.) =   2.36
  ESTIMATED PIPE DIAMETER(INCH) = 126.00    NUMBER OF PIPES =   2
  PIPE-FLOW(CFS) =     354.92
  PIPE TRAVEL TIME(MIN.) =   0.56    Tc(MIN.) =   19.96
  LONGEST FLOWPATH FROM NODE   1304.00 TO NODE   1320.00 =    6575.35 FEET.
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =      301.2  TC(MIN.) =     19.96
  PEAK FLOW RATE(CFS)   =     354.92
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

PA-2
2A

```
************************************************************************

          RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT
                       2003,1985,1981 HYDROLOGY MANUAL
       (c) Copyright 1982-2016 Advanced Engineering Software (aes)
           Ver. 23.0 Release Date: 07/01/2016  License ID 1509

                        Analysis prepared by:




 ************************** DESCRIPTION OF STUDY **************************
* OCEAN BREEZE RANCH - PA2                                                *
* SYSTEM 2100 - PROPOSED CONDITIONS                                       *
* NORTHWEST QUADRANT                                                      *
 *************************************************************************

  FILE NAME: 2100P100.DAT
  TIME/DATE OF STUDY: 11:10 05/31/2024
------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) = 100.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   3.300
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  ========  ================  ======  ===== ====== ===== =======
  1   18.0     12.0    0.020/0.020/0.015   0.50    1.50 0.0313 0.125 0.0150
  2   20.0     13.0    0.020/0.020/0.015   0.50    1.50 0.0313 0.125 0.0150
  3   16.0     11.0    0.020/0.020/0.015   0.50    1.50 0.0313 0.125 0.0150
  4   12.0      7.0    0.020/0.020/0.015   0.50    1.50 0.0100 0.010 0.0160
  5   17.0     12.0    0.020/0.020/0.015   0.33    1.50 0.0100 0.010 0.0160

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth = -0.10 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

************************************************************************
  FLOW PROCESS FROM NODE   2100.00 TO NODE   2101.00 IS CODE =  21
------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
========================================================================
  STREETS & ROADS (CURBS/STORM DRAINS) RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "B"
  S.C.S. CURVE NUMBER (AMC II) =  98
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    60.00
  UPSTREAM ELEVATION(FEET) =    208.19
```



```
  DOWNSTREAM ELEVATION(FEET) =    207.46
  ELEVATION DIFFERENCE(FEET) =      0.73
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.004
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.15
  TOTAL AREA(ACRES) =      0.02   TOTAL RUNOFF(CFS) =      0.15

************************************************************************
  FLOW PROCESS FROM NODE   2101.00 TO NODE   2102.00 IS CODE =  62
------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
========================================================================
  UPSTREAM ELEVATION(FEET) =  207.46  DOWNSTREAM ELEVATION(FEET) =  204.88
  STREET LENGTH(FEET) =   253.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  12.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.015
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       2.42
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.32
    HALFSTREET FLOOD WIDTH(FEET) =    9.80
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.25
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.72
  STREET FLOW TRAVEL TIME(MIN.) =   1.88   Tc(MIN.) =    4.88
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .5740
  S.C.S. CURVE NUMBER (AMC II) =  98
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.580
  SUBAREA AREA(ACRES) =    0.91      SUBAREA RUNOFF(CFS) =    4.54
  TOTAL AREA(ACRES) =        0.9        PEAK FLOW RATE(CFS) =       4.69

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.38   HALFSTREET FLOOD WIDTH(FEET) =  12.89
  FLOW VELOCITY(FEET/SEC.) =  2.64   DEPTH*VELOCITY(FT*FT/SEC.) =   1.01
  LONGEST FLOWPATH FROM NODE   2100.00 TO NODE   2102.00 =     313.00 FEET.

+----------------------------------------------------------------------+
| COMPOSITE C FOR A & B SOILS                                          |
| LAND USE - 14.5 DU/A (~50% IMP)                                      |
| (0.55*0.19)+(0.58*0.72)/0.91 = 0.574                                 |
+----------------------------------------------------------------------+

************************************************************************
  FLOW PROCESS FROM NODE   2102.00 TO NODE   2103.00 IS CODE =  31
------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   199.54  DOWNSTREAM(FEET) =   199.25
  FLOW LENGTH(FEET) =    28.58   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
```

```
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   8.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.70
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       4.69
  PIPE TRAVEL TIME(MIN.) =   0.08    Tc(MIN.) =    4.96
  LONGEST FLOWPATH FROM NODE   2100.00 TO NODE   2103.00 =     341.58 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2104.00 TO NODE   2103.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  RESIDENTIAL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .5800
  SOIL CLASSIFICATION IS "B"
  S.C.S. CURVE NUMBER (AMC II) =  80
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.5802
  SUBAREA AREA(ACRES) =    1.10   SUBAREA RUNOFF(CFS) =    5.55
  TOTAL AREA(ACRES) =        2.0   TOTAL RUNOFF(CFS) =      10.24
  TC(MIN.) =    4.96

****************************************************************************
  FLOW PROCESS FROM NODE   2103.00 TO NODE   2105.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   199.15  DOWNSTREAM(FEET) =   196.92
  FLOW LENGTH(FEET) =   223.50   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  12.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.86
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      10.24
  PIPE TRAVEL TIME(MIN.) =   0.54    Tc(MIN.) =    5.51
  LONGEST FLOWPATH FROM NODE   2100.00 TO NODE   2105.00 =     565.08 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2103.00 TO NODE   2105.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =    5.51
  RAINFALL INTENSITY(INCH/HR) =   8.17
  TOTAL STREAM AREA(ACRES) =     2.03
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     10.24

****************************************************************************
  FLOW PROCESS FROM NODE   2106.00 TO NODE   2107.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  STREETS & ROADS (CURBS/STORM DRAINS) RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "B"
  S.C.S. CURVE NUMBER (AMC II) =  98
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    60.00
  UPSTREAM ELEVATION(FEET) =    205.36
  DOWNSTREAM ELEVATION(FEET) =    204.41
  ELEVATION DIFFERENCE(FEET) =      0.95
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.751
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
```



```
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.15
  TOTAL AREA(ACRES) =      0.02   TOTAL RUNOFF(CFS) =      0.15

****************************************************************************
  FLOW PROCESS FROM NODE   2107.00 TO NODE   2108.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  204.41  DOWNSTREAM ELEVATION(FEET) =  202.57
  STREET LENGTH(FEET) =   192.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  12.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.015
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.93
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.31
    HALFSTREET FLOOD WIDTH(FEET) =    8.95
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.10
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.64
  STREET FLOW TRAVEL TIME(MIN.) =   1.53   Tc(MIN.) =    4.28
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .5680
  S.C.S. CURVE NUMBER (AMC II) =  98
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.576
  SUBAREA AREA(ACRES) =    0.72      SUBAREA RUNOFF(CFS) =    3.56
  TOTAL AREA(ACRES) =        0.7        PEAK FLOW RATE(CFS) =       3.71

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.36   HALFSTREET FLOOD WIDTH(FEET) =  11.86
  FLOW VELOCITY(FEET/SEC.) =  2.43   DEPTH*VELOCITY(FT*FT/SEC.) =   0.88
  LONGEST FLOWPATH FROM NODE   2106.00 TO NODE   2108.00 =     252.00 FEET.

+--------------------------------------------------------------------------+
| COMPOSITE C FOR A & B SOILS                                              |
| LAND USE - 14.5 DU/A (~50% IMP)                                          |
| (0.55*0,28)+(0.58*0.44)/0.72 = 0.568                                     |
+--------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   2108.00 TO NODE   2105.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   197.20  DOWNSTREAM(FEET) =   196.92
  FLOW LENGTH(FEET) =    27.51   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   7.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.37
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       3.71
```

```
  PIPE TRAVEL TIME(MIN.) =   0.09    Tc(MIN.) =    4.36
  LONGEST FLOWPATH FROM NODE   2106.00 TO NODE   2105.00 =     279.51 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2109.00 TO NODE   2105.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  RESIDENTIAL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .5800
  SOIL CLASSIFICATION IS "B"
  S.C.S. CURVE NUMBER (AMC II) =  80
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.5780
  SUBAREA AREA(ACRES) =    0.70   SUBAREA RUNOFF(CFS) =    3.53
  TOTAL AREA(ACRES) =        1.4   TOTAL RUNOFF(CFS) =       7.24
  TC(MIN.) =    4.36

****************************************************************************
  FLOW PROCESS FROM NODE   2109.00 TO NODE   2105.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    4.36
  RAINFALL INTENSITY(INCH/HR) =   8.69
  TOTAL STREAM AREA(ACRES) =     1.44
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      7.24

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       10.24     5.51        8.169         2.03
      2        7.24     4.36        8.695         1.44

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF       Tc      INTENSITY
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)
      1       15.35     4.36        8.695
      2       17.04     5.51        8.169

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      17.04   Tc(MIN.) =    5.51
  TOTAL AREA(ACRES) =        3.5
  LONGEST FLOWPATH FROM NODE   2100.00 TO NODE   2105.00 =     565.08 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2105.00 TO NODE   2110.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   196.82  DOWNSTREAM(FEET) =   191.97
  FLOW LENGTH(FEET) =   478.47   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  15.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.79
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      17.04
```



```
  PIPE TRAVEL TIME(MIN.) =   1.02    Tc(MIN.) =    6.53
  LONGEST FLOWPATH FROM NODE   2100.00 TO NODE   2110.00 =    1043.55 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2105.00 TO NODE   2110.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =    6.53
  RAINFALL INTENSITY(INCH/HR) =   7.32
  TOTAL STREAM AREA(ACRES) =     3.47
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     17.04

****************************************************************************
  FLOW PROCESS FROM NODE   2111.00 TO NODE   2112.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  STREETS & ROADS (CURBS/STORM DRAINS) RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "B"
  S.C.S. CURVE NUMBER (AMC II) =  98
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    60.00
  UPSTREAM ELEVATION(FEET) =    203.62
  DOWNSTREAM ELEVATION(FEET) =    202.96
  ELEVATION DIFFERENCE(FEET) =      0.66
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.107
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.23
  TOTAL AREA(ACRES) =      0.03   TOTAL RUNOFF(CFS) =      0.23

****************************************************************************
  FLOW PROCESS FROM NODE   2112.00 TO NODE   2113.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  202.96  DOWNSTREAM ELEVATION(FEET) =  199.29
  STREET LENGTH(FEET) =   244.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 16.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  11.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.015
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.88
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.29
    HALFSTREET FLOOD WIDTH(FEET) =    8.05
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.46
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.71
  STREET FLOW TRAVEL TIME(MIN.) =   1.66   Tc(MIN.) =    4.76
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .5770
```

```
  S.C.S. CURVE NUMBER (AMC II) =  98
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.590
  SUBAREA AREA(ACRES) =    0.66      SUBAREA RUNOFF(CFS) =    3.31
  TOTAL AREA(ACRES) =        0.7       PEAK FLOW RATE(CFS) =       3.54

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.34   HALFSTREET FLOOD WIDTH(FEET) =  10.63
  FLOW VELOCITY(FEET/SEC.) =  2.84   DEPTH*VELOCITY(FT*FT/SEC.) =   0.96
  LONGEST FLOWPATH FROM NODE   2111.00 TO NODE   2113.00 =     304.00 FEET.

+----------------------------------------------------------------------------+
| COMPOSITE C FOR A & B SOILS                                                |
| LAND USE - 14.5 DU/A (~50%IMP)                                             |
| (0.55*0.05)+(0.58*0.61)/0.66 = 0.577                                       |
+----------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   2113.00 TO NODE   2110.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   193.83  DOWNSTREAM(FEET) =   193.79
  FLOW LENGTH(FEET) =     4.25   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   7.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.15
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       3.54
  PIPE TRAVEL TIME(MIN.) =   0.01    Tc(MIN.) =    4.78
  LONGEST FLOWPATH FROM NODE   2111.00 TO NODE   2110.00 =     308.25 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2114.00 TO NODE   2110.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .5430
  S.C.S. CURVE NUMBER (AMC II) =  98
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.5674
  SUBAREA AREA(ACRES) =    0.63   SUBAREA RUNOFF(CFS) =    2.97
  TOTAL AREA(ACRES) =        1.3   TOTAL RUNOFF(CFS) =       6.51
  TC(MIN.) =    4.78

+----------------------------------------------------------------------------+
| COMPOSITE C FOR A & B SOILS                                                |
| LAND USE - 14.5 DU/A (~50% IMP)                                            |
| (0.55* 0.58)+(0.58*0.04)/ 0.63 = 0.543                                     |
+----------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   2114.00 TO NODE   2110.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    4.78
  RAINFALL INTENSITY(INCH/HR) =   8.69
```



```
  TOTAL STREAM AREA(ACRES) =     1.32
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      6.51

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       17.04     6.53        7.319          3.47
      2        6.51     4.78        8.695          1.32

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF       Tc      INTENSITY
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)
      1       20.86     4.78        8.695
      2       22.52     6.53        7.319

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      22.52   Tc(MIN.) =    6.53
  TOTAL AREA(ACRES) =        4.8
  LONGEST FLOWPATH FROM NODE   2100.00 TO NODE   2110.00 =    1043.55 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2110.00 TO NODE   2122.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   193.79  DOWNSTREAM(FEET) =   191.97
  FLOW LENGTH(FEET) =   182.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  27.0 INCH PIPE IS  17.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.32
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      22.52
  PIPE TRAVEL TIME(MIN.) =   0.36    Tc(MIN.) =    6.90
  LONGEST FLOWPATH FROM NODE   2100.00 TO NODE   2122.00 =    1225.55 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2123.00 TO NODE   2122.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.067
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .5620
  S.C.S. CURVE NUMBER (AMC II) =  98
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.5745
  SUBAREA AREA(ACRES) =    0.59   SUBAREA RUNOFF(CFS) =    2.34
  TOTAL AREA(ACRES) =        5.4   TOTAL RUNOFF(CFS) =      22.52
  TC(MIN.) =    6.90
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

+----------------------------------------------------------------------------+
| COMPOSITE C FOR A & B SOILS                                                |
| SUBAREA - 14.5 DU/A (~50% IMP)                                             |
| (0.55*0.36)+(0.58*0.23)/ 0.59 = 0.562                                      |
+----------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   2124.00 TO NODE   2122.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
```

```
================================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.067
  RESIDENTIAL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .5500
  SOIL CLASSIFICATION IS "A"
  S.C.S. CURVE NUMBER (AMC II) =  69
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.5720
  SUBAREA AREA(ACRES) =    0.60   SUBAREA RUNOFF(CFS) =    2.33
  TOTAL AREA(ACRES) =        6.0   TOTAL RUNOFF(CFS) =      24.17
  TC(MIN.) =    6.90

****************************************************************************
  FLOW PROCESS FROM NODE   2122.00 TO NODE   2115.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   191.87  DOWNSTREAM(FEET) =   188.30
  FLOW LENGTH(FEET) =   399.25   MANNING'S N =  0.013
  DEPTH OF FLOW IN  27.0 INCH PIPE IS  19.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.05
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      24.17
  PIPE TRAVEL TIME(MIN.) =   0.83    Tc(MIN.) =    7.72
  LONGEST FLOWPATH FROM NODE   2100.00 TO NODE   2115.00 =    1624.80 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2115.00 TO NODE   2115.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.569
  RESIDENTIAL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .5500
  SOIL CLASSIFICATION IS "A"
  S.C.S. CURVE NUMBER (AMC II) =  69
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.5656
  SUBAREA AREA(ACRES) =    2.44   SUBAREA RUNOFF(CFS) =    8.82
  TOTAL AREA(ACRES) =        8.4   TOTAL RUNOFF(CFS) =      31.29
  TC(MIN.) =    7.72

+--------------------------------------------------------------------------+
| PREDOMINANT HSG - A                                                      |
| LAND USE 14.5 DU/A (~50%IMP)                                             |
|                                                                          |
+--------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   2115.00 TO NODE   2117.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   188.24  DOWNSTREAM(FEET) =   187.90
  FLOW LENGTH(FEET) =    67.81   MANNING'S N =  0.013
  DEPTH OF FLOW IN  33.0 INCH PIPE IS  23.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.91
  ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      31.29
  PIPE TRAVEL TIME(MIN.) =   0.16    Tc(MIN.) =    7.88
  LONGEST FLOWPATH FROM NODE   2100.00 TO NODE   2117.00 =    1692.61 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2115.00 TO NODE   2117.00 IS CODE =   1
----------------------------------------------------------------------------
```



```
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =    7.88
  RAINFALL INTENSITY(INCH/HR) =   6.48
  TOTAL STREAM AREA(ACRES) =     8.42
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     31.29

****************************************************************************
  FLOW PROCESS FROM NODE   2118.00 TO NODE   2119.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .7900
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  94
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    60.00
  UPSTREAM ELEVATION(FEET) =    275.69
  DOWNSTREAM ELEVATION(FEET) =    275.09
  ELEVATION DIFFERENCE(FEET) =      0.60
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    4.322
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.27
  TOTAL AREA(ACRES) =      0.04   TOTAL RUNOFF(CFS) =      0.27

****************************************************************************
  FLOW PROCESS FROM NODE   2119.00 TO NODE   2117.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  275.09  DOWNSTREAM ELEVATION(FEET) =  193.63
  STREET LENGTH(FEET) =  1062.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 20.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.015
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       3.14
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.27
    HALFSTREET FLOOD WIDTH(FEET) =    6.96
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.22
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.38
  STREET FLOW TRAVEL TIME(MIN.) =   3.39   Tc(MIN.) =    7.72
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.573
  *USER SPECIFIED(SUBAREA):
  NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .7800
  S.C.S. CURVE NUMBER (AMC II) =  94
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.780
  SUBAREA AREA(ACRES) =    1.10      SUBAREA RUNOFF(CFS) =    5.64
  TOTAL AREA(ACRES) =        1.1        PEAK FLOW RATE(CFS) =       5.85

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.31   HALFSTREET FLOOD WIDTH(FEET) =   9.26
```

```
  FLOW VELOCITY(FEET/SEC.) =  5.99   DEPTH*VELOCITY(FT*FT/SEC.) =   1.87
  LONGEST FLOWPATH FROM NODE   2118.00 TO NODE   2117.00 =    1122.00 FEET.

+----------------------------------------------------------------------------+
| COMPOSITE C FOR A & D SOILS                                                |
| ~80% IMPERVIOUS, LAND USE - NEIGHBORHOOD COMMERCIAL                        |
| (0.76*0.32)+(0.79*0.78)/1.10 = 0.78                                        |
+----------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   2121.00 TO NODE   2117.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.573
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .2800
  S.C.S. CURVE NUMBER (AMC II) =  94
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.5802
  SUBAREA AREA(ACRES) =    0.76   SUBAREA RUNOFF(CFS) =    1.40
  TOTAL AREA(ACRES) =        1.9   TOTAL RUNOFF(CFS) =       7.25
  TC(MIN.) =    7.72

+----------------------------------------------------------------------------+
| COMPOSITE C FOR A & D SOILS                                                |
| ASSUMED IMPERVIOUS 10% FOR FUTURE PARK, LAND USE - 1.0 DU/A                |
| (0.27*0.7+0.41*.06)/0.76 = 0.28                                            |
+----------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   2121.00 TO NODE   2117.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    7.72
  RAINFALL INTENSITY(INCH/HR) =   6.57
  TOTAL STREAM AREA(ACRES) =     1.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      7.25

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       31.29     7.88        6.481          8.42
      2        7.25     7.72        6.573          1.90

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF       Tc      INTENSITY
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)
      1       38.10     7.72        6.573
      2       38.43     7.88        6.481

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      38.43   Tc(MIN.) =    7.88
  TOTAL AREA(ACRES) =       10.3
  LONGEST FLOWPATH FROM NODE   2100.00 TO NODE   2117.00 =    1692.61 FEET.

****************************************************************************
```



```
  FLOW PROCESS FROM NODE   2117.00 TO NODE   2120.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   187.84  DOWNSTREAM(FEET) =   187.64
  FLOW LENGTH(FEET) =    40.50   MANNING'S N =  0.013
  DEPTH OF FLOW IN  36.0 INCH PIPE IS  25.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.24
  ESTIMATED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      38.43
  PIPE TRAVEL TIME(MIN.) =   0.09    Tc(MIN.) =    7.98
  LONGEST FLOWPATH FROM NODE   2100.00 TO NODE   2120.00 =    1733.11 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2120.00 TO NODE   2120.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.432
  *USER SPECIFIED(SUBAREA):
  NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .7800
  S.C.S. CURVE NUMBER (AMC II) =  94
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.5853
  SUBAREA AREA(ACRES) =    0.90   SUBAREA RUNOFF(CFS) =    4.52
  TOTAL AREA(ACRES) =       11.2   TOTAL RUNOFF(CFS) =      42.24
  TC(MIN.) =    7.98

+----------------------------------------------------------------------------+
| COMPOSITE C FOR A & D SOILS                                                |
| LAND USE - NEIGHBORHOOD COMMERCIAL                                         |
| (0.76*0.34)+(0.79*0.56)/0.90 = 0.78                                        |
+----------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   2120.00 TO NODE   2216.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   187.55  DOWNSTREAM(FEET) =   187.40
  FLOW LENGTH(FEET) =    29.22   MANNING'S N =  0.013
  DEPTH OF FLOW IN  36.0 INCH PIPE IS  26.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.46
  ESTIMATED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      42.24
  PIPE TRAVEL TIME(MIN.) =   0.07    Tc(MIN.) =    8.04
  LONGEST FLOWPATH FROM NODE   2100.00 TO NODE   2216.00 =    1762.33 FEET.
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =       11.2  TC(MIN.) =      8.04
  PEAK FLOW RATE(CFS)   =      42.24
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

```
****************************************************************************

          RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT
                       2003,1985,1981 HYDROLOGY MANUAL
        (c) Copyright 1982-2016 Advanced Engineering Software (aes)
            Ver. 23.0 Release Date: 07/01/2016  License ID 1509

                        Analysis prepared by:




 ************************** DESCRIPTION OF STUDY **************************
* OCEAN BREEZE RANCH - PA2                                                *
* SYSTEM 2200 - PROPOSED CONDITIONS                                       *
* NORTHWEST QUADRANT                                                      *
 ***************************************************************************

  FILE NAME: 2200P100.DAT
  TIME/DATE OF STUDY: 11:11 05/31/2024
----------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
----------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) = 100.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   3.300
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  ========  ================  ======  =====  ====  ====  =======
  1   18.0     12.0    0.020/0.020/0.015   0.50    1.50 0.0313 0.125 0.0150
  2   20.0     13.0    0.020/0.020/0.015   0.50    1.50 0.0313 0.125 0.0150
  3   16.0     11.0    0.020/0.020/0.015   0.50    1.50 0.0313 0.125 0.0150
  4   12.0      7.0    0.020/0.020/0.015   0.50    1.50 0.0100 0.010 0.0160
  5   17.0     12.0    0.020/0.020/0.015   0.33    1.50 0.0100 0.010 0.0160

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth = -0.10 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

****************************************************************************
  FLOW PROCESS FROM NODE   2200.00 TO NODE   2201.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  STREETS & ROADS (CURBS/STORM DRAINS) RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "A"
  S.C.S. CURVE NUMBER (AMC II) =  98
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    60.00
  UPSTREAM ELEVATION(FEET) =    207.00
```



```
  DOWNSTREAM ELEVATION(FEET) =    206.09
  ELEVATION DIFFERENCE(FEET) =      0.91
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.791
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.15
  TOTAL AREA(ACRES) =      0.02   TOTAL RUNOFF(CFS) =      0.15

****************************************************************************
  FLOW PROCESS FROM NODE   2201.00 TO NODE   2202.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  206.09  DOWNSTREAM ELEVATION(FEET) =  203.21
  STREET LENGTH(FEET) =   313.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 20.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.015
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       3.07
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.35
    HALFSTREET FLOOD WIDTH(FEET) =   11.09
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.28
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.79
  STREET FLOW TRAVEL TIME(MIN.) =   2.29   Tc(MIN.) =    5.08
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.605
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .5690
  S.C.S. CURVE NUMBER (AMC II) =  98
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.574
  SUBAREA AREA(ACRES) =    1.18      SUBAREA RUNOFF(CFS) =    5.78
  TOTAL AREA(ACRES) =        1.2        PEAK FLOW RATE(CFS) =       5.93

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.42   HALFSTREET FLOOD WIDTH(FEET) =  14.49
  FLOW VELOCITY(FEET/SEC.) =  2.67   DEPTH*VELOCITY(FT*FT/SEC.) =   1.11
  LONGEST FLOWPATH FROM NODE   2200.00 TO NODE   2202.00 =     373.00 FEET.

+--------------------------------------------------------------------------+
| COMPOSITE C FOR A & B SOILS                                              |
| LAND USE - 14.5 DU/A (~50% IMP)                                          |
| (0.55*0.45)+(0.58*0.73)/1.18 = 0.569                                     |
+--------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   2202.00 TO NODE   2203.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   197.24  DOWNSTREAM(FEET) =   196.66
  FLOW LENGTH(FEET) =    57.84   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   9.8 INCHES
```

```
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.01
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       5.93
  PIPE TRAVEL TIME(MIN.) =   0.16    Tc(MIN.) =    5.24
  LONGEST FLOWPATH FROM NODE   2200.00 TO NODE   2203.00 =     430.84 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2204.00 TO NODE   2203.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.434
  NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .7600
  SOIL CLASSIFICATION IS "A"
  S.C.S. CURVE NUMBER (AMC II) =  86
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.6178
  SUBAREA AREA(ACRES) =    0.37   SUBAREA RUNOFF(CFS) =    2.37
  TOTAL AREA(ACRES) =        1.6   TOTAL RUNOFF(CFS) =       8.18
  TC(MIN.) =    5.24

****************************************************************************
  FLOW PROCESS FROM NODE   2205.00 TO NODE   2203.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.434
  RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .2700
  SOIL CLASSIFICATION IS "A"
  S.C.S. CURVE NUMBER (AMC II) =  45
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.5458
  SUBAREA AREA(ACRES) =    0.41   SUBAREA RUNOFF(CFS) =    0.93
  TOTAL AREA(ACRES) =        2.0   TOTAL RUNOFF(CFS) =       9.12
  TC(MIN.) =    5.24

+--------------------------------------------------------------------------+
| ASSUMED 10% IMPERVIOUS FOR FUTURE PARK                                   |
| HSG - A                                                                  |
|                                                                          |
+--------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   2203.00 TO NODE   2223.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   196.40  DOWNSTREAM(FEET) =   193.90
  FLOW LENGTH(FEET) =   246.70   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  13.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.59
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       9.12
  PIPE TRAVEL TIME(MIN.) =   0.62    Tc(MIN.) =    5.87
  LONGEST FLOWPATH FROM NODE   2200.00 TO NODE   2223.00 =     677.54 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2224.00 TO NODE   2223.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.844
  RESIDENTIAL (24. DU/AC OR LESS) RUNOFF COEFFICIENT = .6600
  SOIL CLASSIFICATION IS "A"
```



```
  S.C.S. CURVE NUMBER (AMC II) =  77
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.5826
  SUBAREA AREA(ACRES) =    0.94   SUBAREA RUNOFF(CFS) =    4.87
  TOTAL AREA(ACRES) =        2.9   TOTAL RUNOFF(CFS) =      13.34
  TC(MIN.) =    5.87

****************************************************************************
  FLOW PROCESS FROM NODE   2223.00 TO NODE   2206.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   193.90  DOWNSTREAM(FEET) =   191.30
  FLOW LENGTH(FEET) =   226.50   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  14.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.65
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      13.34
  PIPE TRAVEL TIME(MIN.) =   0.49    Tc(MIN.) =    6.36
  LONGEST FLOWPATH FROM NODE   2200.00 TO NODE   2206.00 =     904.04 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2223.00 TO NODE   2206.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =    6.36
  RAINFALL INTENSITY(INCH/HR) =   7.45
  TOTAL STREAM AREA(ACRES) =     2.92
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     13.34

****************************************************************************
  FLOW PROCESS FROM NODE   2207.00 TO NODE   2208.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .7600
  SOIL CLASSIFICATION IS "A"
  S.C.S. CURVE NUMBER (AMC II) =  86
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    60.00
  UPSTREAM ELEVATION(FEET) =    203.24
  DOWNSTREAM ELEVATION(FEET) =    202.26
  ELEVATION DIFFERENCE(FEET) =      0.98
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    4.025
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.20
  TOTAL AREA(ACRES) =      0.03   TOTAL RUNOFF(CFS) =      0.20

****************************************************************************
  FLOW PROCESS FROM NODE   2208.00 TO NODE   2209.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  202.26  DOWNSTREAM ELEVATION(FEET) =  197.90
  STREET LENGTH(FEET) =   436.13   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 20.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
```

```
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.015
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.00
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.26
    HALFSTREET FLOOD WIDTH(FEET) =    6.53
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.84
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.47
  STREET FLOW TRAVEL TIME(MIN.) =   3.95   Tc(MIN.) =    7.98
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.432
  *USER SPECIFIED(SUBAREA):
  NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .7700
  S.C.S. CURVE NUMBER (AMC II) =  86
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.769
  SUBAREA AREA(ACRES) =    0.32      SUBAREA RUNOFF(CFS) =    1.58
  TOTAL AREA(ACRES) =        0.3        PEAK FLOW RATE(CFS) =       1.73

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.30   HALFSTREET FLOOD WIDTH(FEET) =   8.50
  FLOW VELOCITY(FEET/SEC.) =  2.06   DEPTH*VELOCITY(FT*FT/SEC.) =   0.61
  LONGEST FLOWPATH FROM NODE   2207.00 TO NODE   2209.00 =     496.13 FEET.

+---------------------------------------------------------------------------+
| COMPOSITE C FOR A & B SOILS                                               |
| LAND USE - NEIGHBORHOOD COMMERCIAL                                        |
| (0.76*0.10)+(0.77*0.22)/0.32 = 0.77                                       |
+---------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   2209.00 TO NODE   2206.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   191.61  DOWNSTREAM(FEET) =   191.56
  FLOW LENGTH(FEET) =     5.25   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   5.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.24
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.73
  PIPE TRAVEL TIME(MIN.) =   0.02    Tc(MIN.) =    8.00
  LONGEST FLOWPATH FROM NODE   2207.00 TO NODE   2206.00 =     501.38 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2210.00 TO NODE   2206.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.422
  RESIDENTIAL (24. DU/AC OR LESS) RUNOFF COEFFICIENT = .6700
  SOIL CLASSIFICATION IS "B"
  S.C.S. CURVE NUMBER (AMC II) =  85
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.7024
  SUBAREA AREA(ACRES) =    0.72   SUBAREA RUNOFF(CFS) =    3.10
  TOTAL AREA(ACRES) =        1.1   TOTAL RUNOFF(CFS) =       4.83
  TC(MIN.) =    8.00
```



```
****************************************************************************
  FLOW PROCESS FROM NODE   2210.00 TO NODE   2206.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    8.00
  RAINFALL INTENSITY(INCH/HR) =   6.42
  TOTAL STREAM AREA(ACRES) =     1.07
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.83

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc       INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       13.34     6.36        7.446          2.92
      2        4.83     8.00        6.422          1.07

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF       Tc      INTENSITY
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)
      1       17.18     6.36       7.446
      2       16.33     8.00       6.422

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      17.18   Tc(MIN.) =    6.36
  TOTAL AREA(ACRES) =        4.0
  LONGEST FLOWPATH FROM NODE   2200.00 TO NODE   2206.00 =     904.04 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2206.00 TO NODE   2211.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   191.52  DOWNSTREAM(FEET) =   188.48
  FLOW LENGTH(FEET) =   463.82   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  18.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.47
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      17.18
  PIPE TRAVEL TIME(MIN.) =   1.19    Tc(MIN.) =    7.55
  LONGEST FLOWPATH FROM NODE   2200.00 TO NODE   2211.00 =    1367.86 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2206.00 TO NODE   2211.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =    7.55
  RAINFALL INTENSITY(INCH/HR) =   6.66
  TOTAL STREAM AREA(ACRES) =     3.99
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     17.18

****************************************************************************
  FLOW PROCESS FROM NODE   2212.00 TO NODE   2213.00 IS CODE =  21
----------------------------------------------------------------------------
```

```
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
================================================================================
  STREETS & ROADS (CURBS/STORM DRAINS) RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "B"
  S.C.S. CURVE NUMBER (AMC II) =  98
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    60.00
  UPSTREAM ELEVATION(FEET) =    198.40
  DOWNSTREAM ELEVATION(FEET) =    197.45
  ELEVATION DIFFERENCE(FEET) =      0.95
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.751
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.23
  TOTAL AREA(ACRES) =      0.03   TOTAL RUNOFF(CFS) =      0.23

****************************************************************************
  FLOW PROCESS FROM NODE   2213.00 TO NODE   2214.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
================================================================================
  UPSTREAM ELEVATION(FEET) =  197.45  DOWNSTREAM ELEVATION(FEET) =  193.68
  STREET LENGTH(FEET) =   390.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 20.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.015
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       2.71
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.33
    HALFSTREET FLOOD WIDTH(FEET) =   10.43
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.25
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.75
  STREET FLOW TRAVEL TIME(MIN.) =   2.89   Tc(MIN.) =    5.64
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.045
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .5570
  S.C.S. CURVE NUMBER (AMC II) =  98
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.566
  SUBAREA AREA(ACRES) =    1.07      SUBAREA RUNOFF(CFS) =    4.79
  TOTAL AREA(ACRES) =        1.1        PEAK FLOW RATE(CFS) =       5.00

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.39   HALFSTREET FLOOD WIDTH(FEET) =  13.42
  FLOW VELOCITY(FEET/SEC.) =  2.61   DEPTH*VELOCITY(FT*FT/SEC.) =   1.03
  LONGEST FLOWPATH FROM NODE   2212.00 TO NODE   2214.00 =     450.00 FEET.

+--------------------------------------------------------------------------+
| COMPOSITE C FOR A & B SOILS                                              |
| LAND USE - 14.5 DU/A (~50%)                                              |
| (0.55*0.82+0.58+0.25)/1.07=0.557                                         |
+--------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   2222.00 TO NODE   2214.00 IS CODE =  81
----------------------------------------------------------------------------
```



```
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.045
  NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .7600
  SOIL CLASSIFICATION IS "A"
  S.C.S. CURVE NUMBER (AMC II) =  86
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.5832
  SUBAREA AREA(ACRES) =    0.11   SUBAREA RUNOFF(CFS) =    0.67
  TOTAL AREA(ACRES) =        1.2   TOTAL RUNOFF(CFS) =       5.68
  TC(MIN.) =    5.64

****************************************************************************
  FLOW PROCESS FROM NODE   2214.00 TO NODE   2211.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   189.30  DOWNSTREAM(FEET) =   188.94
  FLOW LENGTH(FEET) =    29.75   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   9.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.39
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       5.68
  PIPE TRAVEL TIME(MIN.) =   0.08    Tc(MIN.) =    5.72
  LONGEST FLOWPATH FROM NODE   2212.00 TO NODE   2211.00 =     479.75 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2215.00 TO NODE   2211.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.974
  NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .7600
  SOIL CLASSIFICATION IS "A"
  S.C.S. CURVE NUMBER (AMC II) =  86
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.6486
  SUBAREA AREA(ACRES) =    0.71   SUBAREA RUNOFF(CFS) =    4.30
  TOTAL AREA(ACRES) =        1.9   TOTAL RUNOFF(CFS) =       9.93
  TC(MIN.) =    5.72

+--------------------------------------------------------------------------+
| COMPOSITE C FOR A & B SOILS                                              |
| LAND USE - NEIGHBORHOOD COMMERCIAL                                       |
| PREDOMINANT HSG - A                                                      |
+--------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   2219.00 TO NODE   2211.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.974
  RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .2700
  SOIL CLASSIFICATION IS "A"
  S.C.S. CURVE NUMBER (AMC II) =  45
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.5780
  SUBAREA AREA(ACRES) =    0.44   SUBAREA RUNOFF(CFS) =    0.95
  TOTAL AREA(ACRES) =        2.4   TOTAL RUNOFF(CFS) =      10.88
  TC(MIN.) =    5.72

+--------------------------------------------------------------------------+
| ASSUMED IMPERVIOUS 10% FOR FUTURE PARK                                   |
```

```
| HSG - A                                                                    |
+----------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   2219.00 TO NODE   2211.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    5.72
  RAINFALL INTENSITY(INCH/HR) =   7.97
  TOTAL STREAM AREA(ACRES) =     2.36
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     10.88

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       17.18     7.55        6.663          3.99
      2       10.88     5.72        7.974          2.36

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF       Tc       INTENSITY
  NUMBER      (CFS)     (MIN.)    (INCH/HOUR)
      1       25.23     5.72        7.974
      2       26.27     7.55        6.663

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      26.27   Tc(MIN.) =    7.55
  TOTAL AREA(ACRES) =        6.3
  LONGEST FLOWPATH FROM NODE   2200.00 TO NODE   2211.00 =    1367.86 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2211.00 TO NODE   2220.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   188.44  DOWNSTREAM(FEET) =   187.70
  FLOW LENGTH(FEET) =   147.14   MANNING'S N =  0.013
  DEPTH OF FLOW IN  30.0 INCH PIPE IS  22.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.56
  ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      26.27
  PIPE TRAVEL TIME(MIN.) =   0.37    Tc(MIN.) =    7.93
  LONGEST FLOWPATH FROM NODE   2200.00 TO NODE   2220.00 =    1515.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2221.00 TO NODE   2220.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.459
  RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .2700
  SOIL CLASSIFICATION IS "A"
  S.C.S. CURVE NUMBER (AMC II) =  45
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.5792
  SUBAREA AREA(ACRES) =    0.45   SUBAREA RUNOFF(CFS) =    0.78
```



```
  TOTAL AREA(ACRES) =        6.8   TOTAL RUNOFF(CFS) =      26.27
  TC(MIN.) =    7.93
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

+----------------------------------------------------------------------------+
| ASSUMED IMPERVIOUS 10% FOR FUTURE PARK                                     |
| HSG - A                                                                    |
+----------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   2220.00 TO NODE   2216.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   187.66  DOWNSTREAM(FEET) =   187.40
  FLOW LENGTH(FEET) =    49.92   MANNING'S N =  0.013
  DEPTH OF FLOW IN  30.0 INCH PIPE IS  22.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.66
  ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      26.27
  PIPE TRAVEL TIME(MIN.) =   0.12    Tc(MIN.) =    8.05
  LONGEST FLOWPATH FROM NODE   2200.00 TO NODE   2216.00 =    1564.92 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2220.00 TO NODE   2216.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =    8.05
  RAINFALL INTENSITY(INCH/HR) =   6.39
  TOTAL STREAM AREA(ACRES) =     6.80
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     26.27

****************************************************************************
  FLOW PROCESS FROM NODE   2120.00 TO NODE   2216.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<
============================================================================
  USER-SPECIFIED VALUES ARE AS FOLLOWS:
  TC(MIN) =   8.04   RAIN INTENSITY(INCH/HOUR) =  6.40
  TOTAL AREA(ACRES) =    11.20   TOTAL RUNOFF(CFS) =     42.24

****************************************************************************
  FLOW PROCESS FROM NODE   2120.00 TO NODE   2216.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    8.04
  RAINFALL INTENSITY(INCH/HR) =   6.40
  TOTAL STREAM AREA(ACRES) =    11.20
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     42.24

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       26.27     8.05        6.394          6.80
```

```
      2       42.24     8.04        6.400         11.20

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF       Tc       INTENSITY
  NUMBER      (CFS)     (MIN.)    (INCH/HOUR)
      1       68.48     8.04        6.400
      2       68.47     8.05        6.394

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      68.48   Tc(MIN.) =    8.04
  TOTAL AREA(ACRES) =        18.0
  LONGEST FLOWPATH FROM NODE   2200.00 TO NODE   2216.00 =    1564.92 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2216.00 TO NODE   2217.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.400
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .2000
  SOIL CLASSIFICATION IS "A"
  S.C.S. CURVE NUMBER (AMC II) =  63
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.5586
  SUBAREA AREA(ACRES) =    1.35   SUBAREA RUNOFF(CFS) =    1.73
  TOTAL AREA(ACRES) =       19.4   TOTAL RUNOFF(CFS) =      69.17
  TC(MIN.) =    8.04

****************************************************************************
  FLOW PROCESS FROM NODE   2217.00 TO NODE   2218.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   185.24  DOWNSTREAM(FEET) =   182.00
  FLOW LENGTH(FEET) =   323.59   MANNING'S N =  0.013
  DEPTH OF FLOW IN  39.0 INCH PIPE IS  27.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  10.91
  ESTIMATED PIPE DIAMETER(INCH) =  39.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      69.17
  PIPE TRAVEL TIME(MIN.) =   0.49    Tc(MIN.) =    8.53
  LONGEST FLOWPATH FROM NODE   2200.00 TO NODE   2218.00 =    1888.51 FEET.
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)      =       19.4  TC(MIN.) =      8.53
  PEAK FLOW RATE(CFS)    =      69.17
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

PA-2
2B

```
****************************************************************************

          RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT
                       2003,1985,1981 HYDROLOGY MANUAL
        (c) Copyright 1982-2016 Advanced Engineering Software (aes)
            Ver. 23.0 Release Date: 07/01/2016  License ID 1509

                        Analysis prepared by:




 ************************** DESCRIPTION OF STUDY **************************
* OCEAN BREEZE RANCH - PA2                                                *
* SYSTEM 2300 - PROPOSED CONDITIONS                                       *
* NORTHWEST QUADRANT                                                      *
 ***************************************************************************

  FILE NAME: 2300P100.DAT
  TIME/DATE OF STUDY: 11:59 05/31/2024
----------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
----------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) = 100.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   3.300
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  ========  ================  ======  =====  ====  ====  =======
  1   18.0     12.0    0.020/0.020/0.015   0.50    1.50 0.0417 0.125 0.0165
  2   20.0     13.0    0.020/0.020/0.015   0.50    1.50 0.0417 0.125 0.0165
  3   16.0     11.0    0.020/0.020/0.015   0.50    1.50 0.0417 0.125 0.0165
  4   12.0      7.0    0.020/0.020/0.015   0.50    1.50 0.0100 0.010 0.0160
  5   17.0     12.0    0.020/0.020/0.015   0.33    1.50 0.0100 0.010 0.0160

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth = -0.10 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

****************************************************************************
  FLOW PROCESS FROM NODE   2300.00 TO NODE   2301.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  STREETS & ROADS (CURBS/STORM DRAINS) RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "A"
  S.C.S. CURVE NUMBER (AMC II) =  98
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    60.00
  UPSTREAM ELEVATION(FEET) =    259.84
```



```
  DOWNSTREAM ELEVATION(FEET) =    256.79
  ELEVATION DIFFERENCE(FEET) =      3.05
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    1.865
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.23
  TOTAL AREA(ACRES) =      0.03   TOTAL RUNOFF(CFS) =      0.23

+----------------------------------------------------------------------------+
| 100% IMPERVIOUS                                                            |
| HSG - A                                                                    |
|                                                                            |
+----------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   2301.00 TO NODE   2302.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  256.79  DOWNSTREAM ELEVATION(FEET) =  215.08
  STREET LENGTH(FEET) =  1050.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 20.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.015
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0165
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       3.08
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.30
    HALFSTREET FLOOD WIDTH(FEET) =    8.29
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.75
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.14
  STREET FLOW TRAVEL TIME(MIN.) =   4.66   Tc(MIN.) =    6.53
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.321
  *USER SPECIFIED(SUBAREA):
  NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .7800
  S.C.S. CURVE NUMBER (AMC II) =  98
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.783
  SUBAREA AREA(ACRES) =    0.98      SUBAREA RUNOFF(CFS) =    5.60
  TOTAL AREA(ACRES) =        1.0        PEAK FLOW RATE(CFS) =       5.79

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.36   HALFSTREET FLOOD WIDTH(FEET) =  10.99
  FLOW VELOCITY(FEET/SEC.) =  4.32   DEPTH*VELOCITY(FT*FT/SEC.) =   1.54
  LONGEST FLOWPATH FROM NODE   2300.00 TO NODE   2302.00 =    1110.00 FEET.

+----------------------------------------------------------------------------+
| COMPOSITE C FOR A & D SOILS                                                |
| ~80% IMPERVIOUS, LAND USE - NEIGHBORHOOD COMMERCIAL                        |
| (0.76*0.38)+(0.79*0.69) = 0.78                                             |
+----------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   2302.00 TO NODE   2303.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
```

```
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   207.91  DOWNSTREAM(FEET) =   207.64
  FLOW LENGTH(FEET) =     8.25   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   6.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   9.26
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       5.79
  PIPE TRAVEL TIME(MIN.) =   0.01    Tc(MIN.) =    6.54
  LONGEST FLOWPATH FROM NODE   2300.00 TO NODE   2303.00 =    1118.25 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2304.00 TO NODE   2303.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.310
  *USER SPECIFIED(SUBAREA):
  NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .7800
  S.C.S. CURVE NUMBER (AMC II) =  98
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.7815
  SUBAREA AREA(ACRES) =    0.78   SUBAREA RUNOFF(CFS) =    4.45
  TOTAL AREA(ACRES) =        1.8   TOTAL RUNOFF(CFS) =      10.23
  TC(MIN.) =    6.54

+--------------------------------------------------------------------------+
| COMPOSITE C FOR A & D SOILS                                              |
| SUBAREA - NEIGHBORHOOD COMM                                              |
| (0.76*0.26)+(0.79*0.52)/0.78 = 0.7800                                    |
+--------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   2305.00 TO NODE   2303.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.310
  RESIDENTIAL (2. DU/AC OR LESS) RUNOFF COEFFICIENT = .4600
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  84
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.6512
  SUBAREA AREA(ACRES) =    1.22   SUBAREA RUNOFF(CFS) =    4.10
  TOTAL AREA(ACRES) =        3.0   TOTAL RUNOFF(CFS) =      14.33
  TC(MIN.) =    6.54

+--------------------------------------------------------------------------+
| ASSUMED % IMPERVIOUS FOR FUTURE PARK - 20%                               |
| HSG - D                                                                  |
|                                                                          |
+--------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   2303.00 TO NODE   2306.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   207.31  DOWNSTREAM(FEET) =   206.07
  FLOW LENGTH(FEET) =    35.33   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  11.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  11.90
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
```



```
  PIPE-FLOW(CFS) =      14.33
  PIPE TRAVEL TIME(MIN.) =   0.05    Tc(MIN.) =    6.59
  LONGEST FLOWPATH FROM NODE   2300.00 TO NODE   2306.00 =    1153.58 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2307.00 TO NODE   2306.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.275
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .5600
  S.C.S. CURVE NUMBER (AMC II) =  84
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.6317
  SUBAREA AREA(ACRES) =    0.82   SUBAREA RUNOFF(CFS) =    3.34
  TOTAL AREA(ACRES) =        3.8   TOTAL RUNOFF(CFS) =      17.60
  TC(MIN.) =    6.59

+--------------------------------------------------------------------------+
| COMPOSITE C FOR A & C SOILS                                              |
| ~50% IMPERVIOUS, LAND USE - 14.5 DU/A                                    |
| (0.55*0.56)+(0.60*0.25)/0.81 = 0.56                                      |
+--------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   2306.00 TO NODE   2324.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   205.74  DOWNSTREAM(FEET) =   204.18
  FLOW LENGTH(FEET) =    91.62   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  15.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   9.44
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      17.60
  PIPE TRAVEL TIME(MIN.) =   0.16    Tc(MIN.) =    6.75
  LONGEST FLOWPATH FROM NODE   2300.00 TO NODE   2324.00 =    1245.20 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2306.00 TO NODE   2324.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =    6.75
  RAINFALL INTENSITY(INCH/HR) =   7.16
  TOTAL STREAM AREA(ACRES) =     3.83
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     17.60

****************************************************************************
  FLOW PROCESS FROM NODE   2320.00 TO NODE   2321.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  GENERAL INDUSTRIAL RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "C"
  S.C.S. CURVE NUMBER (AMC II) =  97
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    60.00
  UPSTREAM ELEVATION(FEET) =    250.20
  DOWNSTREAM ELEVATION(FEET) =    246.31
  ELEVATION DIFFERENCE(FEET) =      3.89
```

```
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    1.720
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.15
  TOTAL AREA(ACRES) =      0.02   TOTAL RUNOFF(CFS) =      0.15

+----------------------------------------------------------------------------+
| ~95% IMPERVIOUS, LAND USE - GENERAL INDUSTRIAL                             |
| HSG - C                                                                    |
+----------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   2321.00 TO NODE   2325.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  246.31  DOWNSTREAM ELEVATION(FEET) =  210.69
  STREET LENGTH(FEET) =   902.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 20.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.015
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0165
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       2.26
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.28
    HALFSTREET FLOOD WIDTH(FEET) =    7.18
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.48
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.97
  STREET FLOW TRAVEL TIME(MIN.) =   4.32   Tc(MIN.) =    6.04
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.695
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (24. DU/AC OR LESS) RUNOFF COEFFICIENT = .6700
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.675
  SUBAREA AREA(ACRES) =    0.79      SUBAREA RUNOFF(CFS) =    4.07
  TOTAL AREA(ACRES) =        0.8        PEAK FLOW RATE(CFS) =       4.21

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.33   HALFSTREET FLOOD WIDTH(FEET) =   9.56
  FLOW VELOCITY(FEET/SEC.) =  4.01   DEPTH*VELOCITY(FT*FT/SEC.) =   1.32
  LONGEST FLOWPATH FROM NODE   2320.00 TO NODE   2325.00 =     962.00 FEET.

+----------------------------------------------------------------------------+
| COMPOSITE C FOR A & C SOILS                                                |
| ~65% IMPERVIOUS, LAND USE - 24.0 DU/A                                      |
| (0.66*0.59)*(0.69*0.20)/0.79 = 0.67                                        |
+----------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   2322.00 TO NODE   2325.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.695
```



```
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .2800
  S.C.S. CURVE NUMBER (AMC II) =  97
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3994
  SUBAREA AREA(ACRES) =    1.87   SUBAREA RUNOFF(CFS) =    4.03
  TOTAL AREA(ACRES) =        2.7   TOTAL RUNOFF(CFS) =       8.24
  TC(MIN.) =    6.04

+----------------------------------------------------------------------------+
| COMPOSITE C FOR A, C, & D SOILS                                            |
| 0% IMPERVIOUS, LAND USE - OPEN SPACE                                       |
| (0.20*0.45)+(0.30*1.26)+(0.35*0.08)/1.79 = 0.28                            |
+----------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   2325.00 TO NODE   2324.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   204.76  DOWNSTREAM(FEET) =   204.68
  FLOW LENGTH(FEET) =     8.25   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  12.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.36
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =        8.24
  PIPE TRAVEL TIME(MIN.) =   0.02    Tc(MIN.) =    6.06
  LONGEST FLOWPATH FROM NODE   2320.00 TO NODE   2324.00 =     970.25 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2325.00 TO NODE   2324.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    6.06
  RAINFALL INTENSITY(INCH/HR) =   7.68
  TOTAL STREAM AREA(ACRES) =     2.68
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      8.24

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       17.60     6.75        7.162          3.83
      2        8.24     6.06        7.677          2.68

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF       Tc      INTENSITY
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)
      1       24.04     6.06        7.677
      2       25.28     6.75        7.162

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      25.28   Tc(MIN.) =    6.75
  TOTAL AREA(ACRES) =        6.5
  LONGEST FLOWPATH FROM NODE   2300.00 TO NODE   2324.00 =    1245.20 FEET.

****************************************************************************
```

```
  FLOW PROCESS FROM NODE   2324.00 TO NODE   2308.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   204.08  DOWNSTREAM(FEET) =   201.68
  FLOW LENGTH(FEET) =   240.21   MANNING'S N =  0.013
  DEPTH OF FLOW IN  27.0 INCH PIPE IS  18.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.50
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      25.28
  PIPE TRAVEL TIME(MIN.) =   0.47    Tc(MIN.) =    7.22
  LONGEST FLOWPATH FROM NODE   2300.00 TO NODE   2308.00 =    1485.41 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2309.00 TO NODE   2308.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.857
  NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .7600
  SOIL CLASSIFICATION IS "A"
  S.C.S. CURVE NUMBER (AMC II) =  86
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.5437
  SUBAREA AREA(ACRES) =    0.23   SUBAREA RUNOFF(CFS) =    1.20
  TOTAL AREA(ACRES) =        6.7   TOTAL RUNOFF(CFS) =      25.28
  TC(MIN.) =    7.22
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

+--------------------------------------------------------------------------+
| ~80% IMPERVIOUS, LAND USE - NEIGHBORHOOD COMMERCIAL                      |
| HSG - A                                                                  |
|                                                                          |
+--------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   2326.00 TO NODE   2308.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.857
  RESIDENTIAL (24. DU/AC OR LESS) RUNOFF COEFFICIENT = .6600
  SOIL CLASSIFICATION IS "A"
  S.C.S. CURVE NUMBER (AMC II) =  77
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.5574
  SUBAREA AREA(ACRES) =    0.90   SUBAREA RUNOFF(CFS) =    4.07
  TOTAL AREA(ACRES) =        7.6   TOTAL RUNOFF(CFS) =      29.20
  TC(MIN.) =    7.22

****************************************************************************
  FLOW PROCESS FROM NODE   2308.00 TO NODE   2310.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   201.58  DOWNSTREAM(FEET) =   198.13
  FLOW LENGTH(FEET) =   338.50   MANNING'S N =  0.013
  DEPTH OF FLOW IN  27.0 INCH PIPE IS  21.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.73
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      29.20
  PIPE TRAVEL TIME(MIN.) =   0.65    Tc(MIN.) =    7.87
  LONGEST FLOWPATH FROM NODE   2300.00 TO NODE   2310.00 =    1823.91 FEET.
```



```
****************************************************************************
  FLOW PROCESS FROM NODE   2311.00 TO NODE   2310.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.489
  RESIDENTIAL (24. DU/AC OR LESS) RUNOFF COEFFICIENT = .6600
  SOIL CLASSIFICATION IS "A"
  S.C.S. CURVE NUMBER (AMC II) =  77
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.5683
  SUBAREA AREA(ACRES) =    0.91   SUBAREA RUNOFF(CFS) =    3.90
  TOTAL AREA(ACRES) =        8.6   TOTAL RUNOFF(CFS) =      31.53
  TC(MIN.) =    7.87

+--------------------------------------------------------------------------+
| LAND USE - 24.0 DU/A (~65%IMP)                                           |
| HSG - A                                                                  |
|                                                                          |
+--------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   2310.00 TO NODE   2312.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   198.03  DOWNSTREAM(FEET) =   193.90
  FLOW LENGTH(FEET) =   436.98   MANNING'S N =  0.013
  DEPTH OF FLOW IN  30.0 INCH PIPE IS  20.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.82
  ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      31.53
  PIPE TRAVEL TIME(MIN.) =   0.83    Tc(MIN.) =    8.70
  LONGEST FLOWPATH FROM NODE   2300.00 TO NODE   2312.00 =    2260.89 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2310.00 TO NODE   2312.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =    8.70
  RAINFALL INTENSITY(INCH/HR) =   6.08
  TOTAL STREAM AREA(ACRES) =     8.55
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     31.53

****************************************************************************
  FLOW PROCESS FROM NODE   2313.00 TO NODE   2314.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  RESIDENTIAL (24. DU/AC OR LESS) RUNOFF COEFFICIENT = .6700
  SOIL CLASSIFICATION IS "B"
  S.C.S. CURVE NUMBER (AMC II) =  85
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    60.00
  UPSTREAM ELEVATION(FEET) =    204.16
  DOWNSTREAM ELEVATION(FEET) =    202.92
  ELEVATION DIFFERENCE(FEET) =      1.24
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    4.707
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
```

```
  SUBAREA RUNOFF(CFS) =      0.17
  TOTAL AREA(ACRES) =      0.03   TOTAL RUNOFF(CFS) =      0.17

+----------------------------------------------------------------------------+
| ~65% IMPERVIOUS, LAND USE - 24.0 DU/A                                      |
| HSG - B                                                                    |
|                                                                            |
+----------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   2314.00 TO NODE   2315.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  202.92  DOWNSTREAM ELEVATION(FEET) =  200.43
  STREET LENGTH(FEET) =   209.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  12.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.015
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0165
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       4.38
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.32
    HALFSTREET FLOOD WIDTH(FEET) =    9.33
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.18
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.71
  STREET FLOW TRAVEL TIME(MIN.) =   1.60   Tc(MIN.) =    6.30
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.488
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (7.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .4900
  S.C.S. CURVE NUMBER (AMC II) =  85
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.492
  SUBAREA AREA(ACRES) =    2.26      SUBAREA RUNOFF(CFS) =    8.29
  TOTAL AREA(ACRES) =        2.3        PEAK FLOW RATE(CFS) =       8.44

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.39   HALFSTREET FLOOD WIDTH(FEET) =  12.42
  FLOW VELOCITY(FEET/SEC.) =  2.52   DEPTH*VELOCITY(FT*FT/SEC.) =   0.97
  LONGEST FLOWPATH FROM NODE   2313.00 TO NODE   2315.00 =     269.00 FEET.

+----------------------------------------------------------------------------+
| COMPOSITE C FOR A & B SOILS                                                |
| LAND USE - 7.3 DU/A                                                        |
| (0.48*1.38)+(0.51*0.88)/2.26 = 0.49                                        |
+----------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   2315.00 TO NODE   2312.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   194.89  DOWNSTREAM(FEET) =   194.60
  FLOW LENGTH(FEET) =    28.96   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  12.4 INCHES
```



```
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.48
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       8.44
  PIPE TRAVEL TIME(MIN.) =   0.07    Tc(MIN.) =    6.38
  LONGEST FLOWPATH FROM NODE   2313.00 TO NODE   2312.00 =     297.96 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2315.00 TO NODE   2312.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    6.38
  RAINFALL INTENSITY(INCH/HR) =   7.43
  TOTAL STREAM AREA(ACRES) =     2.29
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      8.44

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc       INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       31.53     8.70        6.084          8.55
      2        8.44     6.38        7.432          2.29

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF       Tc      INTENSITY
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)
      1       34.25     6.38       7.432
      2       38.44     8.70       6.084

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      38.44   Tc(MIN.) =    8.70
  TOTAL AREA(ACRES) =       10.8
  LONGEST FLOWPATH FROM NODE   2300.00 TO NODE   2312.00 =    2260.89 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2312.00 TO NODE   2316.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   193.80  DOWNSTREAM(FEET) =   193.76
  FLOW LENGTH(FEET) =     8.25   MANNING'S N =  0.013
  DEPTH OF FLOW IN  36.0 INCH PIPE IS  25.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.19
  ESTIMATED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      38.44
  PIPE TRAVEL TIME(MIN.) =   0.02    Tc(MIN.) =    8.72
  LONGEST FLOWPATH FROM NODE   2300.00 TO NODE   2316.00 =    2269.14 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2316.00 TO NODE   2316.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.075
  NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .7600
  SOIL CLASSIFICATION IS "A"
  S.C.S. CURVE NUMBER (AMC II) =  86
```

```
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.5677
  SUBAREA AREA(ACRES) =     0.87   SUBAREA RUNOFF(CFS) =     4.02
  TOTAL AREA(ACRES) =       11.7   TOTAL RUNOFF(CFS) =      40.39
  TC(MIN.) =    8.72

+---------------------------------------------------------------------------+
| LAND USE - NEIGHBORHOOD COMMERCIAL                                        |
| PREDOMINANT HSG - A                                                       |
|                                                                           |
+---------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   2316.00 TO NODE   2317.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   193.66  DOWNSTREAM(FEET) =   193.52
  FLOW LENGTH(FEET) =    27.64   MANNING'S N =  0.013
  DEPTH OF FLOW IN  36.0 INCH PIPE IS  26.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.38
  ESTIMATED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      40.39
  PIPE TRAVEL TIME(MIN.) =   0.06    Tc(MIN.) =    8.78
  LONGEST FLOWPATH FROM NODE   2300.00 TO NODE   2317.00 =    2296.78 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2316.00 TO NODE   2317.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =    8.78
  RAINFALL INTENSITY(INCH/HR) =   6.05
  TOTAL STREAM AREA(ACRES) =    11.71
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     40.39

****************************************************************************
  FLOW PROCESS FROM NODE   2416.00 TO NODE   2317.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<
============================================================================
  USER-SPECIFIED VALUES ARE AS FOLLOWS:
  TC(MIN) =   6.17   RAIN INTENSITY(INCH/HOUR) =  7.59
  TOTAL AREA(ACRES) =     6.10   TOTAL RUNOFF(CFS) =     25.77

****************************************************************************
  FLOW PROCESS FROM NODE   2416.00 TO NODE   2317.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    6.17
  RAINFALL INTENSITY(INCH/HR) =   7.59
  TOTAL STREAM AREA(ACRES) =     6.10
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     25.77

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
```



```
       1       40.39     8.78        6.048         11.71
       2       25.77     6.17        7.592          6.10

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF       Tc      INTENSITY
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)
       1       57.94     6.17        7.592
       2       60.92     8.78        6.048

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      60.92   Tc(MIN.) =    8.78
  TOTAL AREA(ACRES) =       17.8
  LONGEST FLOWPATH FROM NODE   2300.00 TO NODE   2317.00 =    2296.78 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2317.00 TO NODE   2318.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.048
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .2000
  SOIL CLASSIFICATION IS "A"
  S.C.S. CURVE NUMBER (AMC II) =  63
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.5497
  SUBAREA AREA(ACRES) =     0.72   SUBAREA RUNOFF(CFS) =     0.87
  TOTAL AREA(ACRES) =       18.5   TOTAL RUNOFF(CFS) =      61.60
  TC(MIN.) =    8.78

****************************************************************************
  FLOW PROCESS FROM NODE   2318.00 TO NODE   2319.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   190.55  DOWNSTREAM(FEET) =   189.97
  FLOW LENGTH(FEET) =   116.61   MANNING'S N =  0.013
  DEPTH OF FLOW IN  42.0 INCH PIPE IS  30.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.12
  ESTIMATED PIPE DIAMETER(INCH) =  42.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      61.60
  PIPE TRAVEL TIME(MIN.) =   0.24    Tc(MIN.) =    9.02
  LONGEST FLOWPATH FROM NODE   2300.00 TO NODE   2319.00 =    2413.39 FEET.
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)      =       18.5  TC(MIN.) =      9.02
  PEAK FLOW RATE(CFS)    =      61.60
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

```
************************************************************************

           RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
           Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT
                        2003,1985,1981 HYDROLOGY MANUAL
        (c) Copyright 1982-2016 Advanced Engineering Software (aes)
            Ver. 23.0 Release Date: 07/01/2016  License ID 1509

                          Analysis prepared by:




 ************************** DESCRIPTION OF STUDY **************************
* OCEAN BREEZE RANCH - PA2                                                *
* SYSTEM 2400 - PROPOSED CONDITIONS                                       *
* NORTHWEST QUADRANT                                                      *
 *************************************************************************

  FILE NAME: 2400P100.DAT
  TIME/DATE OF STUDY: 11:59 05/31/2024
------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) = 100.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   3.300
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  ================  ======  =====  ====  =====  =======
  1   18.0     12.0    0.020/0.020/0.015   0.50    1.50 0.0313 0.125 0.0150
  2   20.0     13.0    0.020/0.020/0.015   0.50    1.50 0.0313 0.125 0.0150
  3   16.0     11.0    0.020/0.020/0.015   0.50    1.50 0.0313 0.125 0.0150
  4   12.0      7.0    0.020/0.020/0.015   0.50    1.50 0.0100 0.010 0.0160
  5   17.0     12.0    0.020/0.020/0.015   0.33    1.50 0.0100 0.010 0.0160

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth = -0.10 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

************************************************************************
  FLOW PROCESS FROM NODE   2400.00 TO NODE   2401.00 IS CODE =  21
------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
========================================================================
  STREETS & ROADS (CURBS/STORM DRAINS) RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "B"
  S.C.S. CURVE NUMBER (AMC II) =  98
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    60.00
  UPSTREAM ELEVATION(FEET) =    208.19
```



```
  DOWNSTREAM ELEVATION(FEET) =    207.39
  ELEVATION DIFFERENCE(FEET) =      0.80
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.914
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.15
  TOTAL AREA(ACRES) =      0.02   TOTAL RUNOFF(CFS) =      0.15

+------------------------------------------------------------------------+
| % IMPERVIOUS - 100                                                     |
| HSG - B                                                                |
|                                                                        |
+------------------------------------------------------------------------+

************************************************************************
  FLOW PROCESS FROM NODE   2401.00 TO NODE   2402.00 IS CODE =  62
------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
========================================================================
  UPSTREAM ELEVATION(FEET) =  207.39  DOWNSTREAM ELEVATION(FEET) =  203.62
  STREET LENGTH(FEET) =   162.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  12.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.015
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.92
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.27
    HALFSTREET FLOOD WIDTH(FEET) =    7.27
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.97
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.81
  STREET FLOW TRAVEL TIME(MIN.) =    0.91   Tc(MIN.) =    3.82
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  RESIDENTIAL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .5800
  SOIL CLASSIFICATION IS "B"
  S.C.S. CURVE NUMBER (AMC II) =  80
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.588
  SUBAREA AREA(ACRES) =    0.70      SUBAREA RUNOFF(CFS) =    3.53
  TOTAL AREA(ACRES) =        0.7        PEAK FLOW RATE(CFS) =       3.68

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.32   HALFSTREET FLOOD WIDTH(FEET) =   9.80
  FLOW VELOCITY(FEET/SEC.) =  3.42   DEPTH*VELOCITY(FT*FT/SEC.) =   1.10
  LONGEST FLOWPATH FROM NODE   2400.00 TO NODE   2402.00 =     222.00 FEET.

+------------------------------------------------------------------------+
| HSG - B                                                                |
| LAND USE - 14.5 DU/A (~50% IMP)                                        |
|                                                                        |
+------------------------------------------------------------------------+

************************************************************************
  FLOW PROCESS FROM NODE   2402.00 TO NODE   2403.00 IS CODE =  31
------------------------------------------------------------------------
```

```
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   197.22  DOWNSTREAM(FEET) =   197.16
  FLOW LENGTH(FEET) =     6.25   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   7.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.24
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       3.68
  PIPE TRAVEL TIME(MIN.) =   0.02    Tc(MIN.) =    3.84
  LONGEST FLOWPATH FROM NODE   2400.00 TO NODE   2403.00 =     228.25 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2404.00 TO NODE   2403.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .5520
  S.C.S. CURVE NUMBER (AMC II) =  80
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.5652
  SUBAREA AREA(ACRES) =    1.24   SUBAREA RUNOFF(CFS) =    5.95
  TOTAL AREA(ACRES) =        2.0   TOTAL RUNOFF(CFS) =       9.63
  TC(MIN.) =    3.84

+--------------------------------------------------------------------------+
| COMPOSITE C FOR A & B SOILS                                              |
| LAND USE - 14.5 DU/A (~50% IMP)                                          |
| (0.55*1.12)+(0.58*0.12)/1.24 = 0.552                                     |
+--------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   2405.00 TO NODE   2403.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .5540
  S.C.S. CURVE NUMBER (AMC II) =  80
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.5605
  SUBAREA AREA(ACRES) =    1.41   SUBAREA RUNOFF(CFS) =    6.79
  TOTAL AREA(ACRES) =        3.4   TOTAL RUNOFF(CFS) =      16.42
  TC(MIN.) =    3.84

+--------------------------------------------------------------------------+
| COMPOSITE C FOR A & B SOILS                                              |
| LAND USE - 7.3 DU/A (~50%IMP)                                            |
| (0.55*1.18)+(0.58*0.23)/1.41 = .554                                      |
+--------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   2403.00 TO NODE   2406.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   196.66  DOWNSTREAM(FEET) =   194.43
  FLOW LENGTH(FEET) =   223.49   MANNING'S N =  0.013
```



```
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  15.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.69
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      16.42
  PIPE TRAVEL TIME(MIN.) =   0.48    Tc(MIN.) =    4.33
  LONGEST FLOWPATH FROM NODE   2400.00 TO NODE   2406.00 =     451.74 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2403.00 TO NODE   2406.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =    4.33
  RAINFALL INTENSITY(INCH/HR) =   8.69
  TOTAL STREAM AREA(ACRES) =     3.37
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     16.42

****************************************************************************
  FLOW PROCESS FROM NODE   2407.00 TO NODE   2408.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  STREETS & ROADS (CURBS/STORM DRAINS) RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "A"
  S.C.S. CURVE NUMBER (AMC II) =  98
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    60.00
  UPSTREAM ELEVATION(FEET) =    207.00
  DOWNSTREAM ELEVATION(FEET) =    206.35
  ELEVATION DIFFERENCE(FEET) =      0.65
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.122
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.15
  TOTAL AREA(ACRES) =      0.02   TOTAL RUNOFF(CFS) =      0.15

+--------------------------------------------------------------------------+
| % IMPERVIOUS - 100                                                       |
| HSG - A                                                                  |
|                                                                          |
+--------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   2408.00 TO NODE   2409.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  206.35  DOWNSTREAM ELEVATION(FEET) =  202.52
  STREET LENGTH(FEET) =   371.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 20.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.015
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       3.15
```

```
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.35
    HALFSTREET FLOOD WIDTH(FEET) =   10.94
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.39
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.83
  STREET FLOW TRAVEL TIME(MIN.) =   2.58   Tc(MIN.) =    5.71
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.985
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .5590
  S.C.S. CURVE NUMBER (AMC II) =  98
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.564
  SUBAREA AREA(ACRES) =    1.30      SUBAREA RUNOFF(CFS) =    5.80
  TOTAL AREA(ACRES) =        1.3        PEAK FLOW RATE(CFS) =       5.94

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.41   HALFSTREET FLOOD WIDTH(FEET) =  14.19
  FLOW VELOCITY(FEET/SEC.) =  2.79   DEPTH*VELOCITY(FT*FT/SEC.) =   1.14
  LONGEST FLOWPATH FROM NODE   2407.00 TO NODE   2409.00 =     431.00 FEET.

+----------------------------------------------------------------------------+
| COMPOSITE C FOR A & B SOILS                                                |
| LAND USE - 14.5 DU/A (~50% IMP)                                            |
| (0.55*0.93)+(0.58*0.37)/1.30 =0.559                                        |
+----------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   2409.00 TO NODE   2410.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   196.69  DOWNSTREAM(FEET) =   196.28
  FLOW LENGTH(FEET) =    28.25   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   8.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.92
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =        5.94
  PIPE TRAVEL TIME(MIN.) =   0.07    Tc(MIN.) =    5.77
  LONGEST FLOWPATH FROM NODE   2407.00 TO NODE   2410.00 =     459.25 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2411.00 TO NODE   2410.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.925
  NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .7600
  SOIL CLASSIFICATION IS "A"
  S.C.S. CURVE NUMBER (AMC II) =  86
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.6102
  SUBAREA AREA(ACRES) =    0.41   SUBAREA RUNOFF(CFS) =    2.47
  TOTAL AREA(ACRES) =        1.7   TOTAL RUNOFF(CFS) =       8.37
  TC(MIN.) =    5.77

+----------------------------------------------------------------------------+
| ~80% IMPERVIOUS, LAND USE - NEIGHBORHOOD COMMERCIAL                        |
| HSG - A                                                                    |
|                                                                            |
+----------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   2412.00 TO NODE   2410.00 IS CODE =  81
```



```
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.925
  RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .2700
  SOIL CLASSIFICATION IS "A"
  S.C.S. CURVE NUMBER (AMC II) =  45
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.4990
  SUBAREA AREA(ACRES) =    0.84   SUBAREA RUNOFF(CFS) =    1.80
  TOTAL AREA(ACRES) =        2.6   TOTAL RUNOFF(CFS) =      10.16
  TC(MIN.) =    5.77

+----------------------------------------------------------------------------+
| ASSUMED FUTURE PARK IMPERVIOUS ~10%, LAND USE - 1.0 DU/A                   |
| HSG - A                                                                    |
+----------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   2410.00 TO NODE   2413.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   195.78  DOWNSTREAM(FEET) =   195.33
  FLOW LENGTH(FEET) =    50.78   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  12.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.54
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      10.16
  PIPE TRAVEL TIME(MIN.) =   0.13    Tc(MIN.) =    5.90
  LONGEST FLOWPATH FROM NODE   2407.00 TO NODE   2413.00 =     510.03 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2414.00 TO NODE   2413.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.812
  LIMITED INDUSTRIAL RUNOFF COEFFICIENT = .8300
  SOIL CLASSIFICATION IS "A"
  S.C.S. CURVE NUMBER (AMC II) =  92
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.5229
  SUBAREA AREA(ACRES) =    0.20   SUBAREA RUNOFF(CFS) =    1.30
  TOTAL AREA(ACRES) =        2.8   TOTAL RUNOFF(CFS) =      11.32
  TC(MIN.) =    5.90

+----------------------------------------------------------------------------+
| ASSUMED IMPERVIOUS 90% FOR LIFT STATION, LAND USE - LIMITED INDUSTRIAL     |
| HSG - A                                                                    |
+----------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   2413.00 TO NODE   2406.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   195.23  DOWNSTREAM(FEET) =   194.43
  FLOW LENGTH(FEET) =    80.08   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  13.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.01
```

```
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       11.32
  PIPE TRAVEL TIME(MIN.) =   0.19    Tc(MIN.) =    6.09
  LONGEST FLOWPATH FROM NODE   2407.00 TO NODE   2406.00 =     590.11 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2410.00 TO NODE   2406.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    6.09
  RAINFALL INTENSITY(INCH/HR) =   7.65
  TOTAL STREAM AREA(ACRES) =     2.77
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     11.32

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       16.42     4.33        8.695          3.37
      2       11.32     6.09        7.654          2.77

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       24.46     4.33       8.695
      2       25.77     6.09       7.654

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      25.77   Tc(MIN.) =    6.09
  TOTAL AREA(ACRES) =        6.1
  LONGEST FLOWPATH FROM NODE   2407.00 TO NODE   2406.00 =     590.11 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2406.00 TO NODE   2416.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   193.93  DOWNSTREAM(FEET) =   193.52
  FLOW LENGTH(FEET) =    41.36   MANNING'S N =  0.013
  DEPTH OF FLOW IN  27.0 INCH PIPE IS  19.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.50
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       25.77
  PIPE TRAVEL TIME(MIN.) =   0.08    Tc(MIN.) =    6.17
  LONGEST FLOWPATH FROM NODE   2407.00 TO NODE   2416.00 =     631.47 FEET.
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =        6.1  TC(MIN.) =      6.17
  PEAK FLOW RATE(CFS)   =      25.77
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

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2C

```
****************************************************************************

          RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT
                       2003,1985,1981 HYDROLOGY MANUAL
        (c) Copyright 1982-2016 Advanced Engineering Software (aes)
            Ver. 23.0 Release Date: 07/01/2016  License ID 1509

                        Analysis prepared by:




 ************************** DESCRIPTION OF STUDY **************************
* OCEAN BREEZE RANCH - PA2                                                *
* SYSTEM 2040 - PROPOSED CONDITIONS                                       *
* NORTHWEST QUADRANT                                                      *
 ****************************************************************************

  FILE NAME: 2040P100.DAT
  TIME/DATE OF STUDY: 12:12 05/31/2024
----------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
----------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) = 100.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   3.300
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  ========  ================  ======  =====  ====  =====  =======
  1   18.0     12.0    0.020/0.020/0.015   0.50    1.50 0.0313 0.125 0.0150
  2   20.0     13.0    0.020/0.020/0.015   0.50    1.50 0.0313 0.125 0.0150
  3   16.0     11.0    0.020/0.020/0.015   0.50    1.50 0.0313 0.125 0.0150
  4   12.0      7.0    0.020/0.020/0.015   0.50    1.50 0.0100 0.010 0.0160
  5   17.0     12.0    0.020/0.020/0.015   0.33    1.50 0.0100 0.010 0.0160

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth = -0.10 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

****************************************************************************
  FLOW PROCESS FROM NODE   2040.00 TO NODE   2041.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  STREETS & ROADS (CURBS/STORM DRAINS) RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "A"
  S.C.S. CURVE NUMBER (AMC II) =  98
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    60.00
  UPSTREAM ELEVATION(FEET) =    206.20
```



```
  DOWNSTREAM ELEVATION(FEET) =    205.55
  ELEVATION DIFFERENCE(FEET) =      0.65
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.122
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.15
  TOTAL AREA(ACRES) =      0.02   TOTAL RUNOFF(CFS) =      0.15

****************************************************************************
  FLOW PROCESS FROM NODE   2041.00 TO NODE   2042.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  205.55  DOWNSTREAM ELEVATION(FEET) =  202.31
  STREET LENGTH(FEET) =   336.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  12.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.015
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       3.43
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.36
    HALFSTREET FLOOD WIDTH(FEET) =   11.48
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.39
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.85
  STREET FLOW TRAVEL TIME(MIN.) =   2.35   Tc(MIN.) =    5.47
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.206
  RESIDENTIAL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .5500
  SOIL CLASSIFICATION IS "A"
  S.C.S. CURVE NUMBER (AMC II) =  69
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.554
  SUBAREA AREA(ACRES) =    1.41      SUBAREA RUNOFF(CFS) =    6.36
  TOTAL AREA(ACRES) =        1.4        PEAK FLOW RATE(CFS) =       6.51

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.43   HALFSTREET FLOOD WIDTH(FEET) =  14.95
  FLOW VELOCITY(FEET/SEC.) =  2.76   DEPTH*VELOCITY(FT*FT/SEC.) =   1.18
  LONGEST FLOWPATH FROM NODE   2040.00 TO NODE   2042.00 =     396.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2042.00 TO NODE   2043.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   196.60  DOWNSTREAM(FEET) =   195.33
  FLOW LENGTH(FEET) =   254.99   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  13.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.63
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       6.51
  PIPE TRAVEL TIME(MIN.) =   0.92    Tc(MIN.) =    6.39
  LONGEST FLOWPATH FROM NODE   2040.00 TO NODE   2043.00 =     650.99 FEET.

****************************************************************************
```

```
  FLOW PROCESS FROM NODE   2044.00 TO NODE   2043.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.424
  STREETS & ROADS (CURBS/STORM DRAINS) RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "A"
  S.C.S. CURVE NUMBER (AMC II) =  98
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.5770
  SUBAREA AREA(ACRES) =    0.11   SUBAREA RUNOFF(CFS) =    0.71
  TOTAL AREA(ACRES) =        1.5   TOTAL RUNOFF(CFS) =       6.60
  TC(MIN.) =    6.39

****************************************************************************
  FLOW PROCESS FROM NODE   2045.00 TO NODE   2043.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.424
  RESIDENTIAL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .5500
  SOIL CLASSIFICATION IS "A"
  S.C.S. CURVE NUMBER (AMC II) =  69
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.5673
  SUBAREA AREA(ACRES) =    0.86   SUBAREA RUNOFF(CFS) =    3.51
  TOTAL AREA(ACRES) =        2.4   TOTAL RUNOFF(CFS) =      10.11
  TC(MIN.) =    6.39

****************************************************************************
  FLOW PROCESS FROM NODE   2043.00 TO NODE   2046.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   195.23  DOWNSTREAM(FEET) =   193.02
  FLOW LENGTH(FEET) =   528.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  14.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.92
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      10.11
  PIPE TRAVEL TIME(MIN.) =   1.79    Tc(MIN.) =    8.17
  LONGEST FLOWPATH FROM NODE   2040.00 TO NODE   2046.00 =    1178.99 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2043.00 TO NODE   2046.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =    8.17
  RAINFALL INTENSITY(INCH/HR) =   6.33
  TOTAL STREAM AREA(ACRES) =     2.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     10.11

****************************************************************************
  FLOW PROCESS FROM NODE   2047.00 TO NODE   2048.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  STREETS & ROADS (CURBS/STORM DRAINS) RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "A"
  S.C.S. CURVE NUMBER (AMC II) =  98
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    60.00
```



```
  UPSTREAM ELEVATION(FEET) =    202.14
  DOWNSTREAM ELEVATION(FEET) =    201.29
  ELEVATION DIFFERENCE(FEET) =      0.85
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.855
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.15
  TOTAL AREA(ACRES) =      0.02   TOTAL RUNOFF(CFS) =      0.15

****************************************************************************
  FLOW PROCESS FROM NODE   2048.00 TO NODE   2049.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  201.29  DOWNSTREAM ELEVATION(FEET) =  199.42
  STREET LENGTH(FEET) =   202.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 16.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  11.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.015
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       2.04
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.31
    HALFSTREET FLOOD WIDTH(FEET) =    9.25
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.09
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.65
  STREET FLOW TRAVEL TIME(MIN.) =   1.61   Tc(MIN.) =    4.46
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  RESIDENTIAL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .5500
  SOIL CLASSIFICATION IS "A"
  S.C.S. CURVE NUMBER (AMC II) =  69
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.558
  SUBAREA AREA(ACRES) =    0.79      SUBAREA RUNOFF(CFS) =    3.78
  TOTAL AREA(ACRES) =        0.8        PEAK FLOW RATE(CFS) =       3.93

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.37   HALFSTREET FLOOD WIDTH(FEET) =  12.26
  FLOW VELOCITY(FEET/SEC.) =  2.42   DEPTH*VELOCITY(FT*FT/SEC.) =   0.90
  LONGEST FLOWPATH FROM NODE   2047.00 TO NODE   2049.00 =     262.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2049.00 TO NODE   2046.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   192.45  DOWNSTREAM(FEET) =   192.42
  FLOW LENGTH(FEET) =     3.33   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   8.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.21
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       3.93
  PIPE TRAVEL TIME(MIN.) =   0.01    Tc(MIN.) =    4.47
```

```
  LONGEST FLOWPATH FROM NODE   2047.00 TO NODE   2046.00 =     265.33 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2049.00 TO NODE   2046.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    4.47
  RAINFALL INTENSITY(INCH/HR) =   8.69
  TOTAL STREAM AREA(ACRES) =     0.81
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.93

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       10.11     8.17        6.332          2.40
      2        3.93     4.47        8.695          0.81

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF       Tc      INTENSITY
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)
      1        9.46     4.47        8.695
      2       12.97     8.17        6.332

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      12.97   Tc(MIN.) =    8.17
  TOTAL AREA(ACRES) =        3.2
  LONGEST FLOWPATH FROM NODE   2040.00 TO NODE   2046.00 =    1178.99 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2046.00 TO NODE   2051.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   192.33  DOWNSTREAM(FEET) =   191.00
  FLOW LENGTH(FEET) =   269.19   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  16.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.52
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      12.97
  PIPE TRAVEL TIME(MIN.) =   0.81    Tc(MIN.) =    8.99
  LONGEST FLOWPATH FROM NODE   2040.00 TO NODE   2051.00 =    1448.18 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2051.00 TO NODE   2051.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.957
  RESIDENTIAL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .5500
  SOIL CLASSIFICATION IS "A"
  S.C.S. CURVE NUMBER (AMC II) =  69
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.5585
  SUBAREA AREA(ACRES) =    2.45   SUBAREA RUNOFF(CFS) =    8.03
  TOTAL AREA(ACRES) =        5.7   TOTAL RUNOFF(CFS) =      18.83
  TC(MIN.) =    8.99
```



```
****************************************************************************
  FLOW PROCESS FROM NODE   2051.00 TO NODE   2052.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   190.90  DOWNSTREAM(FEET) =   190.80
  FLOW LENGTH(FEET) =    19.70   MANNING'S N =  0.013
  DEPTH OF FLOW IN  27.0 INCH PIPE IS  19.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.10
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      18.83
  PIPE TRAVEL TIME(MIN.) =   0.05    Tc(MIN.) =    9.04
  LONGEST FLOWPATH FROM NODE   2040.00 TO NODE   2052.00 =    1467.88 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2052.00 TO NODE   2053.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.934
  URBAN NEWLY GRADED AREAS RUNOFF COEFFICIENT = .6600
  SOIL CLASSIFICATION IS "A"
  S.C.S. CURVE NUMBER (AMC II) =  77
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.5628
  SUBAREA AREA(ACRES) =    0.25   SUBAREA RUNOFF(CFS) =    0.98
  TOTAL AREA(ACRES) =        5.9   TOTAL RUNOFF(CFS) =      19.74
  TC(MIN.) =    9.04

****************************************************************************
  FLOW PROCESS FROM NODE   2053.00 TO NODE   2036.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   187.50  DOWNSTREAM(FEET) =   187.30
  FLOW LENGTH(FEET) =    33.85   MANNING'S N =  0.013
  DEPTH OF FLOW IN  27.0 INCH PIPE IS  19.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.55
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      19.74
  PIPE TRAVEL TIME(MIN.) =   0.09    Tc(MIN.) =    9.13
  LONGEST FLOWPATH FROM NODE   2040.00 TO NODE   2036.00 =    1501.73 FEET.
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)      =         5.9  TC(MIN.) =      9.13
  PEAK FLOW RATE(CFS)    =       19.74
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

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```
****************************************************************************

          RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT
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                          Analysis prepared by:




 ************************** DESCRIPTION OF STUDY **************************
* OCEAN BREEZE RANCH - PA2                                                *
* SYSTEM 2027 - PROPOSED CONDITIONS                                       *
* NORTHWEST QUADRANT                                                      *
 ****************************************************************************

  FILE NAME: 2027P100.DAT
  TIME/DATE OF STUDY: 12:14 05/31/2024
----------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
----------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) = 100.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   3.300
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  ========  ================  ======  =====  ====  ====  =======
  1   18.0     12.0    0.020/0.020/0.015   0.50    1.50 0.0313 0.125 0.0150
  2   20.0     13.0    0.020/0.020/0.015   0.50    1.50 0.0313 0.125 0.0150
  3   16.0     11.0    0.020/0.020/0.015   0.50    1.50 0.0313 0.125 0.0150
  4   12.0      7.0    0.020/0.020/0.015   0.50    1.50 0.0100 0.010 0.0160
  5   17.0     12.0    0.020/0.020/0.015   0.33    1.50 0.0100 0.010 0.0160

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth = -0.10 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

****************************************************************************
  FLOW PROCESS FROM NODE   2027.00 TO NODE   2028.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  STREETS & ROADS (CURBS/STORM DRAINS) RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "B"
  S.C.S. CURVE NUMBER (AMC II) =  98
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    60.00
  UPSTREAM ELEVATION(FEET) =    203.62
```



```
  DOWNSTREAM ELEVATION(FEET) =    202.96
  ELEVATION DIFFERENCE(FEET) =      0.66
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.107
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.23
  TOTAL AREA(ACRES) =      0.03   TOTAL RUNOFF(CFS) =      0.23

****************************************************************************
  FLOW PROCESS FROM NODE   2028.00 TO NODE   2026.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  202.96  DOWNSTREAM ELEVATION(FEET) =  195.40
  STREET LENGTH(FEET) =   732.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 16.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  11.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.015
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       3.45
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.35
    HALFSTREET FLOOD WIDTH(FEET) =   11.40
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.43
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.86
  STREET FLOW TRAVEL TIME(MIN.) =   5.01   Tc(MIN.) =    8.12
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.359
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (7.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .4800
  S.C.S. CURVE NUMBER (AMC II) =  98
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.486
  SUBAREA AREA(ACRES) =    1.96      SUBAREA RUNOFF(CFS) =    5.98
  TOTAL AREA(ACRES) =        2.0        PEAK FLOW RATE(CFS) =       6.15

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.41   HALFSTREET FLOOD WIDTH(FEET) =  14.41
  FLOW VELOCITY(FEET/SEC.) =  2.80   DEPTH*VELOCITY(FT*FT/SEC.) =   1.16
  LONGEST FLOWPATH FROM NODE   2027.00 TO NODE   2026.00 =     792.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2029.00 TO NODE   2026.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.359
  RESIDENTIAL (7.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .4800
  SOIL CLASSIFICATION IS "A"
  S.C.S. CURVE NUMBER (AMC II) =  63
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.4829
  SUBAREA AREA(ACRES) =    1.98   SUBAREA RUNOFF(CFS) =    6.04
  TOTAL AREA(ACRES) =        4.0   TOTAL RUNOFF(CFS) =      12.19
  TC(MIN.) =    8.12

****************************************************************************
  FLOW PROCESS FROM NODE   2026.00 TO NODE   2026.00 IS CODE =  81
```

```
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.359
  RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .2700
  SOIL CLASSIFICATION IS "A"
  S.C.S. CURVE NUMBER (AMC II) =  45
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.4747
  SUBAREA AREA(ACRES) =    0.16   SUBAREA RUNOFF(CFS) =    0.27
  TOTAL AREA(ACRES) =        4.1   TOTAL RUNOFF(CFS) =      12.47
  TC(MIN.) =    8.12

****************************************************************************
  FLOW PROCESS FROM NODE   2026.00 TO NODE   2022.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   190.28  DOWNSTREAM(FEET) =   189.81
  FLOW LENGTH(FEET) =    93.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  16.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.54
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      12.47
  PIPE TRAVEL TIME(MIN.) =   0.28    Tc(MIN.) =    8.40
  LONGEST FLOWPATH FROM NODE   2027.00 TO NODE   2022.00 =     885.00 FEET.
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =        4.1  TC(MIN.) =      8.40
  PEAK FLOW RATE(CFS)   =      12.47
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

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```
************************************************************************

          RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT
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                        Analysis prepared by:




 ************************** DESCRIPTION OF STUDY **************************
* OCEAN BREEZE RANCH - PA2                                                *
* SYSTEM 2058 - PROPOSED CONDITIONS                                       *
* NORTHWEST QUADRANT                                                      *
 *************************************************************************

  FILE NAME: 2058P100.DAT
  TIME/DATE OF STUDY: 12:14 05/31/2024
------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) = 100.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   3.300
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  ==================  ======  =====  ====  =====  =======
  1   18.0     12.0    0.020/0.020/0.015   0.50    1.50 0.0313 0.125 0.0150
  2   20.0     13.0    0.020/0.020/0.015   0.50    1.50 0.0313 0.125 0.0150
  3   16.0     11.0    0.020/0.020/0.015   0.50    1.50 0.0313 0.125 0.0150
  4   12.0      7.0    0.020/0.020/0.015   0.50    1.50 0.0100 0.010 0.0160
  5   17.0     12.0    0.020/0.020/0.015   0.33    1.50 0.0100 0.010 0.0160

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth = -0.10 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

************************************************************************
  FLOW PROCESS FROM NODE   2058.00 TO NODE   2059.00 IS CODE =  21
------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
========================================================================
  NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .7600
  SOIL CLASSIFICATION IS "A"
  S.C.S. CURVE NUMBER (AMC II) =  86
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    52.00
  UPSTREAM ELEVATION(FEET) =    206.20
```



```
  DOWNSTREAM ELEVATION(FEET) =    205.87
  ELEVATION DIFFERENCE(FEET) =      0.33
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    5.135
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.546
  SUBAREA RUNOFF(CFS) =      0.13
  TOTAL AREA(ACRES) =      0.02   TOTAL RUNOFF(CFS) =      0.13

************************************************************************
  FLOW PROCESS FROM NODE   2059.00 TO NODE   2060.00 IS CODE =  62
------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
========================================================================
  UPSTREAM ELEVATION(FEET) =  205.87  DOWNSTREAM ELEVATION(FEET) =  199.00
  STREET LENGTH(FEET) =   478.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 16.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  11.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.015
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       5.05
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.31
    HALFSTREET FLOOD WIDTH(FEET) =    9.25
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.59
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.81
  STREET FLOW TRAVEL TIME(MIN.) =   3.08   Tc(MIN.) =    8.21
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.314
  RESIDENTIAL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .5500
  SOIL CLASSIFICATION IS "A"
  S.C.S. CURVE NUMBER (AMC II) =  69
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.552
  SUBAREA AREA(ACRES) =    2.75      SUBAREA RUNOFF(CFS) =    9.55
  TOTAL AREA(ACRES) =        2.8        PEAK FLOW RATE(CFS) =       9.65

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.37   HALFSTREET FLOOD WIDTH(FEET) =  12.18
  FLOW VELOCITY(FEET/SEC.) =  3.01   DEPTH*VELOCITY(FT*FT/SEC.) =   1.11
  LONGEST FLOWPATH FROM NODE   2058.00 TO NODE   2060.00 =     530.00 FEET.

************************************************************************
  FLOW PROCESS FROM NODE   2060.00 TO NODE   2021.00 IS CODE =  81
------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
========================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.314
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .2000
  SOIL CLASSIFICATION IS "A"
  S.C.S. CURVE NUMBER (AMC II) =  63
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.5346
  SUBAREA AREA(ACRES) =    0.14   SUBAREA RUNOFF(CFS) =    0.18
  TOTAL AREA(ACRES) =        2.9   TOTAL RUNOFF(CFS) =       9.82
  TC(MIN.) =    8.21

************************************************************************
  FLOW PROCESS FROM NODE   2021.00 TO NODE   2020.00 IS CODE =  31
------------------------------------------------------------------------
```

```
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   192.51  DOWNSTREAM(FEET) =   192.06
  FLOW LENGTH(FEET) =    90.33   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  15.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.13
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       9.82
  PIPE TRAVEL TIME(MIN.) =   0.29    Tc(MIN.) =    8.50
  LONGEST FLOWPATH FROM NODE   2058.00 TO NODE   2020.00 =     620.33 FEET.
================================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =        2.9  TC(MIN.) =      8.50
  PEAK FLOW RATE(CFS)   =       9.82
================================================================================
================================================================================
  END OF RATIONAL METHOD ANALYSIS
```

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```
**************************************************************************

          RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT
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           Ver. 23.0 Release Date: 07/01/2016  License ID 1509

                        Analysis prepared by:




 ************************* DESCRIPTION OF STUDY *************************
* OCEAN BREEZE RANCH - PA2                                              *
* SYSTEM 2015 - PROPOSED CONDITIONS                                     *
* NORTHWEST QUADRANT                                                    *
 ************************************************************************

  FILE NAME: 2015P100.DAT
  TIME/DATE OF STUDY: 12:15 05/31/2024
------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) = 100.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   3.300
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  ========  ================  ======  =====  ====  ====  =======
  1   18.0     12.0    0.020/0.020/0.015   0.50    1.50 0.0313 0.125 0.0150
  2   20.0     13.0    0.020/0.020/0.015   0.50    1.50 0.0313 0.125 0.0150
  3   16.0     11.0    0.020/0.020/0.015   0.50    1.50 0.0313 0.125 0.0150
  4   12.0      7.0    0.020/0.020/0.015   0.50    1.50 0.0100 0.010 0.0160
  5   17.0     12.0    0.020/0.020/0.015   0.33    1.50 0.0100 0.010 0.0160

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth = -0.10 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

**************************************************************************
  FLOW PROCESS FROM NODE   2015.00 TO NODE   2016.00 IS CODE =  21
------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
========================================================================
  STREETS & ROADS (CURBS/STORM DRAINS) RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "A"
  S.C.S. CURVE NUMBER (AMC II) =  98
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    60.00
  UPSTREAM ELEVATION(FEET) =    207.93
```



```
  DOWNSTREAM ELEVATION(FEET) =    207.31
  ELEVATION DIFFERENCE(FEET) =      0.62
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.172
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.30
  TOTAL AREA(ACRES) =      0.04   TOTAL RUNOFF(CFS) =      0.30

**************************************************************************
  FLOW PROCESS FROM NODE   2016.00 TO NODE   2017.00 IS CODE =  62
------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
========================================================================
  UPSTREAM ELEVATION(FEET) =  207.31  DOWNSTREAM ELEVATION(FEET) =  200.30
  STREET LENGTH(FEET) =   638.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 16.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  11.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.015
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       6.33
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.34
    HALFSTREET FLOOD WIDTH(FEET) =   10.80
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.46
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.84
  STREET FLOW TRAVEL TIME(MIN.) =   4.32   Tc(MIN.) =    7.49
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.700
  RESIDENTIAL (7.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .4800
  SOIL CLASSIFICATION IS "A"
  S.C.S. CURVE NUMBER (AMC II) =  63
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.484
  SUBAREA AREA(ACRES) =    3.52      SUBAREA RUNOFF(CFS) =   11.32
  TOTAL AREA(ACRES) =        3.6        PEAK FLOW RATE(CFS) =      11.55

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.40   HALFSTREET FLOOD WIDTH(FEET) =  13.89
  FLOW VELOCITY(FEET/SEC.) =  2.82   DEPTH*VELOCITY(FT*FT/SEC.) =   1.14
  LONGEST FLOWPATH FROM NODE   2015.00 TO NODE   2017.00 =     698.00 FEET.

**************************************************************************
  FLOW PROCESS FROM NODE   2017.00 TO NODE   2019.00 IS CODE =  81
------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
========================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.700
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .2000
  SOIL CLASSIFICATION IS "A"
  S.C.S. CURVE NUMBER (AMC II) =  63
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.4714
  SUBAREA AREA(ACRES) =    0.17   SUBAREA RUNOFF(CFS) =    0.23
  TOTAL AREA(ACRES) =        3.7   TOTAL RUNOFF(CFS) =     11.78
  TC(MIN.) =    7.49

**************************************************************************
  FLOW PROCESS FROM NODE   2019.00 TO NODE   2010.00 IS CODE =  31
```

```
--------------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   193.55  DOWNSTREAM(FEET) =   193.17
  FLOW LENGTH(FEET) =    76.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  15.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.45
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      11.78
  PIPE TRAVEL TIME(MIN.) =   0.23    Tc(MIN.) =    7.72
  LONGEST FLOWPATH FROM NODE   2015.00 TO NODE   2010.00 =     774.00 FEET.
================================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =         3.7  TC(MIN.) =      7.72
  PEAK FLOW RATE(CFS)   =      11.78
================================================================================
================================================================================
  END OF RATIONAL METHOD ANALYSIS
```

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```
****************************************************************************

           RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
           Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT
                        2003,1985,1981 HYDROLOGY MANUAL
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            Ver. 23.0 Release Date: 07/01/2016  License ID 1509

                        Analysis prepared by:




 ************************** DESCRIPTION OF STUDY **************************
* OCEAN BREEZE RANCH - PA2                                                *
* SYSTEM 2000 - PROPOSED CONDITIONS                                       *
* NORTHWEST QUADRANT                                                      *
 ***************************************************************************

  FILE NAME: 2000P100.DAT
  TIME/DATE OF STUDY: 12:16 05/31/2024
----------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
----------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) = 100.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   3.300
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  ========  ================  ======  =====  ====  =====  =======
  1   18.0     12.0    0.020/0.020/0.015   0.50    1.50 0.0313 0.125 0.0150
  2   20.0     13.0    0.020/0.020/0.015   0.50    1.50 0.0313 0.125 0.0150
  3   16.0     11.0    0.020/0.020/0.015   0.50    1.50 0.0313 0.125 0.0150
  4   12.0      7.0    0.020/0.020/0.015   0.50    1.50 0.0100 0.010 0.0160
  5   17.0     12.0    0.020/0.020/0.015   0.33    1.50 0.0100 0.010 0.0160

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth = -0.10 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

****************************************************************************
  FLOW PROCESS FROM NODE   2000.00 TO NODE   2001.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  STREETS & ROADS (CURBS/STORM DRAINS) RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "A"
  S.C.S. CURVE NUMBER (AMC II) =  98
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    60.00
  UPSTREAM ELEVATION(FEET) =    208.54
```



```
  DOWNSTREAM ELEVATION(FEET) =    207.79
  ELEVATION DIFFERENCE(FEET) =      0.75
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.977
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.23
  TOTAL AREA(ACRES) =      0.03   TOTAL RUNOFF(CFS) =      0.23

****************************************************************************
  FLOW PROCESS FROM NODE   2001.00 TO NODE   2002.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  207.79  DOWNSTREAM ELEVATION(FEET) =  202.40
  STREET LENGTH(FEET) =   470.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 16.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  11.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.015
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       5.68
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.40
    HALFSTREET FLOOD WIDTH(FEET) =   13.64
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.87
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.15
  STREET FLOW TRAVEL TIME(MIN.) =   2.73   Tc(MIN.) =    5.70
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.986
  RESIDENTIAL (24. DU/AC OR LESS) RUNOFF COEFFICIENT = .6600
  SOIL CLASSIFICATION IS "A"
  S.C.S. CURVE NUMBER (AMC II) =  77
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.663
  SUBAREA AREA(ACRES) =    2.02      SUBAREA RUNOFF(CFS) =   10.65
  TOTAL AREA(ACRES) =        2.0        PEAK FLOW RATE(CFS) =      10.86

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.45   HALFSTREET FLOOD WIDTH(FEET) =  16.00
  FLOW VELOCITY(FEET/SEC.) =  3.16   DEPTH*VELOCITY(FT*FT/SEC.) =   1.41
  LONGEST FLOWPATH FROM NODE   2000.00 TO NODE   2002.00 =     530.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2003.00 TO NODE   2002.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.986
  RESIDENTIAL (7.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .4800
  SOIL CLASSIFICATION IS "A"
  S.C.S. CURVE NUMBER (AMC II) =  63
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.5882
  SUBAREA AREA(ACRES) =    1.42   SUBAREA RUNOFF(CFS) =    5.44
  TOTAL AREA(ACRES) =        3.5   TOTAL RUNOFF(CFS) =     16.30
  TC(MIN.) =    5.70

****************************************************************************
  FLOW PROCESS FROM NODE   2002.00 TO NODE   2004.00 IS CODE =  81
```

```
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.986
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .2000
  SOIL CLASSIFICATION IS "A"
  S.C.S. CURVE NUMBER (AMC II) =  63
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.5690
  SUBAREA AREA(ACRES) =    0.18   SUBAREA RUNOFF(CFS) =    0.29
  TOTAL AREA(ACRES) =        3.6   TOTAL RUNOFF(CFS) =      16.59
  TC(MIN.) =    5.70

****************************************************************************
  FLOW PROCESS FROM NODE   2004.00 TO NODE   2005.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   196.44  DOWNSTREAM(FEET) =   196.20
  FLOW LENGTH(FEET) =    52.70   MANNING'S N =  0.013
  DEPTH OF FLOW IN  27.0 INCH PIPE IS  18.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.71
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      16.59
  PIPE TRAVEL TIME(MIN.) =   0.15    Tc(MIN.) =    5.86
  LONGEST FLOWPATH FROM NODE   2000.00 TO NODE   2005.00 =     582.70 FEET.
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =        3.6  TC(MIN.) =      5.86
  PEAK FLOW RATE(CFS)   =      16.59
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

PA-2
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****************************************************************************

          RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT
                       2003,1985,1981 HYDROLOGY MANUAL
        (c) Copyright 1982-2016 Advanced Engineering Software (aes)
            Ver. 23.0 Release Date: 07/01/2016  License ID 1509

                        Analysis prepared by:




 ************************** DESCRIPTION OF STUDY **************************
* OCEAN BREEZE RANCH - PA2                                                *
* SYSTEM 2023 - PROPOSED CONDITIONS                                       *
* NORTHWEST QUADRANT                                                      *
 ****************************************************************************

  FILE NAME: 2023P100.DAT
  TIME/DATE OF STUDY: 12:17 05/31/2024
----------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
----------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) = 100.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   3.300
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  ========  ================  ======  =====  ====  =====  =======
  1   18.0     12.0    0.020/0.020/0.015   0.50    1.50 0.0313 0.125 0.0150
  2   20.0     13.0    0.020/0.020/0.015   0.50    1.50 0.0313 0.125 0.0150
  3   16.0     11.0    0.020/0.020/0.015   0.50    1.50 0.0313 0.125 0.0150
  4   12.0      7.0    0.020/0.020/0.015   0.50    1.50 0.0100 0.010 0.0160
  5   17.0     12.0    0.020/0.020/0.015   0.33    1.50 0.0100 0.010 0.0160

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth = -0.10 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

****************************************************************************
  FLOW PROCESS FROM NODE   2023.00 TO NODE   2024.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  STREETS & ROADS (CURBS/STORM DRAINS) RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "A"
  S.C.S. CURVE NUMBER (AMC II) =  98
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    60.00
  UPSTREAM ELEVATION(FEET) =    205.53
```



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  DOWNSTREAM ELEVATION(FEET) =    204.58
  ELEVATION DIFFERENCE(FEET) =      0.95
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.751
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.15
  TOTAL AREA(ACRES) =      0.02   TOTAL RUNOFF(CFS) =      0.15

****************************************************************************
  FLOW PROCESS FROM NODE   2024.00 TO NODE   2025.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  3 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  204.58  DOWNSTREAM ELEVATION(FEET) =  196.70
  STREET LENGTH(FEET) =   762.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 16.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  11.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.015
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       5.99
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.34
    HALFSTREET FLOOD WIDTH(FEET) =   10.71
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.37
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.81
  STREET FLOW TRAVEL TIME(MIN.) =   5.37   Tc(MIN.) =    8.12
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.359
  RESIDENTIAL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .5500
  SOIL CLASSIFICATION IS "A"
  S.C.S. CURVE NUMBER (AMC II) =  69
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.552
  SUBAREA AREA(ACRES) =    3.12      SUBAREA RUNOFF(CFS) =   10.91
  TOTAL AREA(ACRES) =        3.1        PEAK FLOW RATE(CFS) =      11.02

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.40   HALFSTREET FLOOD WIDTH(FEET) =  13.72
  FLOW VELOCITY(FEET/SEC.) =  2.75   DEPTH*VELOCITY(FT*FT/SEC.) =   1.10
  LONGEST FLOWPATH FROM NODE   2023.00 TO NODE   2025.00 =     822.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2025.00 TO NODE   2026.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.359
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .2000
  SOIL CLASSIFICATION IS "A"
  S.C.S. CURVE NUMBER (AMC II) =  63
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.5380
  SUBAREA AREA(ACRES) =    0.13   SUBAREA RUNOFF(CFS) =    0.17
  TOTAL AREA(ACRES) =        3.3   TOTAL RUNOFF(CFS) =     11.19
  TC(MIN.) =    8.12
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =        3.3  TC(MIN.) =      8.12
```

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  PEAK FLOW RATE(CFS)    =      11.19
================================================================================
================================================================================
  END OF RATIONAL METHOD ANALYSIS
```

PA-2 BYPASS (Mitigated and Unmitigated)

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          RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT
                       2003,1985,1981 HYDROLOGY MANUAL
        (c) Copyright 1982-2016 Advanced Engineering Software (aes)
            Ver. 23.0 Release Date: 07/01/2016  License ID 1509

                        Analysis prepared by:




 ************************** DESCRIPTION OF STUDY **************************
* OCEAN BREEZE RANCH - PA2                                                *
* SYSTEM 2006 (MITIGATED) - PROPOSED CONDITIONS                           *
* NORTHWEST QUADRANT                                                      *
 ****************************************************************************

  FILE NAME: 2006M100.DAT
  TIME/DATE OF STUDY: 12:32 05/31/2024
----------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
----------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) = 100.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   3.300
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  ========  ================  ======  =====  ====  =====  =======
  1   18.0     12.0    0.020/0.020/0.015   0.50    1.50 0.0313 0.125 0.0150
  2   20.0     13.0    0.020/0.020/0.015   0.50    1.50 0.0313 0.125 0.0150
  3   16.0     11.0    0.020/0.020/0.015   0.50    1.50 0.0313 0.125 0.0150
  4   12.0      7.0    0.020/0.020/0.015   0.50    1.50 0.0100 0.010 0.0160
  5   17.0     12.0    0.020/0.020/0.015   0.33    1.50 0.0100 0.010 0.0160

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth = -0.10 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

****************************************************************************
  FLOW PROCESS FROM NODE   2006.00 TO NODE   2007.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  88
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    412.00
```



```
  DOWNSTREAM ELEVATION(FEET) =    402.00
  ELEVATION DIFFERENCE(FEET) =     10.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.267
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.516
  SUBAREA RUNOFF(CFS) =      0.11
  TOTAL AREA(ACRES) =      0.04   TOTAL RUNOFF(CFS) =      0.11

****************************************************************************
  FLOW PROCESS FROM NODE   2007.00 TO NODE   2008.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    402.00  DOWNSTREAM(FEET) =    215.20
  CHANNEL LENGTH THRU SUBAREA(FEET) =   772.00   CHANNEL SLOPE =  0.2420
  CHANNEL BASE(FEET) =    4.00   "Z" FACTOR =   4.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   5.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.207
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  88
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       4.99
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.94
  AVERAGE FLOW DEPTH(FEET) =   0.18   TRAVEL TIME(MIN.) =   2.17
  Tc(MIN.) =    8.43
  SUBAREA AREA(ACRES) =     4.45       SUBAREA RUNOFF(CFS) =    9.67
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.350
  TOTAL AREA(ACRES) =        4.5         PEAK FLOW RATE(CFS) =       9.75

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.26   FLOW VELOCITY(FEET/SEC.) =   7.37
  LONGEST FLOWPATH FROM NODE   2006.00 TO NODE   2008.00 =     872.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2008.00 TO NODE   2009.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    215.20  DOWNSTREAM(FEET) =    201.70
  CHANNEL LENGTH THRU SUBAREA(FEET) =   182.00   CHANNEL SLOPE =  0.0742
  CHANNEL BASE(FEET) =    2.00   "Z" FACTOR =   0.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   1.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.091
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  88
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      10.43
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  12.12
  AVERAGE FLOW DEPTH(FEET) =   0.43   TRAVEL TIME(MIN.) =   0.25
  Tc(MIN.) =    8.68
  SUBAREA AREA(ACRES) =     0.63       SUBAREA RUNOFF(CFS) =    1.34
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.350
  TOTAL AREA(ACRES) =        5.1         PEAK FLOW RATE(CFS) =      10.91

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.45   FLOW VELOCITY(FEET/SEC.) =  12.25
  LONGEST FLOWPATH FROM NODE   2006.00 TO NODE   2009.00 =    1054.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2018.00 TO NODE   2009.00 IS CODE =  81
----------------------------------------------------------------------------
```

```
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.091
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  88
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
  SUBAREA AREA(ACRES) =    0.32   SUBAREA RUNOFF(CFS) =    0.68
  TOTAL AREA(ACRES) =        5.4   TOTAL RUNOFF(CFS) =      11.60
  TC(MIN.) =    8.68

****************************************************************************
  FLOW PROCESS FROM NODE   2009.00 TO NODE   2005.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   197.22  DOWNSTREAM(FEET) =   196.20
  FLOW LENGTH(FEET) =   203.73   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  15.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.44
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      11.60
  PIPE TRAVEL TIME(MIN.) =   0.62    Tc(MIN.) =    9.31
  LONGEST FLOWPATH FROM NODE   2006.00 TO NODE   2005.00 =    1257.73 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2009.00 TO NODE   2005.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =    9.31
  RAINFALL INTENSITY(INCH/HR) =   5.82
  TOTAL STREAM AREA(ACRES) =     5.44
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     11.60

****************************************************************************
  FLOW PROCESS FROM NODE   2004.00 TO NODE   2005.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<
============================================================================
  USER-SPECIFIED VALUES ARE AS FOLLOWS:
  TC(MIN) =   5.90   RAIN INTENSITY(INCH/HOUR) =  7.81
  TOTAL AREA(ACRES) =     3.60   TOTAL RUNOFF(CFS) =     16.59

****************************************************************************
  FLOW PROCESS FROM NODE   2004.00 TO NODE   2005.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    5.90
  RAINFALL INTENSITY(INCH/HR) =   7.81
  TOTAL STREAM AREA(ACRES) =     3.60
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     16.59

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
```



```
      1       11.60     9.31        5.824          5.44
      2       16.59     5.90        7.814          3.60

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF       Tc      INTENSITY
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)
      1       23.94     5.90        7.814
      2       23.96     9.31        5.824

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      23.96   Tc(MIN.) =    9.31
  TOTAL AREA(ACRES) =        9.0
  LONGEST FLOWPATH FROM NODE   2006.00 TO NODE   2005.00 =    1257.73 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2005.00 TO NODE   2010.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   196.20  DOWNSTREAM(FEET) =   193.17
  FLOW LENGTH(FEET) =   606.06   MANNING'S N =  0.013
  DEPTH OF FLOW IN  30.0 INCH PIPE IS  21.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.46
  ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      23.96
  PIPE TRAVEL TIME(MIN.) =   1.56    Tc(MIN.) =   10.87
  LONGEST FLOWPATH FROM NODE   2006.00 TO NODE   2010.00 =    1863.79 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2005.00 TO NODE   2010.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   10.87
  RAINFALL INTENSITY(INCH/HR) =   5.27
  TOTAL STREAM AREA(ACRES) =     9.04
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     23.96

****************************************************************************
  FLOW PROCESS FROM NODE   2011.00 TO NODE   2012.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  88
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    412.00
  DOWNSTREAM ELEVATION(FEET) =    390.00
  ELEVATION DIFFERENCE(FEET) =     22.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.267
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.516
  SUBAREA RUNOFF(CFS) =      1.21
  TOTAL AREA(ACRES) =      0.46   TOTAL RUNOFF(CFS) =      1.21

****************************************************************************
```

```
  FLOW PROCESS FROM NODE   2012.00 TO NODE   2013.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    390.00  DOWNSTREAM(FEET) =    197.90
  CHANNEL LENGTH THRU SUBAREA(FEET) =   400.00   CHANNEL SLOPE =  0.4803
  CHANNEL BASE(FEET) =    5.00   "Z" FACTOR =   4.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   5.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.037
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3300
  S.C.S. CURVE NUMBER (AMC II) =  88
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      13.21
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   9.90
  AVERAGE FLOW DEPTH(FEET) =   0.23   TRAVEL TIME(MIN.) =   0.67
  Tc(MIN.) =    6.94
  SUBAREA AREA(ACRES) =    10.31       SUBAREA RUNOFF(CFS) =   23.94
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.331
  TOTAL AREA(ACRES) =       10.8         PEAK FLOW RATE(CFS) =      25.08

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.33   FLOW VELOCITY(FEET/SEC.) =  12.24
  LONGEST FLOWPATH FROM NODE   2011.00 TO NODE   2013.00 =     500.00 FEET.

+----------------------------------------------------------------------------+
| COMPOSITE C FOR A & D SOILS                                                |
| LAND USE - NATURAL                                                         |
| (0.20*1.43+0.35*8.88)/10.31 = 0.33                                         |
+----------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   2014.00 TO NODE   2013.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.037
  RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .2700
  SOIL CLASSIFICATION IS "A"
  S.C.S. CURVE NUMBER (AMC II) =  45
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3223
  SUBAREA AREA(ACRES) =    1.75   SUBAREA RUNOFF(CFS) =    3.33
  TOTAL AREA(ACRES) =       12.5   TOTAL RUNOFF(CFS) =      28.40
  TC(MIN.) =    6.94

****************************************************************************
  FLOW PROCESS FROM NODE   2013.00 TO NODE   2010.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   193.44  DOWNSTREAM(FEET) =   193.17
  FLOW LENGTH(FEET) =    26.70   MANNING'S N =  0.013
  DEPTH OF FLOW IN  27.0 INCH PIPE IS  20.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.68
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      28.40
  PIPE TRAVEL TIME(MIN.) =   0.05    Tc(MIN.) =    6.99
  LONGEST FLOWPATH FROM NODE   2011.00 TO NODE   2010.00 =     526.70 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2013.00 TO NODE   2010.00 IS CODE =   1
----------------------------------------------------------------------------
```



```
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    6.99
  RAINFALL INTENSITY(INCH/HR) =   7.00
  TOTAL STREAM AREA(ACRES) =    12.52
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     28.40

****************************************************************************
  FLOW PROCESS FROM NODE   2019.00 TO NODE   2010.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<
============================================================================
  USER-SPECIFIED VALUES ARE AS FOLLOWS:
  TC(MIN) =   7.72   RAIN INTENSITY(INCH/HOUR) =  6.57
  TOTAL AREA(ACRES) =     3.70   TOTAL RUNOFF(CFS) =     11.78

****************************************************************************
  FLOW PROCESS FROM NODE   2019.00 TO NODE   2010.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
  TIME OF CONCENTRATION(MIN.) =    7.72
  RAINFALL INTENSITY(INCH/HR) =   6.57
  TOTAL STREAM AREA(ACRES) =     3.70
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     11.78

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       23.96    10.87        5.269         9.04
      2       28.40     6.99        7.004        12.52
      3       11.78     7.72        6.570         3.70

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  3 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF       Tc       INTENSITY
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)
      1       57.09     6.99        7.004
      2       57.64     7.72        6.570
      3       54.77    10.87        5.269

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      57.64   Tc(MIN.) =    7.72
  TOTAL AREA(ACRES) =       25.3
  LONGEST FLOWPATH FROM NODE   2006.00 TO NODE   2010.00 =    1863.79 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2010.00 TO NODE   2020.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   193.15  DOWNSTREAM(FEET) =   192.16
  FLOW LENGTH(FEET) =   197.54   MANNING'S N =  0.013
  DEPTH OF FLOW IN  42.0 INCH PIPE IS  29.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.07
```

```
  ESTIMATED PIPE DIAMETER(INCH) =  42.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       57.64
  PIPE TRAVEL TIME(MIN.) =   0.41    Tc(MIN.) =    8.13
  LONGEST FLOWPATH FROM NODE   2006.00 TO NODE   2020.00 =    2061.33 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2010.00 TO NODE   2020.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =    8.13
  RAINFALL INTENSITY(INCH/HR) =   6.36
  TOTAL STREAM AREA(ACRES) =    25.26
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     57.64

****************************************************************************
  FLOW PROCESS FROM NODE   2021.00 TO NODE   2020.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<
============================================================================
  USER-SPECIFIED VALUES ARE AS FOLLOWS:
  TC(MIN) =   8.50   RAIN INTENSITY(INCH/HOUR) =  6.17
  TOTAL AREA(ACRES) =     2.90   TOTAL RUNOFF(CFS) =      9.82

****************************************************************************
  FLOW PROCESS FROM NODE   2021.00 TO NODE   2020.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    8.50
  RAINFALL INTENSITY(INCH/HR) =   6.17
  TOTAL STREAM AREA(ACRES) =     2.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      9.82

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       57.64     8.13        6.355         25.26
      2        9.82     8.50        6.175          2.90

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF       Tc      INTENSITY
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)
      1       67.03     8.13        6.355
      2       65.82     8.50        6.175

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      67.03   Tc(MIN.) =    8.13
  TOTAL AREA(ACRES) =       28.2
  LONGEST FLOWPATH FROM NODE   2006.00 TO NODE   2020.00 =    2061.33 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2020.00 TO NODE   2061.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
```



```
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   192.04  DOWNSTREAM(FEET) =   190.54
  FLOW LENGTH(FEET) =   297.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  42.0 INCH PIPE IS  33.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.25
  ESTIMATED PIPE DIAMETER(INCH) =  42.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       67.03
  PIPE TRAVEL TIME(MIN.) =   0.60    Tc(MIN.) =    8.73
  LONGEST FLOWPATH FROM NODE   2006.00 TO NODE   2061.00 =    2358.33 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2020.00 TO NODE   2061.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =    8.73
  RAINFALL INTENSITY(INCH/HR) =   6.07
  TOTAL STREAM AREA(ACRES) =    28.16
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     67.03

****************************************************************************
  FLOW PROCESS FROM NODE   2025.00 TO NODE   2061.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<
============================================================================
  USER-SPECIFIED VALUES ARE AS FOLLOWS:
  TC(MIN) =   8.12   RAIN INTENSITY(INCH/HOUR) =  6.36
  TOTAL AREA(ACRES) =     3.30   TOTAL RUNOFF(CFS) =     11.19

****************************************************************************
  FLOW PROCESS FROM NODE   2023.00 TO NODE   2061.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    8.12
  RAINFALL INTENSITY(INCH/HR) =   6.36
  TOTAL STREAM AREA(ACRES) =     3.30
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     11.19

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       67.03     8.73        6.070         28.16
      2       11.19     8.12        6.360          3.30

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF       Tc      INTENSITY
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)
      1       75.17     8.12        6.360
      2       77.71     8.73        6.070

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      77.71   Tc(MIN.) =    8.73
  TOTAL AREA(ACRES) =       31.5
```

```
  LONGEST FLOWPATH FROM NODE   2006.00 TO NODE   2061.00 =    2358.33 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2061.00 TO NODE   2022.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   190.54  DOWNSTREAM(FEET) =   189.72
  FLOW LENGTH(FEET) =   160.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  45.0 INCH PIPE IS  34.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.67
  ESTIMATED PIPE DIAMETER(INCH) =  45.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      77.71
  PIPE TRAVEL TIME(MIN.) =   0.31    Tc(MIN.) =    9.04
  LONGEST FLOWPATH FROM NODE   2006.00 TO NODE   2022.00 =    2518.33 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2061.00 TO NODE   2022.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =    9.04
  RAINFALL INTENSITY(INCH/HR) =   5.94
  TOTAL STREAM AREA(ACRES) =    31.46
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     77.71

****************************************************************************
  FLOW PROCESS FROM NODE   2026.00 TO NODE   2022.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<
============================================================================
  USER-SPECIFIED VALUES ARE AS FOLLOWS:
  TC(MIN) =   8.40   RAIN INTENSITY(INCH/HOUR) =  6.22
  TOTAL AREA(ACRES) =     4.10   TOTAL RUNOFF(CFS) =     12.47

****************************************************************************
  FLOW PROCESS FROM NODE   2026.00 TO NODE   2022.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    8.40
  RAINFALL INTENSITY(INCH/HR) =   6.22
  TOTAL STREAM AREA(ACRES) =     4.10
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     12.47

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       77.71     9.04        5.936         31.46
      2       12.47     8.40        6.222          4.10

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF       Tc      INTENSITY
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)
```



```
      1       86.61     8.40        6.222
      2       89.60     9.04        5.936

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      89.60   Tc(MIN.) =    9.04
  TOTAL AREA(ACRES) =       35.6
  LONGEST FLOWPATH FROM NODE   2006.00 TO NODE   2022.00 =    2518.33 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2022.00 TO NODE   2030.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   189.79  DOWNSTREAM(FEET) =   189.43
  FLOW LENGTH(FEET) =    72.57   MANNING'S N =  0.013
  DEPTH OF FLOW IN  48.0 INCH PIPE IS  35.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.89
  ESTIMATED PIPE DIAMETER(INCH) =  48.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      89.60
  PIPE TRAVEL TIME(MIN.) =   0.14    Tc(MIN.) =    9.17
  LONGEST FLOWPATH FROM NODE   2006.00 TO NODE   2030.00 =    2590.90 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2022.00 TO NODE   2030.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =    9.17
  RAINFALL INTENSITY(INCH/HR) =   5.88
  TOTAL STREAM AREA(ACRES) =    35.56
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     89.60

****************************************************************************
  FLOW PROCESS FROM NODE   2031.00 TO NODE   2032.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  88
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    376.30
  DOWNSTREAM ELEVATION(FEET) =    352.00
  ELEVATION DIFFERENCE(FEET) =     24.30
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.267
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.516
  SUBAREA RUNOFF(CFS) =      0.79
  TOTAL AREA(ACRES) =      0.30   TOTAL RUNOFF(CFS) =      0.79

****************************************************************************
  FLOW PROCESS FROM NODE   2032.00 TO NODE   2033.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    352.00  DOWNSTREAM(FEET) =    196.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   346.00   CHANNEL SLOPE =  0.4509
  CHANNEL BASE(FEET) =    3.00   "Z" FACTOR =   5.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   1.00
```

```
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.057
*USER SPECIFIED(SUBAREA):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3300
S.C.S. CURVE NUMBER (AMC II) =  88
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       8.01
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.96
AVERAGE FLOW DEPTH(FEET) =   0.22   TRAVEL TIME(MIN.) =   0.64
Tc(MIN.) =    6.91
SUBAREA AREA(ACRES) =     6.19       SUBAREA RUNOFF(CFS) =   14.42
AREA-AVERAGE RUNOFF COEFFICIENT =  0.331
TOTAL AREA(ACRES) =        6.5         PEAK FLOW RATE(CFS) =      15.16

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) =  0.31   FLOW VELOCITY(FEET/SEC.) =  10.75
LONGEST FLOWPATH FROM NODE   2031.00 TO NODE   2033.00 =     446.00 FEET.

+----------------------------------------------------------------------------+
| COMPOSITE C FOR A & D SOILS                                                |
| LAND USE - NATURAL                                                         |
| (0.20*0.98+0.35*5.21)/6.19 = 0.33                                          |
+----------------------------------------------------------------------------+

****************************************************************************
FLOW PROCESS FROM NODE   2033.00 TO NODE   2030.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
ELEVATION DATA: UPSTREAM(FEET) =   191.96  DOWNSTREAM(FEET) =   190.43
FLOW LENGTH(FEET) =    30.59   MANNING'S N =  0.013
DEPTH OF FLOW IN  18.0 INCH PIPE IS  10.7 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =  13.85
ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =      15.16
PIPE TRAVEL TIME(MIN.) =   0.04    Tc(MIN.) =    6.95
LONGEST FLOWPATH FROM NODE   2031.00 TO NODE   2030.00 =     476.59 FEET.

****************************************************************************
FLOW PROCESS FROM NODE   2033.00 TO NODE   2030.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
TIME OF CONCENTRATION(MIN.) =    6.95
RAINFALL INTENSITY(INCH/HR) =   7.03
TOTAL STREAM AREA(ACRES) =     6.49
PEAK FLOW RATE(CFS) AT CONFLUENCE =     15.16

** CONFLUENCE DATA **
STREAM     RUNOFF       Tc      INTENSITY      AREA
NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
    1       89.60     9.17        5.879         35.56
    2       15.16     6.95        7.033          6.49

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR  2 STREAMS.

** PEAK FLOW RATE TABLE **
STREAM     RUNOFF      Tc      INTENSITY
NUMBER      (CFS)     (MIN.)   (INCH/HOUR)
    1       90.06     6.95       7.033
```



```
    2      102.27     9.17       5.879

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =     102.27   Tc(MIN.) =    9.17
TOTAL AREA(ACRES) =       42.1
LONGEST FLOWPATH FROM NODE   2006.00 TO NODE   2030.00 =    2590.90 FEET.

****************************************************************************
FLOW PROCESS FROM NODE   2030.00 TO NODE   2034.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
ELEVATION DATA: UPSTREAM(FEET) =   189.41  DOWNSTREAM(FEET) =   188.18
FLOW LENGTH(FEET) =   246.77   MANNING'S N =  0.013
DEPTH OF FLOW IN  51.0 INCH PIPE IS  37.1 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   9.24
ESTIMATED PIPE DIAMETER(INCH) =  51.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =     102.27
PIPE TRAVEL TIME(MIN.) =   0.45    Tc(MIN.) =    9.62
LONGEST FLOWPATH FROM NODE   2006.00 TO NODE   2034.00 =    2837.67 FEET.

****************************************************************************
FLOW PROCESS FROM NODE   2035.00 TO NODE   2034.00 IS CODE =  81
----------------------------------------------------------------------------
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.702
RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .2700
SOIL CLASSIFICATION IS "A"
S.C.S. CURVE NUMBER (AMC II) =  45
AREA-AVERAGE RUNOFF COEFFICIENT = 0.4076
SUBAREA AREA(ACRES) =    1.57   SUBAREA RUNOFF(CFS) =    2.42
TOTAL AREA(ACRES) =       43.6   TOTAL RUNOFF(CFS) =     102.27
TC(MIN.) =    9.62
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
FLOW PROCESS FROM NODE   2034.00 TO NODE   2036.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
ELEVATION DATA: UPSTREAM(FEET) =   188.16  DOWNSTREAM(FEET) =   187.32
FLOW LENGTH(FEET) =   167.09   MANNING'S N =  0.013
DEPTH OF FLOW IN  51.0 INCH PIPE IS  37.0 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   9.28
ESTIMATED PIPE DIAMETER(INCH) =  51.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =     102.27
PIPE TRAVEL TIME(MIN.) =   0.30    Tc(MIN.) =    9.92
LONGEST FLOWPATH FROM NODE   2006.00 TO NODE   2036.00 =    3004.76 FEET.

****************************************************************************
FLOW PROCESS FROM NODE   2034.00 TO NODE   2036.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  3
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
TIME OF CONCENTRATION(MIN.) =    9.92
RAINFALL INTENSITY(INCH/HR) =   5.59
TOTAL STREAM AREA(ACRES) =    43.62
PEAK FLOW RATE(CFS) AT CONFLUENCE =    102.27
```

```
****************************************************************************
  FLOW PROCESS FROM NODE   2037.00 TO NODE   2038.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  88
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    374.00
  DOWNSTREAM ELEVATION(FEET) =    362.00
  ELEVATION DIFFERENCE(FEET) =     12.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.267
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.516
  SUBAREA RUNOFF(CFS) =      0.29
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.29

****************************************************************************
  FLOW PROCESS FROM NODE   2038.00 TO NODE   2039.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    362.00  DOWNSTREAM(FEET) =    200.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   490.00   CHANNEL SLOPE =  0.3306
  CHANNEL BASE(FEET) =    3.00   "Z" FACTOR =   5.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   5.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.817
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  88
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       8.10
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.98
  AVERAGE FLOW DEPTH(FEET) =   0.24   TRAVEL TIME(MIN.) =   1.02
  Tc(MIN.) =    7.29
  SUBAREA AREA(ACRES) =     6.53       SUBAREA RUNOFF(CFS) =   15.58
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.350
  TOTAL AREA(ACRES) =        6.6         PEAK FLOW RATE(CFS) =      15.84

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.35   FLOW VELOCITY(FEET/SEC.) =   9.67
  LONGEST FLOWPATH FROM NODE   2037.00 TO NODE   2039.00 =     590.00 FEET.

+--------------------------------------------------------------------------+
| PREDOMINANT HSG - D                                                      |
| LAND USE - NATURAL                                                       |
|                                                                          |
+--------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   2039.00 TO NODE   2036.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   192.52  DOWNSTREAM(FEET) =   188.32
  FLOW LENGTH(FEET) =    83.96   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  11.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  13.99
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      15.84
```



```
  PIPE TRAVEL TIME(MIN.) =   0.10    Tc(MIN.) =    7.39
  LONGEST FLOWPATH FROM NODE   2037.00 TO NODE   2036.00 =     673.96 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2039.00 TO NODE   2036.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    7.39
  RAINFALL INTENSITY(INCH/HR) =   6.76
  TOTAL STREAM AREA(ACRES) =     6.64
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     15.84

****************************************************************************
  FLOW PROCESS FROM NODE   2053.00 TO NODE   2036.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<
============================================================================
  USER-SPECIFIED VALUES ARE AS FOLLOWS:
  TC(MIN) =  18.10   RAIN INTENSITY(INCH/HOUR) =  3.79
  TOTAL AREA(ACRES) =     5.90   TOTAL RUNOFF(CFS) =      3.30

****************************************************************************
  FLOW PROCESS FROM NODE   2053.00 TO NODE   2036.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
  TIME OF CONCENTRATION(MIN.) =   18.10
  RAINFALL INTENSITY(INCH/HR) =   3.79
  TOTAL STREAM AREA(ACRES) =     5.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.30

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1      102.27     9.92        5.590         43.62
      2       15.84     7.39        6.758          6.64
      3        3.30    18.10        3.792          5.90

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  3 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1      101.80     7.39        6.758
      2      117.19     9.92        5.590
      3       81.57    18.10        3.792

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     117.19   Tc(MIN.) =    9.92
  TOTAL AREA(ACRES) =       56.2
  LONGEST FLOWPATH FROM NODE   2006.00 TO NODE   2036.00 =    3004.76 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2036.00 TO NODE   2054.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
```

```
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   187.30  DOWNSTREAM(FEET) =   184.08
  FLOW LENGTH(FEET) =   644.76   MANNING'S N =  0.013
  DEPTH OF FLOW IN  54.0 INCH PIPE IS  38.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   9.59
  ESTIMATED PIPE DIAMETER(INCH) =  54.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     117.19
  PIPE TRAVEL TIME(MIN.) =   1.12    Tc(MIN.) =   11.04
  LONGEST FLOWPATH FROM NODE   2006.00 TO NODE   2054.00 =    3649.52 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2054.00 TO NODE   2057.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    184.08  DOWNSTREAM(FEET) =    182.20
  CHANNEL LENGTH THRU SUBAREA(FEET) =   330.00   CHANNEL SLOPE =  0.0057
  CHANNEL BASE(FEET) =   35.00   "Z" FACTOR =  10.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   2.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.689
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .3000
  S.C.S. CURVE NUMBER (AMC II) =  88
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     121.56
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   2.77
  AVERAGE FLOW DEPTH(FEET) =   0.98   TRAVEL TIME(MIN.) =   1.99
  Tc(MIN.) =   13.02
  SUBAREA AREA(ACRES) =     6.21       SUBAREA RUNOFF(CFS) =    8.74
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.366
  TOTAL AREA(ACRES) =       62.4         PEAK FLOW RATE(CFS) =     117.19

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.96   FLOW VELOCITY(FEET/SEC.) =   2.74
  LONGEST FLOWPATH FROM NODE   2006.00 TO NODE   2057.00 =    3979.52 FEET.

+--------------------------------------------------------------------------+
| COMPOSITE C FOR A & D SOILS                                              |
| LAND USE - 1.0 DU/A                                                      |
| (0.27*4.91)+(0.41*1.30)/6.21 = 0.30                                      |
+--------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   2056.00 TO NODE   2057.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.689
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .3400
  S.C.S. CURVE NUMBER (AMC II) =  88
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3639
  SUBAREA AREA(ACRES) =    5.86   SUBAREA RUNOFF(CFS) =    9.34
  TOTAL AREA(ACRES) =       68.2   TOTAL RUNOFF(CFS) =     117.19
  TC(MIN.) =   13.02
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

+--------------------------------------------------------------------------+
| COMPOSITE C FOR A & D SOILS                                              |
| SUBAREA - OPEN SPACE                                                     |
| (0.20*0.52)+(0.35*5.34)/5.86 = 0.34                                      |
+--------------------------------------------------------------------------+
```



```
================================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =       68.2  TC(MIN.) =     13.02
  PEAK FLOW RATE(CFS)   =     117.19
================================================================================
================================================================================
  END OF RATIONAL METHOD ANALYSIS
```

```
****************************************************************************

          RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT
                       2003,1985,1981 HYDROLOGY MANUAL
        (c) Copyright 1982-2016 Advanced Engineering Software (aes)
            Ver. 23.0 Release Date: 07/01/2016  License ID 1509

                        Analysis prepared by:




 ************************** DESCRIPTION OF STUDY **************************
* OCEAN BREEZE RANCH - PA2                                                *
* SYSTEM 2006 - PROPOSED CONDITIONS                                       *
* NORTHWEST QUADRANT                                                      *
 ****************************************************************************

  FILE NAME: 2006P100.DAT
  TIME/DATE OF STUDY: 12:31 05/31/2024
----------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
----------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) = 100.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   3.300
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  ================  ======  =====  ====  =====  =======
  1   18.0     12.0    0.020/0.020/0.015   0.50    1.50 0.0313 0.125 0.0150
  2   20.0     13.0    0.020/0.020/0.015   0.50    1.50 0.0313 0.125 0.0150
  3   16.0     11.0    0.020/0.020/0.015   0.50    1.50 0.0313 0.125 0.0150
  4   12.0      7.0    0.020/0.020/0.015   0.50    1.50 0.0100 0.010 0.0160
  5   17.0     12.0    0.020/0.020/0.015   0.33    1.50 0.0100 0.010 0.0160

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth = -0.10 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

****************************************************************************
  FLOW PROCESS FROM NODE   2006.00 TO NODE   2007.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  88
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    412.00
```



```
  DOWNSTREAM ELEVATION(FEET) =    402.00
  ELEVATION DIFFERENCE(FEET) =     10.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.267
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.516
  SUBAREA RUNOFF(CFS) =      0.11
  TOTAL AREA(ACRES) =      0.04   TOTAL RUNOFF(CFS) =      0.11

****************************************************************************
  FLOW PROCESS FROM NODE   2007.00 TO NODE   2008.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    402.00  DOWNSTREAM(FEET) =    215.20
  CHANNEL LENGTH THRU SUBAREA(FEET) =   772.00   CHANNEL SLOPE =  0.2420
  CHANNEL BASE(FEET) =    4.00   "Z" FACTOR =   4.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   5.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.207
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  88
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       4.99
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.94
  AVERAGE FLOW DEPTH(FEET) =   0.18   TRAVEL TIME(MIN.) =   2.17
  Tc(MIN.) =    8.43
  SUBAREA AREA(ACRES) =     4.45       SUBAREA RUNOFF(CFS) =    9.67
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.350
  TOTAL AREA(ACRES) =        4.5         PEAK FLOW RATE(CFS) =       9.75

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.26   FLOW VELOCITY(FEET/SEC.) =   7.37
  LONGEST FLOWPATH FROM NODE   2006.00 TO NODE   2008.00 =     872.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2008.00 TO NODE   2009.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    215.20  DOWNSTREAM(FEET) =    201.70
  CHANNEL LENGTH THRU SUBAREA(FEET) =   182.00   CHANNEL SLOPE =  0.0742
  CHANNEL BASE(FEET) =    2.00   "Z" FACTOR =   0.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   1.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.091
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  88
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      10.43
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  12.12
  AVERAGE FLOW DEPTH(FEET) =   0.43   TRAVEL TIME(MIN.) =   0.25
  Tc(MIN.) =    8.68
  SUBAREA AREA(ACRES) =     0.63       SUBAREA RUNOFF(CFS) =    1.34
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.350
  TOTAL AREA(ACRES) =        5.1         PEAK FLOW RATE(CFS) =      10.91

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.45   FLOW VELOCITY(FEET/SEC.) =  12.25
  LONGEST FLOWPATH FROM NODE   2006.00 TO NODE   2009.00 =    1054.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2018.00 TO NODE   2009.00 IS CODE =  81
----------------------------------------------------------------------------
```

```
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.091
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  88
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
  SUBAREA AREA(ACRES) =    0.32   SUBAREA RUNOFF(CFS) =    0.68
  TOTAL AREA(ACRES) =        5.4   TOTAL RUNOFF(CFS) =      11.60
  TC(MIN.) =    8.68

****************************************************************************
  FLOW PROCESS FROM NODE   2009.00 TO NODE   2005.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   197.22  DOWNSTREAM(FEET) =   196.20
  FLOW LENGTH(FEET) =   203.73   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  15.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.44
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      11.60
  PIPE TRAVEL TIME(MIN.) =   0.62    Tc(MIN.) =    9.31
  LONGEST FLOWPATH FROM NODE   2006.00 TO NODE   2005.00 =    1257.73 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2009.00 TO NODE   2005.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =    9.31
  RAINFALL INTENSITY(INCH/HR) =   5.82
  TOTAL STREAM AREA(ACRES) =     5.44
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     11.60

****************************************************************************
  FLOW PROCESS FROM NODE   2004.00 TO NODE   2005.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<
============================================================================
  USER-SPECIFIED VALUES ARE AS FOLLOWS:
  TC(MIN) =   5.90   RAIN INTENSITY(INCH/HOUR) =  7.81
  TOTAL AREA(ACRES) =     3.60   TOTAL RUNOFF(CFS) =     16.59

****************************************************************************
  FLOW PROCESS FROM NODE   2004.00 TO NODE   2005.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    5.90
  RAINFALL INTENSITY(INCH/HR) =   7.81
  TOTAL STREAM AREA(ACRES) =     3.60
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     16.59

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
```



```
      1       11.60     9.31        5.824          5.44
      2       16.59     5.90        7.814          3.60

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF       Tc      INTENSITY
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)
      1       23.94     5.90        7.814
      2       23.96     9.31        5.824

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      23.96   Tc(MIN.) =    9.31
  TOTAL AREA(ACRES) =        9.0
  LONGEST FLOWPATH FROM NODE   2006.00 TO NODE   2005.00 =    1257.73 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2005.00 TO NODE   2010.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   196.20  DOWNSTREAM(FEET) =   193.17
  FLOW LENGTH(FEET) =   606.06   MANNING'S N =  0.013
  DEPTH OF FLOW IN  30.0 INCH PIPE IS  21.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.46
  ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      23.96
  PIPE TRAVEL TIME(MIN.) =   1.56    Tc(MIN.) =   10.87
  LONGEST FLOWPATH FROM NODE   2006.00 TO NODE   2010.00 =    1863.79 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2005.00 TO NODE   2010.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   10.87
  RAINFALL INTENSITY(INCH/HR) =   5.27
  TOTAL STREAM AREA(ACRES) =     9.04
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     23.96

****************************************************************************
  FLOW PROCESS FROM NODE   2011.00 TO NODE   2012.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  88
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    412.00
  DOWNSTREAM ELEVATION(FEET) =    390.00
  ELEVATION DIFFERENCE(FEET) =     22.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.267
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.516
  SUBAREA RUNOFF(CFS) =      1.21
  TOTAL AREA(ACRES) =      0.46   TOTAL RUNOFF(CFS) =      1.21

****************************************************************************
```

```
  FLOW PROCESS FROM NODE   2012.00 TO NODE   2013.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    390.00  DOWNSTREAM(FEET) =    197.90
  CHANNEL LENGTH THRU SUBAREA(FEET) =   400.00   CHANNEL SLOPE =  0.4803
  CHANNEL BASE(FEET) =    5.00   "Z" FACTOR =   4.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   5.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.037
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3300
  S.C.S. CURVE NUMBER (AMC II) =  88
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      13.21
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   9.90
  AVERAGE FLOW DEPTH(FEET) =   0.23   TRAVEL TIME(MIN.) =   0.67
  Tc(MIN.) =    6.94
  SUBAREA AREA(ACRES) =    10.31       SUBAREA RUNOFF(CFS) =   23.94
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.331
  TOTAL AREA(ACRES) =       10.8         PEAK FLOW RATE(CFS) =      25.08

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.33   FLOW VELOCITY(FEET/SEC.) =  12.24
  LONGEST FLOWPATH FROM NODE   2011.00 TO NODE   2013.00 =     500.00 FEET.

+----------------------------------------------------------------------------+
| COMPOSITE C FOR A & D SOILS                                                |
| LAND USE - NATURAL                                                         |
| (0.20*1.43+0.35*8.88)/10.31 = 0.33                                         |
+----------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   2014.00 TO NODE   2013.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.037
  RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .2700
  SOIL CLASSIFICATION IS "A"
  S.C.S. CURVE NUMBER (AMC II) =  45
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3223
  SUBAREA AREA(ACRES) =    1.75   SUBAREA RUNOFF(CFS) =    3.33
  TOTAL AREA(ACRES) =       12.5   TOTAL RUNOFF(CFS) =      28.40
  TC(MIN.) =    6.94

****************************************************************************
  FLOW PROCESS FROM NODE   2013.00 TO NODE   2010.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   193.44  DOWNSTREAM(FEET) =   193.17
  FLOW LENGTH(FEET) =    26.70   MANNING'S N =  0.013
  DEPTH OF FLOW IN  27.0 INCH PIPE IS  20.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.68
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      28.40
  PIPE TRAVEL TIME(MIN.) =   0.05    Tc(MIN.) =    6.99
  LONGEST FLOWPATH FROM NODE   2011.00 TO NODE   2010.00 =     526.70 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2013.00 TO NODE   2010.00 IS CODE =   1
----------------------------------------------------------------------------
```



```
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    6.99
  RAINFALL INTENSITY(INCH/HR) =   7.00
  TOTAL STREAM AREA(ACRES) =    12.52
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     28.40

****************************************************************************
  FLOW PROCESS FROM NODE   2019.00 TO NODE   2010.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<
============================================================================
  USER-SPECIFIED VALUES ARE AS FOLLOWS:
  TC(MIN) =   7.72   RAIN INTENSITY(INCH/HOUR) =  6.57
  TOTAL AREA(ACRES) =     3.70   TOTAL RUNOFF(CFS) =     11.78

****************************************************************************
  FLOW PROCESS FROM NODE   2019.00 TO NODE   2010.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
  TIME OF CONCENTRATION(MIN.) =    7.72
  RAINFALL INTENSITY(INCH/HR) =   6.57
  TOTAL STREAM AREA(ACRES) =     3.70
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     11.78

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       23.96    10.87        5.269         9.04
      2       28.40     6.99        7.004        12.52
      3       11.78     7.72        6.570         3.70

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  3 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF       Tc       INTENSITY
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)
      1       57.09     6.99        7.004
      2       57.64     7.72        6.570
      3       54.77    10.87        5.269

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      57.64   Tc(MIN.) =    7.72
  TOTAL AREA(ACRES) =       25.3
  LONGEST FLOWPATH FROM NODE   2006.00 TO NODE   2010.00 =    1863.79 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2010.00 TO NODE   2020.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   193.15  DOWNSTREAM(FEET) =   192.16
  FLOW LENGTH(FEET) =   197.54   MANNING'S N =  0.013
  DEPTH OF FLOW IN  42.0 INCH PIPE IS  29.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.07
```

```
  ESTIMATED PIPE DIAMETER(INCH) =  42.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       57.64
  PIPE TRAVEL TIME(MIN.) =   0.41    Tc(MIN.) =    8.13
  LONGEST FLOWPATH FROM NODE   2006.00 TO NODE   2020.00 =    2061.33 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2010.00 TO NODE   2020.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =    8.13
  RAINFALL INTENSITY(INCH/HR) =   6.36
  TOTAL STREAM AREA(ACRES) =    25.26
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     57.64

****************************************************************************
  FLOW PROCESS FROM NODE   2021.00 TO NODE   2020.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<
============================================================================
  USER-SPECIFIED VALUES ARE AS FOLLOWS:
  TC(MIN) =   8.50   RAIN INTENSITY(INCH/HOUR) =  6.17
  TOTAL AREA(ACRES) =     2.90   TOTAL RUNOFF(CFS) =      9.82

****************************************************************************
  FLOW PROCESS FROM NODE   2021.00 TO NODE   2020.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    8.50
  RAINFALL INTENSITY(INCH/HR) =   6.17
  TOTAL STREAM AREA(ACRES) =     2.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      9.82

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       57.64     8.13        6.355         25.26
      2        9.82     8.50        6.175          2.90

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF       Tc      INTENSITY
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)
      1       67.03     8.13        6.355
      2       65.82     8.50        6.175

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      67.03   Tc(MIN.) =    8.13
  TOTAL AREA(ACRES) =       28.2
  LONGEST FLOWPATH FROM NODE   2006.00 TO NODE   2020.00 =    2061.33 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2020.00 TO NODE   2061.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
```



```
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   192.04  DOWNSTREAM(FEET) =   190.54
  FLOW LENGTH(FEET) =   297.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  42.0 INCH PIPE IS  33.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.25
  ESTIMATED PIPE DIAMETER(INCH) =  42.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       67.03
  PIPE TRAVEL TIME(MIN.) =   0.60    Tc(MIN.) =    8.73
  LONGEST FLOWPATH FROM NODE   2006.00 TO NODE   2061.00 =    2358.33 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2020.00 TO NODE   2061.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =    8.73
  RAINFALL INTENSITY(INCH/HR) =   6.07
  TOTAL STREAM AREA(ACRES) =    28.16
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     67.03

****************************************************************************
  FLOW PROCESS FROM NODE   2025.00 TO NODE   2061.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<
============================================================================
  USER-SPECIFIED VALUES ARE AS FOLLOWS:
  TC(MIN) =   8.12   RAIN INTENSITY(INCH/HOUR) =  6.36
  TOTAL AREA(ACRES) =     3.30   TOTAL RUNOFF(CFS) =     11.19

****************************************************************************
  FLOW PROCESS FROM NODE   2023.00 TO NODE   2061.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    8.12
  RAINFALL INTENSITY(INCH/HR) =   6.36
  TOTAL STREAM AREA(ACRES) =     3.30
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     11.19

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       67.03     8.73        6.070         28.16
      2       11.19     8.12        6.360          3.30

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF       Tc      INTENSITY
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)
      1       75.17     8.12        6.360
      2       77.71     8.73        6.070

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      77.71   Tc(MIN.) =    8.73
  TOTAL AREA(ACRES) =       31.5
```

```
 LONGEST FLOWPATH FROM NODE   2006.00 TO NODE   2061.00 =    2358.33 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   2061.00 TO NODE   2022.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   190.54  DOWNSTREAM(FEET) =   189.72
 FLOW LENGTH(FEET) =   160.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  45.0 INCH PIPE IS  34.0 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   8.67
 ESTIMATED PIPE DIAMETER(INCH) =  45.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =      77.71
 PIPE TRAVEL TIME(MIN.) =   0.31    Tc(MIN.) =    9.04
 LONGEST FLOWPATH FROM NODE   2006.00 TO NODE   2022.00 =    2518.33 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   2061.00 TO NODE   2022.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =    9.04
 RAINFALL INTENSITY(INCH/HR) =   5.94
 TOTAL STREAM AREA(ACRES) =    31.46
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     77.71

****************************************************************************
 FLOW PROCESS FROM NODE   2026.00 TO NODE   2022.00 IS CODE =   7
----------------------------------------------------------------------------
 >>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<
============================================================================
 USER-SPECIFIED VALUES ARE AS FOLLOWS:
 TC(MIN) =   8.40   RAIN INTENSITY(INCH/HOUR) =  6.22
 TOTAL AREA(ACRES) =     4.10   TOTAL RUNOFF(CFS) =     12.47

****************************************************************************
 FLOW PROCESS FROM NODE   2026.00 TO NODE   2022.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =    8.40
 RAINFALL INTENSITY(INCH/HR) =   6.22
 TOTAL STREAM AREA(ACRES) =     4.10
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     12.47

 ** CONFLUENCE DATA **
 STREAM     RUNOFF       Tc      INTENSITY      AREA
 NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
     1       77.71     9.04        5.936         31.46
     2       12.47     8.40        6.222          4.10

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  2 STREAMS.

 ** PEAK FLOW RATE TABLE **
 STREAM     RUNOFF       Tc      INTENSITY
 NUMBER      (CFS)     (MIN.)   (INCH/HOUR)
```



```
     1       86.61     8.40        6.222
     2       89.60     9.04        5.936

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =      89.60   Tc(MIN.) =    9.04
 TOTAL AREA(ACRES) =       35.6
 LONGEST FLOWPATH FROM NODE   2006.00 TO NODE   2022.00 =    2518.33 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   2022.00 TO NODE   2030.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   189.79  DOWNSTREAM(FEET) =   189.43
 FLOW LENGTH(FEET) =    72.57   MANNING'S N =  0.013
 DEPTH OF FLOW IN  48.0 INCH PIPE IS  35.9 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   8.89
 ESTIMATED PIPE DIAMETER(INCH) =  48.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =      89.60
 PIPE TRAVEL TIME(MIN.) =   0.14    Tc(MIN.) =    9.17
 LONGEST FLOWPATH FROM NODE   2006.00 TO NODE   2030.00 =    2590.90 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE   2022.00 TO NODE   2030.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =    9.17
 RAINFALL INTENSITY(INCH/HR) =   5.88
 TOTAL STREAM AREA(ACRES) =    35.56
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     89.60

****************************************************************************
 FLOW PROCESS FROM NODE   2031.00 TO NODE   2032.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
 NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
 SOIL CLASSIFICATION IS "D"
 S.C.S. CURVE NUMBER (AMC II) =  88
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
 UPSTREAM ELEVATION(FEET) =    376.30
 DOWNSTREAM ELEVATION(FEET) =    352.00
 ELEVATION DIFFERENCE(FEET) =     24.30
 SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.267
 WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.516
 SUBAREA RUNOFF(CFS) =      0.79
 TOTAL AREA(ACRES) =      0.30   TOTAL RUNOFF(CFS) =      0.79

****************************************************************************
 FLOW PROCESS FROM NODE   2032.00 TO NODE   2033.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    352.00  DOWNSTREAM(FEET) =    196.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   346.00   CHANNEL SLOPE =  0.4509
 CHANNEL BASE(FEET) =    3.00   "Z" FACTOR =   5.000
 MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   1.00
```

```
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.057
*USER SPECIFIED(SUBAREA):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3300
S.C.S. CURVE NUMBER (AMC II) =  88
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       8.01
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.96
AVERAGE FLOW DEPTH(FEET) =   0.22   TRAVEL TIME(MIN.) =   0.64
Tc(MIN.) =    6.91
SUBAREA AREA(ACRES) =     6.19       SUBAREA RUNOFF(CFS) =   14.42
AREA-AVERAGE RUNOFF COEFFICIENT =  0.331
TOTAL AREA(ACRES) =        6.5         PEAK FLOW RATE(CFS) =      15.16

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) =  0.31   FLOW VELOCITY(FEET/SEC.) =  10.75
LONGEST FLOWPATH FROM NODE   2031.00 TO NODE   2033.00 =     446.00 FEET.

+----------------------------------------------------------------------------+
| COMPOSITE C FOR A & D SOILS                                                |
| LAND USE - NATURAL                                                         |
| (0.20*0.98+0.35*5.21)/6.19 = 0.33                                          |
+----------------------------------------------------------------------------+

****************************************************************************
FLOW PROCESS FROM NODE   2033.00 TO NODE   2030.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
ELEVATION DATA: UPSTREAM(FEET) =   191.96  DOWNSTREAM(FEET) =   190.43
FLOW LENGTH(FEET) =    30.59   MANNING'S N =  0.013
DEPTH OF FLOW IN  18.0 INCH PIPE IS  10.7 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =  13.85
ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =      15.16
PIPE TRAVEL TIME(MIN.) =   0.04    Tc(MIN.) =    6.95
LONGEST FLOWPATH FROM NODE   2031.00 TO NODE   2030.00 =     476.59 FEET.

****************************************************************************
FLOW PROCESS FROM NODE   2033.00 TO NODE   2030.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
TIME OF CONCENTRATION(MIN.) =    6.95
RAINFALL INTENSITY(INCH/HR) =   7.03
TOTAL STREAM AREA(ACRES) =     6.49
PEAK FLOW RATE(CFS) AT CONFLUENCE =     15.16

** CONFLUENCE DATA **
STREAM     RUNOFF       Tc      INTENSITY      AREA
NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
    1       89.60     9.17        5.879         35.56
    2       15.16     6.95        7.033          6.49

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR  2 STREAMS.

** PEAK FLOW RATE TABLE **
STREAM     RUNOFF      Tc      INTENSITY
NUMBER      (CFS)     (MIN.)   (INCH/HOUR)
    1       90.06     6.95       7.033
```



```
    2      102.27     9.17       5.879

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =     102.27   Tc(MIN.) =    9.17
TOTAL AREA(ACRES) =       42.1
LONGEST FLOWPATH FROM NODE   2006.00 TO NODE   2030.00 =    2590.90 FEET.

****************************************************************************
FLOW PROCESS FROM NODE   2030.00 TO NODE   2034.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
ELEVATION DATA: UPSTREAM(FEET) =   189.41  DOWNSTREAM(FEET) =   188.18
FLOW LENGTH(FEET) =   246.77   MANNING'S N =  0.013
DEPTH OF FLOW IN  51.0 INCH PIPE IS  37.1 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   9.24
ESTIMATED PIPE DIAMETER(INCH) =  51.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =     102.27
PIPE TRAVEL TIME(MIN.) =   0.45    Tc(MIN.) =    9.62
LONGEST FLOWPATH FROM NODE   2006.00 TO NODE   2034.00 =    2837.67 FEET.

****************************************************************************
FLOW PROCESS FROM NODE   2035.00 TO NODE   2034.00 IS CODE =  81
----------------------------------------------------------------------------
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.702
RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .2700
SOIL CLASSIFICATION IS "A"
S.C.S. CURVE NUMBER (AMC II) =  45
AREA-AVERAGE RUNOFF COEFFICIENT = 0.4076
SUBAREA AREA(ACRES) =    1.57   SUBAREA RUNOFF(CFS) =    2.42
TOTAL AREA(ACRES) =       43.6   TOTAL RUNOFF(CFS) =     102.27
TC(MIN.) =    9.62
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
FLOW PROCESS FROM NODE   2034.00 TO NODE   2036.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
ELEVATION DATA: UPSTREAM(FEET) =   188.16  DOWNSTREAM(FEET) =   187.32
FLOW LENGTH(FEET) =   167.09   MANNING'S N =  0.013
DEPTH OF FLOW IN  51.0 INCH PIPE IS  37.0 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   9.28
ESTIMATED PIPE DIAMETER(INCH) =  51.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =     102.27
PIPE TRAVEL TIME(MIN.) =   0.30    Tc(MIN.) =    9.92
LONGEST FLOWPATH FROM NODE   2006.00 TO NODE   2036.00 =    3004.76 FEET.

****************************************************************************
FLOW PROCESS FROM NODE   2034.00 TO NODE   2036.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  3
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
TIME OF CONCENTRATION(MIN.) =    9.92
RAINFALL INTENSITY(INCH/HR) =   5.59
TOTAL STREAM AREA(ACRES) =    43.62
PEAK FLOW RATE(CFS) AT CONFLUENCE =    102.27
```

```
****************************************************************************
  FLOW PROCESS FROM NODE   2037.00 TO NODE   2038.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  88
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    374.00
  DOWNSTREAM ELEVATION(FEET) =    362.00
  ELEVATION DIFFERENCE(FEET) =     12.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.267
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.516
  SUBAREA RUNOFF(CFS) =      0.29
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.29

****************************************************************************
  FLOW PROCESS FROM NODE   2038.00 TO NODE   2039.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    362.00  DOWNSTREAM(FEET) =    200.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   490.00   CHANNEL SLOPE =  0.3306
  CHANNEL BASE(FEET) =    3.00   "Z" FACTOR =   5.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   5.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.817
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  88
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       8.10
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.98
  AVERAGE FLOW DEPTH(FEET) =   0.24   TRAVEL TIME(MIN.) =   1.02
  Tc(MIN.) =    7.29
  SUBAREA AREA(ACRES) =     6.53       SUBAREA RUNOFF(CFS) =   15.58
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.350
  TOTAL AREA(ACRES) =        6.6         PEAK FLOW RATE(CFS) =      15.84

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.35   FLOW VELOCITY(FEET/SEC.) =   9.67
  LONGEST FLOWPATH FROM NODE   2037.00 TO NODE   2039.00 =     590.00 FEET.

+--------------------------------------------------------------------------+
| PREDOMINANT HSG - D                                                      |
| LAND USE - NATURAL                                                       |
|                                                                          |
+--------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   2039.00 TO NODE   2036.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   192.52  DOWNSTREAM(FEET) =   188.32
  FLOW LENGTH(FEET) =    83.96   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  11.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  13.99
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      15.84
```



```
  PIPE TRAVEL TIME(MIN.) =   0.10    Tc(MIN.) =    7.39
  LONGEST FLOWPATH FROM NODE   2037.00 TO NODE   2036.00 =     673.96 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2039.00 TO NODE   2036.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    7.39
  RAINFALL INTENSITY(INCH/HR) =   6.76
  TOTAL STREAM AREA(ACRES) =     6.64
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     15.84

****************************************************************************
  FLOW PROCESS FROM NODE   2053.00 TO NODE   2036.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<
============================================================================
  USER-SPECIFIED VALUES ARE AS FOLLOWS:
  TC(MIN) =   9.13   RAIN INTENSITY(INCH/HOUR) =  5.90
  TOTAL AREA(ACRES) =     5.90   TOTAL RUNOFF(CFS) =     19.74

****************************************************************************
  FLOW PROCESS FROM NODE   2053.00 TO NODE   2036.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
  TIME OF CONCENTRATION(MIN.) =    9.13
  RAINFALL INTENSITY(INCH/HR) =   5.90
  TOTAL STREAM AREA(ACRES) =     5.90
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     19.74

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1      102.27     9.92        5.590         43.62
      2       15.84     7.39        6.758          6.64
      3       19.74     9.13        5.896          5.90

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  3 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1      116.43     7.39        6.758
      2      130.53     9.13        5.896
      3      134.10     9.92        5.590

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     134.10   Tc(MIN.) =    9.92
  TOTAL AREA(ACRES) =       56.2
  LONGEST FLOWPATH FROM NODE   2006.00 TO NODE   2036.00 =    3004.76 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2036.00 TO NODE   2054.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
```

```
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   187.30  DOWNSTREAM(FEET) =   184.08
  FLOW LENGTH(FEET) =   644.76   MANNING'S N =  0.013
  DEPTH OF FLOW IN  54.0 INCH PIPE IS  43.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   9.71
  ESTIMATED PIPE DIAMETER(INCH) =  54.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     134.10
  PIPE TRAVEL TIME(MIN.) =   1.11    Tc(MIN.) =   11.02
  LONGEST FLOWPATH FROM NODE   2006.00 TO NODE   2054.00 =    3649.52 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2054.00 TO NODE   2057.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    184.08  DOWNSTREAM(FEET) =    182.20
  CHANNEL LENGTH THRU SUBAREA(FEET) =   330.00   CHANNEL SLOPE =  0.0057
  CHANNEL BASE(FEET) =   35.00   "Z" FACTOR =  10.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   2.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.710
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .3000
  S.C.S. CURVE NUMBER (AMC II) =  88
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     138.49
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   2.88
  AVERAGE FLOW DEPTH(FEET) =   1.06   TRAVEL TIME(MIN.) =   1.91
  Tc(MIN.) =   12.93
  SUBAREA AREA(ACRES) =     6.21       SUBAREA RUNOFF(CFS) =    8.77
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.406
  TOTAL AREA(ACRES) =       62.4         PEAK FLOW RATE(CFS) =     134.10

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.03   FLOW VELOCITY(FEET/SEC.) =   2.86
  LONGEST FLOWPATH FROM NODE   2006.00 TO NODE   2057.00 =    3979.52 FEET.

+----------------------------------------------------------------------------+
| COMPOSITE C FOR A & D SOILS                                                |
| LAND USE - 1.0 DU/A                                                        |
| (0.27*4.91)+(0.41*1.30)/6.21 = 0.30                                        |
+----------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   2056.00 TO NODE   2057.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.710
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .3400
  S.C.S. CURVE NUMBER (AMC II) =  88
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.4002
  SUBAREA AREA(ACRES) =    5.86   SUBAREA RUNOFF(CFS) =    9.38
  TOTAL AREA(ACRES) =       68.2   TOTAL RUNOFF(CFS) =     134.10
  TC(MIN.) =   12.93
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

+----------------------------------------------------------------------------+
| COMPOSITE C FOR A & D SOILS                                                |
| SUBAREA - OPEN SPACE                                                       |
| (0.20*0.52)+(0.35*5.34)/5.86 = 0.34                                        |
+----------------------------------------------------------------------------+
```



```
================================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =       68.2  TC(MIN.) =     12.93
  PEAK FLOW RATE(CFS)   =     134.10
================================================================================
================================================================================
  END OF RATIONAL METHOD ANALYSIS
```

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```
****************************************************************************

          RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT
                       2003,1985,1981 HYDROLOGY MANUAL
        (c) Copyright 1982-2016 Advanced Engineering Software (aes)
            Ver. 23.0 Release Date: 07/01/2016  License ID 1509

                        Analysis prepared by:




 ************************** DESCRIPTION OF STUDY **************************
* OCEAN BREEZE RANCH - PA3                                                *
* SYSTEM 3000 - PROPOSED CONDITIONS                                       *
* NORTHEAST QUADRANT                                                      *
 ****************************************************************************

  FILE NAME: 3000P100.DAT
  TIME/DATE OF STUDY: 12:45 05/31/2024
----------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
----------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) = 100.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   3.300
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  ========  ================  ======  =====  ====  ====  =======
  1   18.0     12.0    0.020/0.020/0.015   0.50    1.50 0.0313 0.125 0.0150
  2   20.0     13.0    0.020/0.020/0.015   0.50    1.50 0.0313 0.125 0.0150
  3   16.0     11.0    0.020/0.020/0.015   0.50    1.50 0.0313 0.125 0.0150
  4   12.0      7.0    0.020/0.020/0.015   0.50    1.50 0.0100 0.010 0.0160
  5   17.0     12.0    0.020/0.020/0.015   0.33    1.50 0.0100 0.010 0.0160

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth = -0.10 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

****************************************************************************
  FLOW PROCESS FROM NODE   3000.00 TO NODE   3001.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  STREETS & ROADS (CURBS/STORM DRAINS) RUNOFF COEFFICIENT = .8700
  S.C.S. CURVE NUMBER (AMC II) =  88
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    60.00
  UPSTREAM ELEVATION(FEET) =    356.39
```



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  DOWNSTREAM ELEVATION(FEET) =    354.95
  ELEVATION DIFFERENCE(FEET) =      1.44
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.395
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.30
  TOTAL AREA(ACRES) =      0.04   TOTAL RUNOFF(CFS) =      0.30

****************************************************************************
  FLOW PROCESS FROM NODE   3001.00 TO NODE   3002.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  4 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  354.95  DOWNSTREAM ELEVATION(FEET) =  291.92
  STREET LENGTH(FEET) =   778.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 12.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   7.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.015
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0160
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.62
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.12
    HALFSTREET FLOOD WIDTH(FEET) =    6.29
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.09
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.47
  STREET FLOW TRAVEL TIME(MIN.) =   3.17   Tc(MIN.) =    5.56
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.116
  STREETS & ROADS (CURBS/STORM DRAINS) RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "C"
  S.C.S. CURVE NUMBER (AMC II) =  98
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    0.37      SUBAREA RUNOFF(CFS) =    2.61
  TOTAL AREA(ACRES) =        0.4        PEAK FLOW RATE(CFS) =       2.90

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.15   HALFSTREET FLOOD WIDTH(FEET) =   7.82
  FLOW VELOCITY(FEET/SEC.) =  4.74   DEPTH*VELOCITY(FT*FT/SEC.) =   0.69
  LONGEST FLOWPATH FROM NODE   3000.00 TO NODE   3002.00 =     838.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3002.00 TO NODE   3003.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   284.09  DOWNSTREAM(FEET) =   284.05
  FLOW LENGTH(FEET) =     4.25   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   6.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.88
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       2.90
  PIPE TRAVEL TIME(MIN.) =   0.01    Tc(MIN.) =    5.58
  LONGEST FLOWPATH FROM NODE   3000.00 TO NODE   3003.00 =     842.25 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE   3004.00 TO NODE   3003.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.103
  *USER SPECIFIED(SUBAREA):
  STREETS & ROADS (CURBS/STORM DRAINS) RUNOFF COEFFICIENT = .8700
  S.C.S. CURVE NUMBER (AMC II) =  98
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.8700
  SUBAREA AREA(ACRES) =    0.40   SUBAREA RUNOFF(CFS) =    2.82
  TOTAL AREA(ACRES) =        0.8   TOTAL RUNOFF(CFS) =       5.71
  TC(MIN.) =    5.58

****************************************************************************
  FLOW PROCESS FROM NODE   3020.00 TO NODE   3003.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.103
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3000
  SOIL CLASSIFICATION IS "C"
  S.C.S. CURVE NUMBER (AMC II) =  85
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.7617
  SUBAREA AREA(ACRES) =    0.19   SUBAREA RUNOFF(CFS) =    0.46
  TOTAL AREA(ACRES) =        1.0   TOTAL RUNOFF(CFS) =       6.17
  TC(MIN.) =    5.58

****************************************************************************
  FLOW PROCESS FROM NODE   3023.00 TO NODE   3003.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.103
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3200
  S.C.S. CURVE NUMBER (AMC II) =  85
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.7447
  SUBAREA AREA(ACRES) =    0.04   SUBAREA RUNOFF(CFS) =    0.10
  TOTAL AREA(ACRES) =        1.0   TOTAL RUNOFF(CFS) =       6.28
  TC(MIN.) =    5.58

****************************************************************************
  FLOW PROCESS FROM NODE   3003.00 TO NODE   3017.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   283.31  DOWNSTREAM(FEET) =   250.30
  FLOW LENGTH(FEET) =   468.59   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   5.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  12.50
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       6.28
  PIPE TRAVEL TIME(MIN.) =   0.62    Tc(MIN.) =    6.20
  LONGEST FLOWPATH FROM NODE   3000.00 TO NODE   3017.00 =    1310.84 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3018.00 TO NODE   3019.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
```



```
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.566
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3000
  SOIL CLASSIFICATION IS "C"
  S.C.S. CURVE NUMBER (AMC II) =  85
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.5769
  SUBAREA AREA(ACRES) =    0.63   SUBAREA RUNOFF(CFS) =    1.43
  TOTAL AREA(ACRES) =        1.7   TOTAL RUNOFF(CFS) =       7.29
  TC(MIN.) =    6.20

****************************************************************************
  FLOW PROCESS FROM NODE   3019.00 TO NODE   3017.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   252.00  DOWNSTREAM(FEET) =   249.97
  FLOW LENGTH(FEET) =    12.25   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   5.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  17.72
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       7.29
  PIPE TRAVEL TIME(MIN.) =   0.01    Tc(MIN.) =    6.21
  LONGEST FLOWPATH FROM NODE   3000.00 TO NODE   3017.00 =    1323.09 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3017.00 TO NODE   3005.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   249.97  DOWNSTREAM(FEET) =   249.07
  FLOW LENGTH(FEET) =    89.55   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  11.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.30
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       7.29
  PIPE TRAVEL TIME(MIN.) =   0.24    Tc(MIN.) =    6.45
  LONGEST FLOWPATH FROM NODE   3000.00 TO NODE   3005.00 =    1412.64 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3017.00 TO NODE   3005.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =    6.45
  RAINFALL INTENSITY(INCH/HR) =   7.38
  TOTAL STREAM AREA(ACRES) =     1.67
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      7.29

****************************************************************************
  FLOW PROCESS FROM NODE   3006.00 TO NODE   3007.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  STREETS & ROADS (CURBS/STORM DRAINS) RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "C"
  S.C.S. CURVE NUMBER (AMC II) =  98
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    55.00
  UPSTREAM ELEVATION(FEET) =    258.39
  DOWNSTREAM ELEVATION(FEET) =    257.97
```

```
  ELEVATION DIFFERENCE(FEET) =      0.42
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.359
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.15
  TOTAL AREA(ACRES) =      0.02   TOTAL RUNOFF(CFS) =      0.15

****************************************************************************
  FLOW PROCESS FROM NODE   3007.00 TO NODE   3008.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  4 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  257.97  DOWNSTREAM ELEVATION(FEET) =  254.84
  STREET LENGTH(FEET) =   321.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 12.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   7.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.015
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0160
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.40
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.17
    HALFSTREET FLOOD WIDTH(FEET) =    8.86
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.78
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.30
  STREET FLOW TRAVEL TIME(MIN.) =   3.00   Tc(MIN.) =    6.36
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.445
  STREETS & ROADS (CURBS/STORM DRAINS) RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "C"
  S.C.S. CURVE NUMBER (AMC II) =  98
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    0.38      SUBAREA RUNOFF(CFS) =    2.46
  TOTAL AREA(ACRES) =        0.4        PEAK FLOW RATE(CFS) =       2.59

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.21   HALFSTREET FLOOD WIDTH(FEET) =  11.15
  FLOW VELOCITY(FEET/SEC.) =  2.08   DEPTH*VELOCITY(FT*FT/SEC.) =   0.44
  LONGEST FLOWPATH FROM NODE   3006.00 TO NODE   3008.00 =     376.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3021.00 TO NODE   3008.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.445
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3000
  SOIL CLASSIFICATION IS "C"
  S.C.S. CURVE NUMBER (AMC II) =  85
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.8302
  SUBAREA AREA(ACRES) =    0.03   SUBAREA RUNOFF(CFS) =    0.07
  TOTAL AREA(ACRES) =        0.4   TOTAL RUNOFF(CFS) =       2.66
  TC(MIN.) =    6.36

****************************************************************************
  FLOW PROCESS FROM NODE   3022.00 TO NODE   3008.00 IS CODE =  81
----------------------------------------------------------------------------
```



```
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.445
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3000
  SOIL CLASSIFICATION IS "C"
  S.C.S. CURVE NUMBER (AMC II) =  85
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.6508
  SUBAREA AREA(ACRES) =    0.22   SUBAREA RUNOFF(CFS) =    0.49
  TOTAL AREA(ACRES) =        0.6   TOTAL RUNOFF(CFS) =       3.15
  TC(MIN.) =    6.36

****************************************************************************
  FLOW PROCESS FROM NODE   3008.00 TO NODE   3005.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   249.06  DOWNSTREAM(FEET) =   248.90
  FLOW LENGTH(FEET) =    16.25   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   6.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.07
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       3.15
  PIPE TRAVEL TIME(MIN.) =   0.05    Tc(MIN.) =    6.41
  LONGEST FLOWPATH FROM NODE   3006.00 TO NODE   3005.00 =     392.25 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3008.00 TO NODE   3005.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    6.41
  RAINFALL INTENSITY(INCH/HR) =   7.40
  TOTAL STREAM AREA(ACRES) =     0.65
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.15

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        7.29     6.45        7.377          1.67
      2        3.15     6.41        7.405          0.65

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF       Tc      INTENSITY
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)
      1       10.40     6.41        7.405
      2       10.43     6.45        7.377

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      10.43   Tc(MIN.) =    6.45
  TOTAL AREA(ACRES) =        2.3
  LONGEST FLOWPATH FROM NODE   3000.00 TO NODE   3005.00 =    1412.64 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3005.00 TO NODE   3009.00 IS CODE =  31
----------------------------------------------------------------------------
```

```
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   248.57  DOWNSTREAM(FEET) =   248.52
  FLOW LENGTH(FEET) =     4.25   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  13.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.14
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      10.43
  PIPE TRAVEL TIME(MIN.) =   0.01    Tc(MIN.) =    6.46
  LONGEST FLOWPATH FROM NODE   3000.00 TO NODE   3009.00 =    1416.89 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3009.00 TO NODE   3009.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.370
  STREETS & ROADS (CURBS/STORM DRAINS) RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "C"
  S.C.S. CURVE NUMBER (AMC II) =  98
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.6377
  SUBAREA AREA(ACRES) =    0.40   SUBAREA RUNOFF(CFS) =    2.56
  TOTAL AREA(ACRES) =        2.7   TOTAL RUNOFF(CFS) =      12.78
  TC(MIN.) =    6.46

****************************************************************************
  FLOW PROCESS FROM NODE   3009.00 TO NODE   3010.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   248.19  DOWNSTREAM(FEET) =   248.00
  FLOW LENGTH(FEET) =    18.94   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  14.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.19
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      12.78
  PIPE TRAVEL TIME(MIN.) =   0.04    Tc(MIN.) =    6.50
  LONGEST FLOWPATH FROM NODE   3000.00 TO NODE   3010.00 =    1435.83 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3010.00 TO NODE   3011.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.338
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3000
  SOIL CLASSIFICATION IS "C"
  S.C.S. CURVE NUMBER (AMC II) =  85
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.6124
  SUBAREA AREA(ACRES) =    0.22   SUBAREA RUNOFF(CFS) =    0.48
  TOTAL AREA(ACRES) =        2.9   TOTAL RUNOFF(CFS) =      13.21
  TC(MIN.) =    6.50

****************************************************************************
  FLOW PROCESS FROM NODE   3011.00 TO NODE   3012.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   241.50  DOWNSTREAM(FEET) =   232.73
  FLOW LENGTH(FEET) =   157.43   MANNING'S N =  0.013
```



```
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   9.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  13.98
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      13.21
  PIPE TRAVEL TIME(MIN.) =   0.19    Tc(MIN.) =    6.69
  LONGEST FLOWPATH FROM NODE   3000.00 TO NODE   3012.00 =    1593.26 FEET.
================================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =        2.9  TC(MIN.) =      6.69
  PEAK FLOW RATE(CFS)   =      13.21
================================================================================
================================================================================
  END OF RATIONAL METHOD ANALYSIS
```

```
****************************************************************************

          RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT
                       2003,1985,1981 HYDROLOGY MANUAL
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                        Analysis prepared by:




 ************************** DESCRIPTION OF STUDY **************************
* OCEAN BREEZE RANCH - PA3                                                *
* SYSTEM 3050 - PROPOSED CONDITIONS                                       *
* NORTHEAST QUADRANT                                                      *
 ****************************************************************************

  FILE NAME: 3050P100.DAT
  TIME/DATE OF STUDY: 12:46 05/31/2024
----------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
----------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) = 100.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   3.300
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  ========  ================  ======  =====  ====  =====  =======
  1   18.0     12.0    0.020/0.020/0.015   0.50    1.50 0.0417 0.125 0.0165
  2   20.0     13.0    0.020/0.020/0.015   0.50    1.50 0.0417 0.125 0.0165
  3   16.0     11.0    0.020/0.020/0.015   0.50    1.50 0.0417 0.125 0.0165
  4   12.0      7.0    0.020/0.020/0.015   0.50    1.50 0.0100 0.010 0.0160
  5   17.0     12.0    0.020/0.020/0.015   0.33    1.50 0.0100 0.010 0.0160

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth = -0.10 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

****************************************************************************
  FLOW PROCESS FROM NODE   3050.00 TO NODE   3051.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  88
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    490.00
```



```
  DOWNSTREAM ELEVATION(FEET) =    454.00
  ELEVATION DIFFERENCE(FEET) =     36.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.267
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.516
  SUBAREA RUNOFF(CFS) =      0.26
  TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.26

****************************************************************************
  FLOW PROCESS FROM NODE   3051.00 TO NODE   3052.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    454.00  DOWNSTREAM(FEET) =    245.40
  CHANNEL LENGTH THRU SUBAREA(FEET) =   630.00   CHANNEL SLOPE =  0.3311
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.966
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3100
  S.C.S. CURVE NUMBER (AMC II) =  88
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       4.09
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.89
  AVERAGE FLOW DEPTH(FEET) =   0.10   TRAVEL TIME(MIN.) =   2.70
  Tc(MIN.) =    8.97
  SUBAREA AREA(ACRES) =     4.03       SUBAREA RUNOFF(CFS) =    7.45
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.311
  TOTAL AREA(ACRES) =        4.1          PEAK FLOW RATE(CFS) =       7.66

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.14   FLOW VELOCITY(FEET/SEC.) =   5.17
  LONGEST FLOWPATH FROM NODE   3050.00 TO NODE   3052.00 =     730.00 FEET.

+--------------------------------------------------------------------------+
| COMPOSITE C FOR B & D SOILS                                              |
| SUBAREA - NATURAL                                                        |
| (1.44*0.25)+(2.59*0.35)/4.03 = 0.31                                      |
+--------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   3052.00 TO NODE   3054.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   234.75  DOWNSTREAM(FEET) =   234.00
  FLOW LENGTH(FEET) =    74.54   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  11.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.37
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       7.66
  PIPE TRAVEL TIME(MIN.) =   0.20    Tc(MIN.) =    9.16
  LONGEST FLOWPATH FROM NODE   3050.00 TO NODE   3054.00 =     804.54 FEET.
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)      =        4.1  TC(MIN.) =      9.16
  PEAK FLOW RATE(CFS)    =       7.66
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

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          Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT
                       2003,1985,1981 HYDROLOGY MANUAL
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                        Analysis prepared by:




 ************************** DESCRIPTION OF STUDY **************************
* OCEAN BREEZE RANCH - PA3                                                *
* SYSTEM 3100 - PROPOSED CONDITIONS                                       *
* NORTHEAST QUADRANT                                                      *
 ****************************************************************************

  FILE NAME: 3100P100.DAT
  TIME/DATE OF STUDY: 12:46 05/31/2024
----------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
----------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) = 100.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   3.300
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  ================  ======  =====  ====== =====  =======
  1   18.0     12.0    0.020/0.020/0.015   0.50    1.50 0.0417 0.125 0.0165
  2   20.0     13.0    0.020/0.020/0.015   0.50    1.50 0.0417 0.125 0.0165
  3   16.0     11.0    0.020/0.020/0.015   0.50    1.50 0.0417 0.125 0.0165
  4   12.0      7.0    0.020/0.020/0.015   0.50    1.50 0.0100 0.010 0.0160
  5   17.0     12.0    0.020/0.020/0.015   0.33    1.50 0.0100 0.010 0.0160

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth = -0.10 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

****************************************************************************
  FLOW PROCESS FROM NODE   3100.00 TO NODE   3101.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  88
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    827.20
```



```
  DOWNSTREAM ELEVATION(FEET) =    816.00
  ELEVATION DIFFERENCE(FEET) =     11.20
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.267
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.516
  SUBAREA RUNOFF(CFS) =      0.79
  TOTAL AREA(ACRES) =      0.30   TOTAL RUNOFF(CFS) =      0.79

****************************************************************************
  FLOW PROCESS FROM NODE   3101.00 TO NODE   3102.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    816.00  DOWNSTREAM(FEET) =    246.81
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1559.00   CHANNEL SLOPE =  0.3651
  CHANNEL BASE(FEET) =   15.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   5.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.518
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3300
  S.C.S. CURVE NUMBER (AMC II) =  88
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      21.39
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.74
  AVERAGE FLOW DEPTH(FEET) =   0.20   TRAVEL TIME(MIN.) =   3.85
  Tc(MIN.) =   10.12
  SUBAREA AREA(ACRES) =    21.97       SUBAREA RUNOFF(CFS) =   40.01
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.330
  TOTAL AREA(ACRES) =       22.3          PEAK FLOW RATE(CFS) =      40.58

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.30   FLOW VELOCITY(FEET/SEC.) =   8.50
  LONGEST FLOWPATH FROM NODE   3100.00 TO NODE   3102.00 =    1659.00 FEET.

+--------------------------------------------------------------------------+
| COMPOSITE C FOR B, C, AND D SOILS                                        |
| SUBAREA - NATURAL                                                        |
| (4.15*.25)+(.27*.30)+(17.32*.35)/21.74 = 0.33                            |
+--------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   3102.00 TO NODE   3103.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   238.95  DOWNSTREAM(FEET) =   238.02
  FLOW LENGTH(FEET) =    92.87   MANNING'S N =  0.013
  DEPTH OF FLOW IN  33.0 INCH PIPE IS  22.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   9.62
  ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      40.58
  PIPE TRAVEL TIME(MIN.) =   0.16    Tc(MIN.) =   10.28
  LONGEST FLOWPATH FROM NODE   3100.00 TO NODE   3103.00 =    1751.87 FEET.
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)      =       22.3  TC(MIN.) =     10.28
  PEAK FLOW RATE(CFS)    =      40.58
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

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          RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT
                       2003,1985,1981 HYDROLOGY MANUAL
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                        Analysis prepared by:




 ************************** DESCRIPTION OF STUDY **************************
* OCEAN BREEZE RANCH - PA3                                                *
* SYSTEM 3130 - PROPOSED CONDITIONS                                       *
* NORTHEAST QUADRANT                                                      *
 ****************************************************************************

  FILE NAME: 3130P100.DAT
  TIME/DATE OF STUDY: 12:47 05/31/2024
----------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
----------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) = 100.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   3.300
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  ========  ================  ======  =====  ====== =====  =======
  1   18.0     12.0    0.020/0.020/0.015   0.50    1.50 0.0417 0.125 0.0165
  2   20.0     13.0    0.020/0.020/0.015   0.50    1.50 0.0417 0.125 0.0165
  3   16.0     11.0    0.020/0.020/0.015   0.50    1.50 0.0417 0.125 0.0165
  4   12.0      7.0    0.020/0.020/0.015   0.50    1.50 0.0100 0.010 0.0160
  5   17.0     12.0    0.020/0.020/0.015   0.33    1.50 0.0100 0.010 0.0160

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth = -0.10 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

****************************************************************************
  FLOW PROCESS FROM NODE   3130.00 TO NODE   3131.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  88
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    820.00
```



```
  DOWNSTREAM ELEVATION(FEET) =    784.00
  ELEVATION DIFFERENCE(FEET) =     36.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.267
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.516
  SUBAREA RUNOFF(CFS) =      0.53
  TOTAL AREA(ACRES) =      0.20   TOTAL RUNOFF(CFS) =      0.53

****************************************************************************
  FLOW PROCESS FROM NODE   3131.00 TO NODE   3132.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    784.00  DOWNSTREAM(FEET) =    257.20
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1423.00   CHANNEL SLOPE =  0.3702
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.353
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3000
  S.C.S. CURVE NUMBER (AMC II) =  88
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       8.10
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.47
  AVERAGE FLOW DEPTH(FEET) =   0.14   TRAVEL TIME(MIN.) =   4.34
  Tc(MIN.) =   10.60
  SUBAREA AREA(ACRES) =     9.10       SUBAREA RUNOFF(CFS) =   14.61
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.301
  TOTAL AREA(ACRES) =        9.3         PEAK FLOW RATE(CFS) =      14.99

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.21   FLOW VELOCITY(FEET/SEC.) =   6.75
  LONGEST FLOWPATH FROM NODE   3130.00 TO NODE   3132.00 =    1523.00 FEET.

+--------------------------------------------------------------------------+
| COMPOSITE C FOR B, C, &  D SOILS                                         |
| SUBAREA - NATURAL                                                        |
| (4.04*0.25)+(0.79*0.30)+(4.50*0.35)/9.33 = 0.30                          |
+--------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   3132.00 TO NODE   3133.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   251.90  DOWNSTREAM(FEET) =   251.65
  FLOW LENGTH(FEET) =    24.97   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  16.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.32
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      14.99
  PIPE TRAVEL TIME(MIN.) =   0.06    Tc(MIN.) =   10.66
  LONGEST FLOWPATH FROM NODE   3130.00 TO NODE   3133.00 =    1547.97 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3134.00 TO NODE   3133.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.335
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .2800
```

```
  S.C.S. CURVE NUMBER (AMC II) =  88
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3000
  SUBAREA AREA(ACRES) =    0.48   SUBAREA RUNOFF(CFS) =    0.72
  TOTAL AREA(ACRES) =        9.8   TOTAL RUNOFF(CFS) =      15.66
  TC(MIN.) =   10.66

****************************************************************************
  FLOW PROCESS FROM NODE   3135.00 TO NODE   3133.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.335
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .2700
  S.C.S. CURVE NUMBER (AMC II) =  88
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.2927
  SUBAREA AREA(ACRES) =    3.19   SUBAREA RUNOFF(CFS) =    4.60
  TOTAL AREA(ACRES) =       13.0   TOTAL RUNOFF(CFS) =      20.25
  TC(MIN.) =   10.66

****************************************************************************
  FLOW PROCESS FROM NODE   3133.00 TO NODE   3136.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   251.55  DOWNSTREAM(FEET) =   251.36
  FLOW LENGTH(FEET) =    19.26   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  18.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.91
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      20.25
  PIPE TRAVEL TIME(MIN.) =   0.04    Tc(MIN.) =   10.70
  LONGEST FLOWPATH FROM NODE   3130.00 TO NODE   3136.00 =    1567.23 FEET.
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =       13.0  TC(MIN.) =     10.70
  PEAK FLOW RATE(CFS)   =      20.25
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

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          RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT
                       2003,1985,1981 HYDROLOGY MANUAL
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           Ver. 23.0 Release Date: 07/01/2016  License ID 1509

                        Analysis prepared by:




 ************************** DESCRIPTION OF STUDY **************************
* OCEAN BREEZE RANCH - PA3                                                *
* SYSTEM 3150 - PROPOSED CONDITIONS                                       *
* NORTHEAST QUADRANT                                                      *
 *************************************************************************

  FILE NAME: 3150P100.DAT
  TIME/DATE OF STUDY: 14:01 06/04/2024
--------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
--------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) = 100.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   3.300
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  ========  ================  ======  =====  ====  =====  =======
  1   18.0     12.0    0.020/0.020/0.015   0.50    1.50 0.0417 0.125 0.0165
  2   20.0     13.0    0.020/0.020/0.015   0.50    1.50 0.0417 0.125 0.0165
  3   16.0     11.0    0.020/0.020/0.015   0.50    1.50 0.0417 0.125 0.0165
  4   12.0      7.0    0.020/0.020/0.015   0.50    1.50 0.0100 0.010 0.0160
  5   17.0     12.0    0.020/0.020/0.015   0.33    1.50 0.0100 0.010 0.0160

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth = -0.10 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

**************************************************************************
  FLOW PROCESS FROM NODE   3150.00 TO NODE   3151.00 IS CODE =  21
--------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==========================================================================
  STREETS & ROADS (CURBS/STORM DRAINS) RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "C"
  S.C.S. CURVE NUMBER (AMC II) =  98
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    57.00
  UPSTREAM ELEVATION(FEET) =    258.39
```



```
  DOWNSTREAM ELEVATION(FEET) =    257.86
  ELEVATION DIFFERENCE(FEET) =      0.53
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.202
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.15
  TOTAL AREA(ACRES) =      0.02   TOTAL RUNOFF(CFS) =      0.15

**************************************************************************
  FLOW PROCESS FROM NODE   3151.00 TO NODE   3152.00 IS CODE =  62
--------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  4 USED)<<<<<
==========================================================================
  UPSTREAM ELEVATION(FEET) =  257.86  DOWNSTREAM ELEVATION(FEET) =  248.39
  STREET LENGTH(FEET) =   737.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 12.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   7.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.015
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0160
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.61
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.17
    HALFSTREET FLOOD WIDTH(FEET) =    8.86
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.05
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.34
  STREET FLOW TRAVEL TIME(MIN.) =   6.00   Tc(MIN.) =    9.20
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.866
  STREETS & ROADS (CURBS/STORM DRAINS) RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "C"
  S.C.S. CURVE NUMBER (AMC II) =  98
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    0.55      SUBAREA RUNOFF(CFS) =    2.81
  TOTAL AREA(ACRES) =        0.6        PEAK FLOW RATE(CFS) =       2.91

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.21   HALFSTREET FLOOD WIDTH(FEET) =  11.04
  FLOW VELOCITY(FEET/SEC.) =  2.39   DEPTH*VELOCITY(FT*FT/SEC.) =   0.50
  LONGEST FLOWPATH FROM NODE   3150.00 TO NODE   3152.00 =     794.00 FEET.

**************************************************************************
  FLOW PROCESS FROM NODE   3152.00 TO NODE   3154.00 IS CODE =  31
--------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   243.41  DOWNSTREAM(FEET) =   243.25
  FLOW LENGTH(FEET) =    16.25   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   6.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.96
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       2.91
  PIPE TRAVEL TIME(MIN.) =   0.05    Tc(MIN.) =    9.26
  LONGEST FLOWPATH FROM NODE   3150.00 TO NODE   3154.00 =     810.25 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE   3155.00 TO NODE   3154.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.844
  NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .7800
  SOIL CLASSIFICATION IS "C"
  S.C.S. CURVE NUMBER (AMC II) =  93
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.8323
  SUBAREA AREA(ACRES) =    0.41   SUBAREA RUNOFF(CFS) =    1.87
  TOTAL AREA(ACRES) =        1.0   TOTAL RUNOFF(CFS) =       4.77
  TC(MIN.) =    9.26

****************************************************************************
  FLOW PROCESS FROM NODE   3154.00 TO NODE   3156.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   243.15  DOWNSTREAM(FEET) =   242.00
  FLOW LENGTH(FEET) =   108.68   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   8.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.81
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       4.77
  PIPE TRAVEL TIME(MIN.) =   0.31    Tc(MIN.) =    9.57
  LONGEST FLOWPATH FROM NODE   3150.00 TO NODE   3156.00 =     918.93 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3156.00 TO NODE   3157.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.720
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3000
  SOIL CLASSIFICATION IS "C"
  S.C.S. CURVE NUMBER (AMC II) =  85
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.7312
  SUBAREA AREA(ACRES) =    0.23   SUBAREA RUNOFF(CFS) =    0.39
  TOTAL AREA(ACRES) =        1.2   TOTAL RUNOFF(CFS) =       5.06
  TC(MIN.) =    9.57

****************************************************************************
  FLOW PROCESS FROM NODE   3157.00 TO NODE   3158.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   237.50  DOWNSTREAM(FEET) =   235.80
  FLOW LENGTH(FEET) =    38.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   5.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   9.99
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       5.06
  PIPE TRAVEL TIME(MIN.) =   0.06    Tc(MIN.) =    9.63
  LONGEST FLOWPATH FROM NODE   3150.00 TO NODE   3158.00 =     956.93 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3157.00 TO NODE   3158.00 IS CODE =   1
----------------------------------------------------------------------------
```



```
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =    9.63
  RAINFALL INTENSITY(INCH/HR) =   5.70
  TOTAL STREAM AREA(ACRES) =     1.21
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      5.06

****************************************************************************
  FLOW PROCESS FROM NODE   3159.00 TO NODE   3160.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .3200
  SOIL CLASSIFICATION IS "B"
  S.C.S. CURVE NUMBER (AMC II) =  65
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    700.00
  DOWNSTREAM ELEVATION(FEET) =    658.00
  ELEVATION DIFFERENCE(FEET) =     42.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.517
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.328
  SUBAREA RUNOFF(CFS) =      0.52
  TOTAL AREA(ACRES) =      0.22   TOTAL RUNOFF(CFS) =      0.52

****************************************************************************
  FLOW PROCESS FROM NODE   3160.00 TO NODE   3165.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    658.00  DOWNSTREAM(FEET) =    286.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1633.00   CHANNEL SLOPE =  0.2278
  CHANNEL BASE(FEET) =    4.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   5.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.546
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .3300
  S.C.S. CURVE NUMBER (AMC II) =  65
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      17.97
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.73
  AVERAGE FLOW DEPTH(FEET) =   0.44   TRAVEL TIME(MIN.) =   3.52
  Tc(MIN.) =   10.04
  SUBAREA AREA(ACRES) =    18.76       SUBAREA RUNOFF(CFS) =   34.33
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.330
  TOTAL AREA(ACRES) =       19.0         PEAK FLOW RATE(CFS) =      34.72

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.63   FLOW VELOCITY(FEET/SEC.) =   9.39
  LONGEST FLOWPATH FROM NODE   3159.00 TO NODE   3165.00 =    1733.00 FEET.

+--------------------------------------------------------------------------+
| COMPOSITE C FOR B & C SOILS                                              |
| SUBAREA - 1.0 DU/A                                                       |
| (13.72+0.32)+(5.04*0.36)/18.76 = 0.33                                    |
+--------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   3165.00 TO NODE   3161.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
```

```
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   280.00  DOWNSTREAM(FEET) =   247.33
  FLOW LENGTH(FEET) =   435.90   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  14.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  19.62
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      34.72
  PIPE TRAVEL TIME(MIN.) =   0.37    Tc(MIN.) =   10.41
  LONGEST FLOWPATH FROM NODE   3159.00 TO NODE   3161.00 =    2168.90 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3172.00 TO NODE   3161.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.418
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =  65
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3322
  SUBAREA AREA(ACRES) =    2.52   SUBAREA RUNOFF(CFS) =    4.78
  TOTAL AREA(ACRES) =       21.5   TOTAL RUNOFF(CFS) =      38.70
  TC(MIN.) =   10.41

+--------------------------------------------------------------------------+
| COMPOSITE C FOR B & C SOILS                                              |
| SUBAREA 1.0 DU/A OR LESS                                                 |
| (0.32*0.93)+(0.36*1.61)/2.52 = 0.35                                      |
+--------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   3161.00 TO NODE   3167.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   244.00  DOWNSTREAM(FEET) =   237.21
  FLOW LENGTH(FEET) =    39.89   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  13.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  27.11
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      38.70
  PIPE TRAVEL TIME(MIN.) =   0.02    Tc(MIN.) =   10.43
  LONGEST FLOWPATH FROM NODE   3159.00 TO NODE   3167.00 =    2208.79 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3166.00 TO NODE   3167.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.410
  RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .3600
  SOIL CLASSIFICATION IS "C"
  S.C.S. CURVE NUMBER (AMC II) =  76
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3335
  SUBAREA AREA(ACRES) =    1.06   SUBAREA RUNOFF(CFS) =    2.06
  TOTAL AREA(ACRES) =       22.6   TOTAL RUNOFF(CFS) =      40.71
  TC(MIN.) =   10.43

****************************************************************************
  FLOW PROCESS FROM NODE   3167.00 TO NODE   3158.00 IS CODE =  31
----------------------------------------------------------------------------
```



```
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   236.21  DOWNSTREAM(FEET) =   234.30
  FLOW LENGTH(FEET) =    66.25   MANNING'S N =  0.013
  DEPTH OF FLOW IN  27.0 INCH PIPE IS  18.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  14.30
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      40.71
  PIPE TRAVEL TIME(MIN.) =   0.08    Tc(MIN.) =   10.51
  LONGEST FLOWPATH FROM NODE   3159.00 TO NODE   3158.00 =    2275.04 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3167.00 TO NODE   3158.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
================================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   10.51
  RAINFALL INTENSITY(INCH/HR) =   5.38
  TOTAL STREAM AREA(ACRES) =    22.56
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     40.71

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        5.06     9.63        5.696          1.21
      2       40.71    10.51        5.384         22.56

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF       Tc      INTENSITY
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)
      1       42.36     9.63        5.696
      2       45.49    10.51        5.384

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      45.49   Tc(MIN.) =   10.51
  TOTAL AREA(ACRES) =       23.8
  LONGEST FLOWPATH FROM NODE   3159.00 TO NODE   3158.00 =    2275.04 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3158.00 TO NODE   3162.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   233.97  DOWNSTREAM(FEET) =   230.44
  FLOW LENGTH(FEET) =   164.16   MANNING'S N =  0.013
  DEPTH OF FLOW IN  30.0 INCH PIPE IS  19.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  13.19
  ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      45.49
  PIPE TRAVEL TIME(MIN.) =   0.21    Tc(MIN.) =   10.72
  LONGEST FLOWPATH FROM NODE   3159.00 TO NODE   3162.00 =    2439.20 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3158.00 TO NODE   3162.00 IS CODE =  10
----------------------------------------------------------------------------
```

```
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
================================================================================

********************************************************************************
  FLOW PROCESS FROM NODE   3555.00 TO NODE   3162.00 IS CODE =   7
--------------------------------------------------------------------------------
  >>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<
================================================================================
  USER-SPECIFIED VALUES ARE AS FOLLOWS:
  TC(MIN) =  13.34   RAIN INTENSITY(INCH/HOUR) =  4.62
  TOTAL AREA(ACRES) =    58.70   TOTAL RUNOFF(CFS) =     77.50

********************************************************************************
  FLOW PROCESS FROM NODE   3555.00 TO NODE   3162.00 IS CODE =  11
--------------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
================================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM     RUNOFF       Tc       INTENSITY     AREA
  NUMBER      (CFS)     (MIN.)    (INCH/HOUR)    (ACRE)
      1       77.50    13.34        4.617        58.70
  LONGEST FLOWPATH FROM NODE   3159.00 TO NODE   3162.00 =    2439.20 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
  STREAM     RUNOFF       Tc       INTENSITY     AREA
  NUMBER      (CFS)     (MIN.)    (INCH/HOUR)    (ACRE)
      1       45.49    10.72        5.317        23.77
  LONGEST FLOWPATH FROM NODE   3159.00 TO NODE   3162.00 =    2439.20 FEET.

  ** PEAK FLOW RATE TABLE **
  STREAM    RUNOFF       Tc       INTENSITY
  NUMBER     (CFS)      (MIN.)    (INCH/HOUR)
      1     107.76      10.72        5.317
      2     117.00      13.34        4.617

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     117.00   Tc(MIN.) =   13.34
  TOTAL AREA(ACRES) =       82.5

********************************************************************************
  FLOW PROCESS FROM NODE   3158.00 TO NODE   3162.00 IS CODE =  31
--------------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   230.50  DOWNSTREAM(FEET) =   228.56
  FLOW LENGTH(FEET) =   114.76   MANNING'S N =  0.013
  DEPTH OF FLOW IN  42.0 INCH PIPE IS  31.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  15.03
  ESTIMATED PIPE DIAMETER(INCH) =  42.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     117.00
  PIPE TRAVEL TIME(MIN.) =   0.13    Tc(MIN.) =   13.47
  LONGEST FLOWPATH FROM NODE   3159.00 TO NODE   3162.00 =    2553.96 FEET.

********************************************************************************
  FLOW PROCESS FROM NODE   3162.00 TO NODE   3170.00 IS CODE =  51
--------------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    230.00  DOWNSTREAM(FEET) =    218.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   497.00   CHANNEL SLOPE =  0.0241
```



```
  CHANNEL BASE(FEET) =  100.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.044
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .3600
  S.C.S. CURVE NUMBER (AMC II) =  76
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     121.49
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   2.84
  AVERAGE FLOW DEPTH(FEET) =   0.42   TRAVEL TIME(MIN.) =   2.92
  Tc(MIN.) =   16.38
  SUBAREA AREA(ACRES) =     6.16       SUBAREA RUNOFF(CFS) =    8.97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.309
  TOTAL AREA(ACRES) =       88.6         PEAK FLOW RATE(CFS) =     117.00

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.41   FLOW VELOCITY(FEET/SEC.) =   2.83
  LONGEST FLOWPATH FROM NODE   3159.00 TO NODE   3170.00 =    3050.96 FEET.

+------------------------------------------------------------------------------+
| COMPOSITE C FOR C & D SOILS                                                  |
| SUBAREA - 1.0 DU/A                                                           |
| (0.36*5.85)+(0.41*0.31)/6.16 = 0.36                                          |
+------------------------------------------------------------------------------+

********************************************************************************
  FLOW PROCESS FROM NODE   3170.00 TO NODE   3171.00 IS CODE =  51
--------------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    218.00  DOWNSTREAM(FEET) =    210.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   220.00   CHANNEL SLOPE =  0.0364
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   5.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.955
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .3860
  S.C.S. CURVE NUMBER (AMC II) =  76
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     122.99
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.42
  AVERAGE FLOW DEPTH(FEET) =   1.36   TRAVEL TIME(MIN.) =   0.57
  Tc(MIN.) =   16.96
  SUBAREA AREA(ACRES) =     7.84       SUBAREA RUNOFF(CFS) =   11.97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.316
  TOTAL AREA(ACRES) =       96.5         PEAK FLOW RATE(CFS) =     120.40

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.35   FLOW VELOCITY(FEET/SEC.) =   6.37
  LONGEST FLOWPATH FROM NODE   3159.00 TO NODE   3171.00 =    3270.96 FEET.

+------------------------------------------------------------------------------+
| COMPOSITE C FOR C & D SOILS                                                  |
| SUBAREA - 1.0 DU/A                                                           |
| (3.70*0.36)+(4.14*0.41)/7.84 = 0.386                                         |
+------------------------------------------------------------------------------+

********************************************************************************
  FLOW PROCESS FROM NODE   3171.00 TO NODE   3173.00 IS CODE =  31
--------------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   210.40  DOWNSTREAM(FEET) =   210.00
```

```
  FLOW LENGTH(FEET) =    40.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  48.0 INCH PIPE IS  34.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  12.53
  ESTIMATED PIPE DIAMETER(INCH) =  48.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     120.40
  PIPE TRAVEL TIME(MIN.) =   0.05    Tc(MIN.) =   17.01
  LONGEST FLOWPATH FROM NODE   3159.00 TO NODE   3173.00 =    3310.96 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3173.00 TO NODE   3174.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    210.00  DOWNSTREAM(FEET) =    209.50
  CHANNEL LENGTH THRU SUBAREA(FEET) =   750.00   CHANNEL SLOPE =  0.0007
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   5.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.067
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .3180
  S.C.S. CURVE NUMBER (AMC II) =  76
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     127.17
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   1.53
  AVERAGE FLOW DEPTH(FEET) =   3.85   TRAVEL TIME(MIN.) =   8.15
  Tc(MIN.) =   25.16
  SUBAREA AREA(ACRES) =    13.89       SUBAREA RUNOFF(CFS) =   13.55
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.316
  TOTAL AREA(ACRES) =      110.4          PEAK FLOW RATE(CFS) =     120.40

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  3.75   FLOW VELOCITY(FEET/SEC.) =   1.51
  LONGEST FLOWPATH FROM NODE   3159.00 TO NODE   3174.00 =    4060.96 FEET.

+--------------------------------------------------------------------------+
| COMPOSITE C FOR A & D SOILS                                              |
| SUBAREA -1.0 DU/A                                                        |
| (0.27*9.17)+(0.41*4.72)/13.89 = 0.318                                    |
+--------------------------------------------------------------------------+
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =      110.4  TC(MIN.) =     25.16
  PEAK FLOW RATE(CFS)   =     120.40
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

```
****************************************************************************

          RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT
                       2003,1985,1981 HYDROLOGY MANUAL
        (c) Copyright 1982-2016 Advanced Engineering Software (aes)
            Ver. 23.0 Release Date: 07/01/2016  License ID 1509

                        Analysis prepared by:




 ************************** DESCRIPTION OF STUDY **************************
* OCEAN BREEZE RANCH - PA3                                                *
* SYSTEM 3270 - PROPOSED CONDITIONS                                       *
* NORTHEAST QUADRANT                                                      *
 ***************************************************************************

  FILE NAME: 3270P100.DAT
  TIME/DATE OF STUDY: 12:50 05/31/2024
----------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
----------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) = 100.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   3.300
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  ================  ======  =====  ====== =====  =======
  1   18.0     12.0    0.020/0.020/0.015   0.50    1.50 0.0417 0.125 0.0165
  2   20.0     13.0    0.020/0.020/0.015   0.50    1.50 0.0417 0.125 0.0165
  3   16.0     11.0    0.020/0.020/0.015   0.50    1.50 0.0417 0.125 0.0165
  4   12.0      7.0    0.020/0.020/0.015   0.50    1.50 0.0100 0.010 0.0160
  5   17.0     12.0    0.020/0.020/0.015   0.33    1.50 0.0100 0.010 0.0160

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth = -0.10 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

****************************************************************************
  FLOW PROCESS FROM NODE   3329.00 TO NODE   3330.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .3200
  SOIL CLASSIFICATION IS "B"
  S.C.S. CURVE NUMBER (AMC II) =  65
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    422.00
```



```
  DOWNSTREAM ELEVATION(FEET) =    402.00
  ELEVATION DIFFERENCE(FEET) =     20.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.517
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.328
  SUBAREA RUNOFF(CFS) =      0.14
  TOTAL AREA(ACRES) =      0.06   TOTAL RUNOFF(CFS) =      0.14

****************************************************************************
  FLOW PROCESS FROM NODE   3330.00 TO NODE   3331.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    402.00  DOWNSTREAM(FEET) =    266.31
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1038.00   CHANNEL SLOPE =  0.1307
  CHANNEL BASE(FEET) =    4.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.444
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .3300
  S.C.S. CURVE NUMBER (AMC II) =  65
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       5.56
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.53
  AVERAGE FLOW DEPTH(FEET) =   0.27   TRAVEL TIME(MIN.) =   3.82
  Tc(MIN.) =   10.33
  SUBAREA AREA(ACRES) =     5.91       SUBAREA RUNOFF(CFS) =   10.62
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.330
  TOTAL AREA(ACRES) =        6.0          PEAK FLOW RATE(CFS) =      10.72

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.39   FLOW VELOCITY(FEET/SEC.) =   5.69
  LONGEST FLOWPATH FROM NODE   3329.00 TO NODE   3331.00 =    1138.00 FEET.

+--------------------------------------------------------------------------+
| COMPOSITE C FOR B & C SOILS                                              |
| SUBAREA - 1.0 DU/A                                                       |
| (0.32*3.80)+(0.36*2.11)/5.91 = 0.33                                      |
+--------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   3331.00 TO NODE   3333.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   265.86  DOWNSTREAM(FEET) =   261.53
  FLOW LENGTH(FEET) =    61.56   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   7.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  14.46
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      10.72
  PIPE TRAVEL TIME(MIN.) =   0.07    Tc(MIN.) =   10.40
  LONGEST FLOWPATH FROM NODE   3329.00 TO NODE   3333.00 =    1199.56 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3333.00 TO NODE   3334.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.420
  RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .3600
```

```
  SOIL CLASSIFICATION IS "C"
  S.C.S. CURVE NUMBER (AMC II) =  76
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3355
  SUBAREA AREA(ACRES) =    1.35   SUBAREA RUNOFF(CFS) =    2.63
  TOTAL AREA(ACRES) =        7.3   TOTAL RUNOFF(CFS) =      13.31
  TC(MIN.) =   10.40

****************************************************************************
  FLOW PROCESS FROM NODE   3334.00 TO NODE   3351.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   247.49  DOWNSTREAM(FEET) =   229.39
  FLOW LENGTH(FEET) =   234.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   8.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  15.84
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      13.31
  PIPE TRAVEL TIME(MIN.) =   0.25    Tc(MIN.) =   10.65
  LONGEST FLOWPATH FROM NODE   3329.00 TO NODE   3351.00 =    1433.56 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3334.00 TO NODE   3351.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   10.65
  RAINFALL INTENSITY(INCH/HR) =   5.34
  TOTAL STREAM AREA(ACRES) =     7.32
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     13.31

****************************************************************************
  FLOW PROCESS FROM NODE   3339.00 TO NODE   3340.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .3200
  SOIL CLASSIFICATION IS "B"
  S.C.S. CURVE NUMBER (AMC II) =  65
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    386.00
  DOWNSTREAM ELEVATION(FEET) =    372.00
  ELEVATION DIFFERENCE(FEET) =     14.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.517
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.328
  SUBAREA RUNOFF(CFS) =      0.28
  TOTAL AREA(ACRES) =      0.12   TOTAL RUNOFF(CFS) =      0.28

****************************************************************************
  FLOW PROCESS FROM NODE   3340.00 TO NODE   3341.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    372.00  DOWNSTREAM(FEET) =    270.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1163.00   CHANNEL SLOPE =  0.0877
  CHANNEL BASE(FEET) =    4.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
```



```
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.998
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .3400
  S.C.S. CURVE NUMBER (AMC II) =  65
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       4.25
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.67
  AVERAGE FLOW DEPTH(FEET) =   0.26   TRAVEL TIME(MIN.) =   5.28
  Tc(MIN.) =   11.80
  SUBAREA AREA(ACRES) =     4.55       SUBAREA RUNOFF(CFS) =    7.73
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.339
  TOTAL AREA(ACRES) =        4.7         PEAK FLOW RATE(CFS) =       7.92

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.37   FLOW VELOCITY(FEET/SEC.) =   4.50
  LONGEST FLOWPATH FROM NODE   3339.00 TO NODE   3341.00 =    1263.00 FEET.

+----------------------------------------------------------------------------+
| COMPOSITE C FOR B & C SOILS                                                |
| SUBAREA - 1.0 DU/A                                                         |
| (1.94*0.32)+(2.61*0.36)/4.55 = 0.34                                        |
+----------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   3341.00 TO NODE   3351.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   260.74  DOWNSTREAM(FEET) =   229.39
  FLOW LENGTH(FEET) =    72.94   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   4.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  25.50
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       7.92
  PIPE TRAVEL TIME(MIN.) =   0.05    Tc(MIN.) =   11.84
  LONGEST FLOWPATH FROM NODE   3339.00 TO NODE   3351.00 =    1335.94 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3341.00 TO NODE   3351.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   11.84
  RAINFALL INTENSITY(INCH/HR) =   4.99
  TOTAL STREAM AREA(ACRES) =     4.67
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      7.92

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       13.31    10.65        5.339         7.32
      2        7.92    11.84        4.985         4.67

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF       Tc      INTENSITY
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)
```

```
      1       20.43    10.65       5.339
      2       20.35    11.84       4.985

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      20.43   Tc(MIN.) =   10.65
  TOTAL AREA(ACRES) =       12.0
  LONGEST FLOWPATH FROM NODE   3329.00 TO NODE   3351.00 =    1433.56 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3351.00 TO NODE   3342.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   229.06  DOWNSTREAM(FEET) =   223.73
  FLOW LENGTH(FEET) =   213.01   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  14.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  11.37
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      20.43
  PIPE TRAVEL TIME(MIN.) =   0.31    Tc(MIN.) =   10.96
  LONGEST FLOWPATH FROM NODE   3329.00 TO NODE   3342.00 =    1646.57 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3343.00 TO NODE   3342.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.240
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =  65
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3401
  SUBAREA AREA(ACRES) =     3.66   SUBAREA RUNOFF(CFS) =     6.71
  TOTAL AREA(ACRES) =       15.6   TOTAL RUNOFF(CFS) =      27.89
  TC(MIN.) =   10.96

+--------------------------------------------------------------------------+
| COMPOSITE C FOR B & C SOILS                                              |
| SUBAREA - 1.0 DU/A                                                       |
| (1.07*0.32)+(2.59*0.36)/3.66 = 0.35                                      |
+--------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   3342.00 TO NODE   3344.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   223.63  DOWNSTREAM(FEET) =   221.80
  FLOW LENGTH(FEET) =   349.64   MANNING'S N =  0.013
  DEPTH OF FLOW IN  30.0 INCH PIPE IS  23.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.71
  ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      27.89
  PIPE TRAVEL TIME(MIN.) =   0.87    Tc(MIN.) =   11.83
  LONGEST FLOWPATH FROM NODE   3329.00 TO NODE   3344.00 =    1996.21 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3342.00 TO NODE   3344.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
```



```
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   11.83
  RAINFALL INTENSITY(INCH/HR) =   4.99
  TOTAL STREAM AREA(ACRES) =    15.65
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     27.89

****************************************************************************
  FLOW PROCESS FROM NODE   3345.00 TO NODE   3346.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .3600
  SOIL CLASSIFICATION IS "C"
  S.C.S. CURVE NUMBER (AMC II) =  76
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    264.00
  DOWNSTREAM ELEVATION(FEET) =    256.00
  ELEVATION DIFFERENCE(FEET) =      8.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.660
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.226
  SUBAREA RUNOFF(CFS) =      0.62
  TOTAL AREA(ACRES) =      0.24   TOTAL RUNOFF(CFS) =      0.62

****************************************************************************
  FLOW PROCESS FROM NODE   3346.00 TO NODE   3347.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    256.00  DOWNSTREAM(FEET) =    242.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   202.00   CHANNEL SLOPE =  0.0693
  CHANNEL BASE(FEET) =   12.00   "Z" FACTOR =   4.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.044
  RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .3600
  SOIL CLASSIFICATION IS "C"
  S.C.S. CURVE NUMBER (AMC II) =  76
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.43
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   1.58
  AVERAGE FLOW DEPTH(FEET) =   0.07   TRAVEL TIME(MIN.) =   2.13
  Tc(MIN.) =    8.79
  SUBAREA AREA(ACRES) =     0.74       SUBAREA RUNOFF(CFS) =    1.61
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.360
  TOTAL AREA(ACRES) =        1.0         PEAK FLOW RATE(CFS) =       2.13

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.10   FLOW VELOCITY(FEET/SEC.) =   1.79
  LONGEST FLOWPATH FROM NODE   3345.00 TO NODE   3347.00 =     302.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3347.00 TO NODE   3348.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    242.00  DOWNSTREAM(FEET) =    225.41
  CHANNEL LENGTH THRU SUBAREA(FEET) =   540.00   CHANNEL SLOPE =  0.0307
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   2.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.546
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .3500
```

```
  S.C.S. CURVE NUMBER (AMC II) =  76
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       5.00
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.17
  AVERAGE FLOW DEPTH(FEET) =   0.59   TRAVEL TIME(MIN.) =   1.25
  Tc(MIN.) =   10.04
  SUBAREA AREA(ACRES) =     2.95       SUBAREA RUNOFF(CFS) =    5.73
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.352
  TOTAL AREA(ACRES) =        3.9         PEAK FLOW RATE(CFS) =       7.68

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.70   FLOW VELOCITY(FEET/SEC.) =   7.90
  LONGEST FLOWPATH FROM NODE   3345.00 TO NODE   3348.00 =     842.00 FEET.

+----------------------------------------------------------------------------+
| COMPOSITE C FOR B & C SOILS                                                |
| SUBAREA - 1.0 DU/A                                                         |
| (0.72*0.32)+(2.22*0.36)/2.95 = 0.35                                        |
+----------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   3348.00 TO NODE   3344.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   222.00  DOWNSTREAM(FEET) =   221.80
  FLOW LENGTH(FEET) =    36.23   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  12.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.11
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       7.68
  PIPE TRAVEL TIME(MIN.) =   0.12    Tc(MIN.) =   10.16
  LONGEST FLOWPATH FROM NODE   3345.00 TO NODE   3344.00 =     878.23 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3348.00 TO NODE   3344.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   10.16
  RAINFALL INTENSITY(INCH/HR) =   5.50
  TOTAL STREAM AREA(ACRES) =     3.93
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      7.68

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       27.89    11.83        4.989         15.65
      2        7.68    10.16        5.504          3.93

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF       Tc      INTENSITY
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)
      1       32.96    10.16        5.504
      2       34.85    11.83        4.989

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
```



```
  PEAK FLOW RATE(CFS) =      34.85   Tc(MIN.) =   11.83
  TOTAL AREA(ACRES) =       19.6
  LONGEST FLOWPATH FROM NODE   3329.00 TO NODE   3344.00 =    1996.21 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3344.00 TO NODE   3328.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   221.70  DOWNSTREAM(FEET) =   220.56
  FLOW LENGTH(FEET) =   211.44   MANNING'S N =  0.013
  DEPTH OF FLOW IN  33.0 INCH PIPE IS  25.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.23
  ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      34.85
  PIPE TRAVEL TIME(MIN.) =   0.49    Tc(MIN.) =   12.32
  LONGEST FLOWPATH FROM NODE   3329.00 TO NODE   3328.00 =    2207.65 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3328.00 TO NODE   3349.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   220.46  DOWNSTREAM(FEET) =   220.24
  FLOW LENGTH(FEET) =    43.59   MANNING'S N =  0.013
  DEPTH OF FLOW IN  33.0 INCH PIPE IS  25.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.02
  ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      34.85
  PIPE TRAVEL TIME(MIN.) =   0.10    Tc(MIN.) =   12.42
  LONGEST FLOWPATH FROM NODE   3329.00 TO NODE   3349.00 =    2251.24 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3349.00 TO NODE   3370.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.834
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .3300
  S.C.S. CURVE NUMBER (AMC II) =  76
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3420
  SUBAREA AREA(ACRES) =    0.96   SUBAREA RUNOFF(CFS) =    1.53
  TOTAL AREA(ACRES) =       20.5   TOTAL RUNOFF(CFS) =      34.85
  TC(MIN.) =   12.42
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

+----------------------------------------------------------------------------+
| COMPOSITE C FOR A, B, & C SOILS                                            |
| SUBAREA - 1.0 DU/A                                                         |
| (0.27*0.03)+(0.66*0.32)+(0.27*0.36)/0.96 = .33                             |
+----------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   3370.00 TO NODE   3371.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   219.40  DOWNSTREAM(FEET) =   219.11
  FLOW LENGTH(FEET) =    55.91   MANNING'S N =  0.013
```

```
  DEPTH OF FLOW IN  33.0 INCH PIPE IS  25.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.11
  ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      34.85
  PIPE TRAVEL TIME(MIN.) =   0.13    Tc(MIN.) =   12.55
  LONGEST FLOWPATH FROM NODE   3329.00 TO NODE   3371.00 =    2307.15 FEET.
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =       20.5  TC(MIN.) =     12.55
  PEAK FLOW RATE(CFS)   =      34.85
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

```
**************************************************************************

           RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
           Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT
                        2003,1985,1981 HYDROLOGY MANUAL
        (c) Copyright 1982-2016 Advanced Engineering Software (aes)
            Ver. 23.0 Release Date: 07/01/2016  License ID 1509

                        Analysis prepared by:




 ************************** DESCRIPTION OF STUDY **************************
* OCEAN BREEZE RANCH - PA3                                                *
* PROPOSED CONDITIONS                                                     *
* SYSTEM 3300                                                             *
 **************************************************************************

  FILE NAME: 3300P100.DAT
  TIME/DATE OF STUDY: 18:40 06/01/2024
--------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
--------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) = 100.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   3.300
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  ================  ======  ===== ====== ===== =======
  1   18.0     12.0    0.020/0.020/0.015   0.50    1.50 0.0417 0.125 0.0165
  2   20.0     13.0    0.020/0.020/0.015   0.50    1.50 0.0417 0.125 0.0165
  3   16.0     11.0    0.020/0.020/0.015   0.50    1.50 0.0417 0.125 0.0165
  4   12.0      7.0    0.020/0.020/0.015   0.50    1.50 0.0100 0.010 0.0160
  5   17.0     12.0    0.020/0.020/0.015   0.33    1.50 0.0100 0.010 0.0160

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth = -0.10 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

**************************************************************************
  FLOW PROCESS FROM NODE   3300.00 TO NODE   3301.00 IS CODE =  21
--------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==========================================================================
  STREETS & ROADS (CURBS/STORM DRAINS) RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "C"
  S.C.S. CURVE NUMBER (AMC II) =  98
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    60.00
  UPSTREAM ELEVATION(FEET) =    282.00
```



```
  DOWNSTREAM ELEVATION(FEET) =    278.00
  ELEVATION DIFFERENCE(FEET) =      4.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    1.704
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.23
  TOTAL AREA(ACRES) =      0.03   TOTAL RUNOFF(CFS) =      0.23

**************************************************************************
  FLOW PROCESS FROM NODE   3301.00 TO NODE   3302.00 IS CODE =  62
--------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  4 USED)<<<<<
==========================================================================
  UPSTREAM ELEVATION(FEET) =  278.00  DOWNSTREAM ELEVATION(FEET) =  268.55
  STREET LENGTH(FEET) =   174.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 12.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   7.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.015
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0160
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       0.74
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.09
    HALFSTREET FLOOD WIDTH(FEET) =    5.03
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.92
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.26
  STREET FLOW TRAVEL TIME(MIN.) =   0.99   Tc(MIN.) =    2.70
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  LIMITED INDUSTRIAL RUNOFF COEFFICIENT = .8400
  SOIL CLASSIFICATION IS "C"
  S.C.S. CURVE NUMBER (AMC II) =  96
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.845
  SUBAREA AREA(ACRES) =    0.14      SUBAREA RUNOFF(CFS) =    1.02
  TOTAL AREA(ACRES) =       0.2        PEAK FLOW RATE(CFS) =       1.25

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.11   HALFSTREET FLOOD WIDTH(FEET) =   6.12
  FLOW VELOCITY(FEET/SEC.) =  3.33   DEPTH*VELOCITY(FT*FT/SEC.) =   0.37
  LONGEST FLOWPATH FROM NODE   3300.00 TO NODE   3302.00 =     234.00 FEET.

**************************************************************************
  FLOW PROCESS FROM NODE   3303.00 TO NODE   3302.00 IS CODE =  81
--------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  LIMITED INDUSTRIAL RUNOFF COEFFICIENT = .8400
  SOIL CLASSIFICATION IS "C"
  S.C.S. CURVE NUMBER (AMC II) =  96
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.8433
  SUBAREA AREA(ACRES) =    0.10   SUBAREA RUNOFF(CFS) =    0.73
  TOTAL AREA(ACRES) =       0.3   TOTAL RUNOFF(CFS) =       1.98
  TC(MIN.) =    2.70
```

```
****************************************************************************
  FLOW PROCESS FROM NODE   3302.00 TO NODE   3304.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   261.80  DOWNSTREAM(FEET) =   261.55
  FLOW LENGTH(FEET) =    16.25   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   4.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.23
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.98
  PIPE TRAVEL TIME(MIN.) =   0.05    Tc(MIN.) =    2.75
  LONGEST FLOWPATH FROM NODE   3300.00 TO NODE   3304.00 =     250.25 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3305.00 TO NODE   3304.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  LIMITED INDUSTRIAL RUNOFF COEFFICIENT = .8400
  SOIL CLASSIFICATION IS "C"
  S.C.S. CURVE NUMBER (AMC II) =  96
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.8418
  SUBAREA AREA(ACRES) =    0.24   SUBAREA RUNOFF(CFS) =    1.75
  TOTAL AREA(ACRES) =        0.5   TOTAL RUNOFF(CFS) =       3.73
  TC(MIN.) =    2.75

****************************************************************************
  FLOW PROCESS FROM NODE   3711.00 TO NODE   3304.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (2. DU/AC OR LESS) RUNOFF COEFFICIENT = .3900
  S.C.S. CURVE NUMBER (AMC II) =  96
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.5076
  SUBAREA AREA(ACRES) =    1.45   SUBAREA RUNOFF(CFS) =    4.92
  TOTAL AREA(ACRES) =        2.0   TOTAL RUNOFF(CFS) =       8.65
  TC(MIN.) =    2.75

****************************************************************************
  FLOW PROCESS FROM NODE   3712.00 TO NODE   3704.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  RESIDENTIAL (2. DU/AC OR LESS) RUNOFF COEFFICIENT = .4200
  SOIL CLASSIFICATION IS "C"
  S.C.S. CURVE NUMBER (AMC II) =  79
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.4772
  SUBAREA AREA(ACRES) =    1.04   SUBAREA RUNOFF(CFS) =    3.80
  TOTAL AREA(ACRES) =        3.0   TOTAL RUNOFF(CFS) =      12.45
  TC(MIN.) =    2.75

****************************************************************************
  FLOW PROCESS FROM NODE   3336.00 TO NODE   3304.00 IS CODE =  81
```



```
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  PASTURE OR RANGE LAND FAIR COVER RUNOFF COEFFICIENT = .3000
  SOIL CLASSIFICATION IS "C"
  S.C.S. CURVE NUMBER (AMC II) =  79
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.4493
  SUBAREA AREA(ACRES) =    0.56   SUBAREA RUNOFF(CFS) =    1.46
  TOTAL AREA(ACRES) =        3.6   TOTAL RUNOFF(CFS) =      13.91
  TC(MIN.) =    2.75

****************************************************************************
  FLOW PROCESS FROM NODE   3337.00 TO NODE   3304.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  PASTURE OR RANGE LAND FAIR COVER RUNOFF COEFFICIENT = .2500
  SOIL CLASSIFICATION IS "B"
  S.C.S. CURVE NUMBER (AMC II) =  69
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.4053
  SUBAREA AREA(ACRES) =    1.01   SUBAREA RUNOFF(CFS) =    2.20
  TOTAL AREA(ACRES) =        4.6   TOTAL RUNOFF(CFS) =      16.10
  TC(MIN.) =    2.75

****************************************************************************
  FLOW PROCESS FROM NODE   3304.00 TO NODE   3714.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   261.22  DOWNSTREAM(FEET) =   259.08
  FLOW LENGTH(FEET) =    38.88   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  10.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  14.57
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      16.10
  PIPE TRAVEL TIME(MIN.) =   0.04    Tc(MIN.) =    2.79
  LONGEST FLOWPATH FROM NODE   3300.00 TO NODE   3714.00 =     289.13 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3713.00 TO NODE   3714.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .3600
  SOIL CLASSIFICATION IS "C"
  S.C.S. CURVE NUMBER (AMC II) =  76
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3955
  SUBAREA AREA(ACRES) =    1.25   SUBAREA RUNOFF(CFS) =    3.91
  TOTAL AREA(ACRES) =        5.8   TOTAL RUNOFF(CFS) =      20.02
  TC(MIN.) =    2.79

****************************************************************************
  FLOW PROCESS FROM NODE   3332.00 TO NODE   3714.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
```

```
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
RESIDENTIAL (2. DU/AC OR LESS) RUNOFF COEFFICIENT = .4200
SOIL CLASSIFICATION IS "C"
S.C.S. CURVE NUMBER (AMC II) =  79
AREA-AVERAGE RUNOFF COEFFICIENT = 0.3994
SUBAREA AREA(ACRES) =    1.09   SUBAREA RUNOFF(CFS) =    3.98
TOTAL AREA(ACRES) =        6.9   TOTAL RUNOFF(CFS) =     24.00
TC(MIN.) =    2.79

****************************************************************************
FLOW PROCESS FROM NODE   3714.00 TO NODE   3306.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
ELEVATION DATA: UPSTREAM(FEET) =   258.67  DOWNSTREAM(FEET) =   246.20
FLOW LENGTH(FEET) =   218.10   MANNING'S N =  0.013
DEPTH OF FLOW IN  18.0 INCH PIPE IS  14.4 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =  15.79
ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =      24.00
PIPE TRAVEL TIME(MIN.) =   0.23    Tc(MIN.) =    3.02
LONGEST FLOWPATH FROM NODE   3300.00 TO NODE   3306.00 =     507.23 FEET.

****************************************************************************
FLOW PROCESS FROM NODE   3307.00 TO NODE   3306.00 IS CODE =  81
----------------------------------------------------------------------------
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .7800
SOIL CLASSIFICATION IS "C"
S.C.S. CURVE NUMBER (AMC II) =  93
AREA-AVERAGE RUNOFF COEFFICIENT = 0.4106
SUBAREA AREA(ACRES) =    0.21   SUBAREA RUNOFF(CFS) =    1.42
TOTAL AREA(ACRES) =        7.1   TOTAL RUNOFF(CFS) =     25.42
TC(MIN.) =    3.02

****************************************************************************
FLOW PROCESS FROM NODE   3308.00 TO NODE   3306.00 IS CODE =  81
----------------------------------------------------------------------------
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
LIMITED INDUSTRIAL RUNOFF COEFFICIENT = .8400
SOIL CLASSIFICATION IS "C"
S.C.S. CURVE NUMBER (AMC II) =  96
AREA-AVERAGE RUNOFF COEFFICIENT = 0.4189
SUBAREA AREA(ACRES) =    0.14   SUBAREA RUNOFF(CFS) =    1.02
TOTAL AREA(ACRES) =        7.3   TOTAL RUNOFF(CFS) =     26.44
TC(MIN.) =    3.02

****************************************************************************
FLOW PROCESS FROM NODE   3306.00 TO NODE   3372.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
ELEVATION DATA: UPSTREAM(FEET) =   245.87  DOWNSTREAM(FEET) =   232.01
FLOW LENGTH(FEET) =   213.00   MANNING'S N =  0.013
```



```
DEPTH OF FLOW IN  21.0 INCH PIPE IS  12.6 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =  17.56
ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =      26.44
PIPE TRAVEL TIME(MIN.) =   0.20    Tc(MIN.) =    3.23
LONGEST FLOWPATH FROM NODE   3300.00 TO NODE   3372.00 =     720.23 FEET.

****************************************************************************
FLOW PROCESS FROM NODE   3306.00 TO NODE   3372.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
TIME OF CONCENTRATION(MIN.) =    3.23
RAINFALL INTENSITY(INCH/HR) =   8.69
TOTAL STREAM AREA(ACRES) =     7.26
PEAK FLOW RATE(CFS) AT CONFLUENCE =     26.44

****************************************************************************
FLOW PROCESS FROM NODE   3312.00 TO NODE   3313.00 IS CODE =  21
----------------------------------------------------------------------------
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
STREETS & ROADS (CURBS/STORM DRAINS) RUNOFF COEFFICIENT = .8700
SOIL CLASSIFICATION IS "C"
S.C.S. CURVE NUMBER (AMC II) =  98
INITIAL SUBAREA FLOW-LENGTH(FEET) =    60.00
UPSTREAM ELEVATION(FEET) =    255.00
DOWNSTREAM ELEVATION(FEET) =    251.33
ELEVATION DIFFERENCE(FEET) =      3.67
SUBAREA OVERLAND TIME OF FLOW(MIN.) =    1.754
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
SUBAREA RUNOFF(CFS) =      0.15
TOTAL AREA(ACRES) =      0.02   TOTAL RUNOFF(CFS) =      0.15

****************************************************************************
FLOW PROCESS FROM NODE   3313.00 TO NODE   3373.00 IS CODE =  62
----------------------------------------------------------------------------
>>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>(STREET TABLE SECTION #  4 USED)<<<<<
============================================================================
UPSTREAM ELEVATION(FEET) =  251.33  DOWNSTREAM ELEVATION(FEET) =  239.75
STREET LENGTH(FEET) =   221.69   CURB HEIGHT(INCHES) =  6.0
STREET HALFWIDTH(FEET) = 12.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   7.00
INSIDE STREET CROSSFALL(DECIMAL) =  0.020
OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
STREET PARKWAY CROSSFALL(DECIMAL)  =  0.015
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0160
Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0150

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       0.48
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.08
  HALFSTREET FLOOD WIDTH(FEET) =    4.32
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.58
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.20
STREET FLOW TRAVEL TIME(MIN.) =   1.43   Tc(MIN.) =    3.19
```

```
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
LIMITED INDUSTRIAL RUNOFF COEFFICIENT = .8400
SOIL CLASSIFICATION IS "C"
S.C.S. CURVE NUMBER (AMC II) =  96
AREA-AVERAGE RUNOFF COEFFICIENT =  0.845
SUBAREA AREA(ACRES) =    0.09      SUBAREA RUNOFF(CFS) =    0.66
TOTAL AREA(ACRES) =        0.1        PEAK FLOW RATE(CFS) =       0.81

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.09   HALFSTREET FLOOD WIDTH(FEET) =   5.25
FLOW VELOCITY(FEET/SEC.) =  2.94   DEPTH*VELOCITY(FT*FT/SEC.) =   0.28
LONGEST FLOWPATH FROM NODE   3312.00 TO NODE   3373.00 =     281.69 FEET.

****************************************************************************
FLOW PROCESS FROM NODE   3318.00 TO NODE   3373.00 IS CODE =  81
----------------------------------------------------------------------------
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
URBAN NEWLY GRADED AREAS RUNOFF COEFFICIENT = .6900
SOIL CLASSIFICATION IS "C"
S.C.S. CURVE NUMBER (AMC II) =  91
AREA-AVERAGE RUNOFF COEFFICIENT = 0.7418
SUBAREA AREA(ACRES) =    0.22   SUBAREA RUNOFF(CFS) =    1.32
TOTAL AREA(ACRES) =        0.3   TOTAL RUNOFF(CFS) =       2.13
TC(MIN.) =    3.19

****************************************************************************
FLOW PROCESS FROM NODE   3373.00 TO NODE   3372.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
ELEVATION DATA: UPSTREAM(FEET) =   233.17  DOWNSTREAM(FEET) =   233.00
FLOW LENGTH(FEET) =    16.25   MANNING'S N =  0.013
ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
DEPTH OF FLOW IN  18.0 INCH PIPE IS   5.5 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   4.65
ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =       2.13
PIPE TRAVEL TIME(MIN.) =   0.06    Tc(MIN.) =    3.25
LONGEST FLOWPATH FROM NODE   3312.00 TO NODE   3372.00 =     297.94 FEET.

****************************************************************************
FLOW PROCESS FROM NODE   3338.00 TO NODE   3372.00 IS CODE =  81
----------------------------------------------------------------------------
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
RESIDENTIAL (2. DU/AC OR LESS) RUNOFF COEFFICIENT = .4200
SOIL CLASSIFICATION IS "C"
S.C.S. CURVE NUMBER (AMC II) =  79
AREA-AVERAGE RUNOFF COEFFICIENT = 0.5078
SUBAREA AREA(ACRES) =    0.88   SUBAREA RUNOFF(CFS) =    3.21
TOTAL AREA(ACRES) =        1.2   TOTAL RUNOFF(CFS) =       5.34
TC(MIN.) =    3.25

****************************************************************************
FLOW PROCESS FROM NODE   3373.00 TO NODE   3372.00 IS CODE =   1
----------------------------------------------------------------------------
```



```
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
TIME OF CONCENTRATION(MIN.) =    3.25
RAINFALL INTENSITY(INCH/HR) =   8.69
TOTAL STREAM AREA(ACRES) =     1.21
PEAK FLOW RATE(CFS) AT CONFLUENCE =      5.34

** CONFLUENCE DATA **
STREAM     RUNOFF       Tc      INTENSITY      AREA
NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
    1       26.44     3.23        8.695          7.26
    2        5.34     3.25        8.695          1.21

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR  2 STREAMS.

** PEAK FLOW RATE TABLE **
STREAM     RUNOFF       Tc      INTENSITY
NUMBER      (CFS)     (MIN.)   (INCH/HOUR)
    1       31.75     3.23        8.695
    2       31.78     3.25        8.695

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =      31.78   Tc(MIN.) =    3.25
TOTAL AREA(ACRES) =        8.5
LONGEST FLOWPATH FROM NODE   3300.00 TO NODE   3372.00 =     720.23 FEET.

****************************************************************************
FLOW PROCESS FROM NODE   3372.00 TO NODE   3309.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
ELEVATION DATA: UPSTREAM(FEET) =   231.68  DOWNSTREAM(FEET) =   228.66
FLOW LENGTH(FEET) =  1664.41   MANNING'S N =  0.013
DEPTH OF FLOW IN  39.0 INCH PIPE IS  29.7 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   4.69
ESTIMATED PIPE DIAMETER(INCH) =  39.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =      31.78
PIPE TRAVEL TIME(MIN.) =   5.91    Tc(MIN.) =    9.16
LONGEST FLOWPATH FROM NODE   3300.00 TO NODE   3309.00 =    2384.64 FEET.

****************************************************************************
FLOW PROCESS FROM NODE   3311.00 TO NODE   3309.00 IS CODE =  81
----------------------------------------------------------------------------
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.885
RESIDENTIAL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .6000
SOIL CLASSIFICATION IS "C"
S.C.S. CURVE NUMBER (AMC II) =  86
AREA-AVERAGE RUNOFF COEFFICIENT = 0.4342
SUBAREA AREA(ACRES) =    0.13   SUBAREA RUNOFF(CFS) =    0.46
TOTAL AREA(ACRES) =        8.6   TOTAL RUNOFF(CFS) =      31.78
TC(MIN.) =    9.16
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
FLOW PROCESS FROM NODE   3314.00 TO NODE   3309.00 IS CODE =  81
----------------------------------------------------------------------------
```

```
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.885
  RESIDENTIAL (2. DU/AC OR LESS) RUNOFF COEFFICIENT = .4200
  SOIL CLASSIFICATION IS "C"
  S.C.S. CURVE NUMBER (AMC II) =  79
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.4331
  SUBAREA AREA(ACRES) =    0.66   SUBAREA RUNOFF(CFS) =    1.63
  TOTAL AREA(ACRES) =        9.3   TOTAL RUNOFF(CFS) =      31.78
  TC(MIN.) =    9.16
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

********************************************************************************
  FLOW PROCESS FROM NODE   3350.00 TO NODE   3309.00 IS CODE =  81
--------------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.885
  RESIDENTIAL (2.9 DU/AC OR LESS) RUNOFF COEFFICIENT = .4500
  SOIL CLASSIFICATION IS "C"
  S.C.S. CURVE NUMBER (AMC II) =  80
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.4335
  SUBAREA AREA(ACRES) =    0.22   SUBAREA RUNOFF(CFS) =    0.58
  TOTAL AREA(ACRES) =        9.5   TOTAL RUNOFF(CFS) =      31.78
  TC(MIN.) =    9.16
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

+------------------------------------------------------------------------------+
| COMPOSITE C FOR B & C SOILS                                                  |
| SUBAREA - 2.9 DU/A OR LESS, IMPERVIOUS AREA ~25%                             |
| (0.41*0.04)+(0.45*1.14)/1.18 = 0.45                                          |
+------------------------------------------------------------------------------+

********************************************************************************
  FLOW PROCESS FROM NODE   3309.00 TO NODE   3315.00 IS CODE =  31
--------------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   228.16  DOWNSTREAM(FEET) =   227.82
  FLOW LENGTH(FEET) =    67.72   MANNING'S N =  0.013
  DEPTH OF FLOW IN  33.0 INCH PIPE IS  23.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.93
  ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      31.78
  PIPE TRAVEL TIME(MIN.) =   0.16    Tc(MIN.) =    9.32
  LONGEST FLOWPATH FROM NODE   3300.00 TO NODE   3315.00 =    2452.36 FEET.

********************************************************************************
  FLOW PROCESS FROM NODE   3309.00 TO NODE   3315.00 IS CODE =   1
--------------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
================================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =    9.32
  RAINFALL INTENSITY(INCH/HR) =   5.82
  TOTAL STREAM AREA(ACRES) =     9.48
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     31.78

********************************************************************************
  FLOW PROCESS FROM NODE   3316.00 TO NODE   3317.00 IS CODE =  21
--------------------------------------------------------------------------------
```



```
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
================================================================================
  STREETS & ROADS (CURBS/STORM DRAINS) RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "C"
  S.C.S. CURVE NUMBER (AMC II) =  98
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    56.00
  UPSTREAM ELEVATION(FEET) =    246.25
  DOWNSTREAM ELEVATION(FEET) =    245.72
  ELEVATION DIFFERENCE(FEET) =      0.53
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.155
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.45
  TOTAL AREA(ACRES) =      0.06   TOTAL RUNOFF(CFS) =      0.45

+------------------------------------------------------------------------------+
| SUBAREA - 4.3 DU/A OR LESS                                                   |
| CALCULATED IMPERVIOUS ~30%                                                   |
|                                                                              |
+------------------------------------------------------------------------------+

********************************************************************************
  FLOW PROCESS FROM NODE   3317.00 TO NODE   3375.00 IS CODE =  62
--------------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  4 USED)<<<<<
================================================================================
  UPSTREAM ELEVATION(FEET) =  245.72  DOWNSTREAM ELEVATION(FEET) =  241.65
  STREET LENGTH(FEET) =   152.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 12.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   7.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.015
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0160
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       2.82
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.18
    HALFSTREET FLOOD WIDTH(FEET) =    9.51
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.12
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.56
  STREET FLOW TRAVEL TIME(MIN.) =   0.81   Tc(MIN.) =    3.97
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  RESIDENTIAL (7.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .5400
  SOIL CLASSIFICATION IS "C"
  S.C.S. CURVE NUMBER (AMC II) =  84
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.559
  SUBAREA AREA(ACRES) =    1.01      SUBAREA RUNOFF(CFS) =    4.74
  TOTAL AREA(ACRES) =        1.1        PEAK FLOW RATE(CFS) =       5.20

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.23   HALFSTREET FLOOD WIDTH(FEET) =  11.97
  FLOW VELOCITY(FEET/SEC.) =  3.62   DEPTH*VELOCITY(FT*FT/SEC.) =   0.83
  LONGEST FLOWPATH FROM NODE   3316.00 TO NODE   3375.00 =     208.00 FEET.

********************************************************************************
  FLOW PROCESS FROM NODE   3319.00 TO NODE   3374.00 IS CODE =  81
```

```
------------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  RESIDENTIAL (2. DU/AC OR LESS) RUNOFF COEFFICIENT = .4200
  SOIL CLASSIFICATION IS "C"
  S.C.S. CURVE NUMBER (AMC II) =  79
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.4859
  SUBAREA AREA(ACRES) =    1.18   SUBAREA RUNOFF(CFS) =    4.31
  TOTAL AREA(ACRES) =       2.2   TOTAL RUNOFF(CFS) =       9.50
  TC(MIN.) =    3.97

****************************************************************************
  FLOW PROCESS FROM NODE   3319.00 TO NODE   3374.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   236.70  DOWNSTREAM(FEET) =   231.61
  FLOW LENGTH(FEET) =   412.78   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  12.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.20
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       9.50
  PIPE TRAVEL TIME(MIN.) =   0.95    Tc(MIN.) =    4.92
  LONGEST FLOWPATH FROM NODE   3316.00 TO NODE   3374.00 =     620.78 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3335.00 TO NODE   3374.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .4800
  SOIL CLASSIFICATION IS "C"
  S.C.S. CURVE NUMBER (AMC II) =  81
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.4842
  SUBAREA AREA(ACRES) =    0.90   SUBAREA RUNOFF(CFS) =    3.76
  TOTAL AREA(ACRES) =       3.2   TOTAL RUNOFF(CFS) =      13.26
  TC(MIN.) =    4.92

****************************************************************************
  FLOW PROCESS FROM NODE   3374.00 TO NODE   3375.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   231.11  DOWNSTREAM(FEET) =   229.13
  FLOW LENGTH(FEET) =   197.89   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  15.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.22
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      13.26
  PIPE TRAVEL TIME(MIN.) =   0.46    Tc(MIN.) =    5.38
  LONGEST FLOWPATH FROM NODE   3316.00 TO NODE   3375.00 =     818.67 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3325.00 TO NODE   3375.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
```



```
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.295
  RESIDENTIAL (2. DU/AC OR LESS) RUNOFF COEFFICIENT = .4200
  SOIL CLASSIFICATION IS "C"
  S.C.S. CURVE NUMBER (AMC II) =  79
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.4721
  SUBAREA AREA(ACRES) =    0.73   SUBAREA RUNOFF(CFS) =    2.54
  TOTAL AREA(ACRES) =       3.9   TOTAL RUNOFF(CFS) =      15.19
  TC(MIN.) =    5.38

****************************************************************************
  FLOW PROCESS FROM NODE   3375.00 TO NODE   3315.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   228.63  DOWNSTREAM(FEET) =   228.32
  FLOW LENGTH(FEET) =    61.05   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  19.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.70
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      15.19
  PIPE TRAVEL TIME(MIN.) =   0.18    Tc(MIN.) =    5.56
  LONGEST FLOWPATH FROM NODE   3316.00 TO NODE   3315.00 =     879.72 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3375.00 TO NODE   3315.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    5.56
  RAINFALL INTENSITY(INCH/HR) =   8.12
  TOTAL STREAM AREA(ACRES) =     3.88
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     15.19

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       31.78     9.32        5.818          9.48
      2       15.19     5.56        8.122          3.88

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF       Tc      INTENSITY
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)
      1       37.96     5.56        8.122
      2       42.67     9.32        5.818

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      42.67   Tc(MIN.) =    9.32
  TOTAL AREA(ACRES) =       13.4
  LONGEST FLOWPATH FROM NODE   3300.00 TO NODE   3315.00 =    2452.36 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3315.00 TO NODE   3320.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
```

```
  ELEVATION DATA: UPSTREAM(FEET) =   227.32  DOWNSTREAM(FEET) =   225.67
  FLOW LENGTH(FEET) =   292.14   MANNING'S N =  0.013
  DEPTH OF FLOW IN  36.0 INCH PIPE IS  26.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.79
  ESTIMATED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      42.67
  PIPE TRAVEL TIME(MIN.) =   0.63    Tc(MIN.) =    9.95
  LONGEST FLOWPATH FROM NODE   3300.00 TO NODE   3320.00 =    2744.50 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3342.00 TO NODE   3321.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.580
  GENERAL COMMERCIAL RUNOFF COEFFICIENT = .8100
  SOIL CLASSIFICATION IS "C"
  S.C.S. CURVE NUMBER (AMC II) =  94
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.4607
  SUBAREA AREA(ACRES) =    0.61   SUBAREA RUNOFF(CFS) =    2.76
  TOTAL AREA(ACRES) =       14.0   TOTAL RUNOFF(CFS) =      42.67
  TC(MIN.) =    9.95
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE   3321.00 TO NODE   3320.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   225.34  DOWNSTREAM(FEET) =   225.23
  FLOW LENGTH(FEET) =    10.25   MANNING'S N =  0.013
  DEPTH OF FLOW IN  33.0 INCH PIPE IS  22.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   9.99
  ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      42.67
  PIPE TRAVEL TIME(MIN.) =   0.02    Tc(MIN.) =    9.96
  LONGEST FLOWPATH FROM NODE   3300.00 TO NODE   3320.00 =    2754.75 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3320.00 TO NODE   3322.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =    9.96
  RAINFALL INTENSITY(INCH/HR) =   5.57
  TOTAL STREAM AREA(ACRES) =    13.97
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     42.67

****************************************************************************
  FLOW PROCESS FROM NODE   3323.00 TO NODE   3324.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  RESIDENTIAL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .6000
  SOIL CLASSIFICATION IS "C"
  S.C.S. CURVE NUMBER (AMC II) =  86
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    60.00
  UPSTREAM ELEVATION(FEET) =    246.25
  DOWNSTREAM ELEVATION(FEET) =    245.69
  ELEVATION DIFFERENCE(FEET) =      0.56
```



```
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    7.134
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.914
  SUBAREA RUNOFF(CFS) =      0.17
  TOTAL AREA(ACRES) =      0.04   TOTAL RUNOFF(CFS) =      0.17

+--------------------------------------------------------------------------+
| SUBAREA - 14.5 DU/A OR LESS                                              |
| CALCULATED IMPERVIOUS ~50%                                               |
|                                                                          |
+--------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   3324.00 TO NODE   3322.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  4 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  245.69  DOWNSTREAM ELEVATION(FEET) =  230.81
  STREET LENGTH(FEET) =   756.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 12.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   7.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.015
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0160
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       2.24
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.17
    HALFSTREET FLOOD WIDTH(FEET) =    9.24
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.63
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.46
  STREET FLOW TRAVEL TIME(MIN.) =   4.79   Tc(MIN.) =   11.92
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.964
  *USER SPECIFIED(SUBAREA):
  NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .7800
  S.C.S. CURVE NUMBER (AMC II) =  86
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.774
  SUBAREA AREA(ACRES) =    1.07      SUBAREA RUNOFF(CFS) =    4.14
  TOTAL AREA(ACRES) =        1.1        PEAK FLOW RATE(CFS) =       4.26

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.23   HALFSTREET FLOOD WIDTH(FEET) =  11.75
  FLOW VELOCITY(FEET/SEC.) =  3.08   DEPTH*VELOCITY(FT*FT/SEC.) =   0.69
  LONGEST FLOWPATH FROM NODE   3323.00 TO NODE   3322.00 =     816.00 FEET.

+--------------------------------------------------------------------------+
| COMPOSITE C FOR B & C SOILS                                              |
| SUBAREA - NEIGHBORHOOD COMM.                                             |
| (0.77*0.34)+(0.78*0.73)/1.07 = 0.78                                      |
+--------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   3325.00 TO NODE   3322.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
```

```
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   11.92
  RAINFALL INTENSITY(INCH/HR) =   4.96
  TOTAL STREAM AREA(ACRES) =     1.11
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.26

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       42.67     9.96        5.573         13.97
      2        4.26    11.92        4.964          1.11

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF       Tc      INTENSITY
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)
      1       46.23     9.96        5.573
      2       42.26    11.92        4.964

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      46.23   Tc(MIN.) =    9.96
  TOTAL AREA(ACRES) =       15.1
  LONGEST FLOWPATH FROM NODE   3300.00 TO NODE   3322.00 =    2754.75 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3322.00 TO NODE   3326.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   224.90  DOWNSTREAM(FEET) =   224.54
  FLOW LENGTH(FEET) =    17.78   MANNING'S N =  0.013
  DEPTH OF FLOW IN  30.0 INCH PIPE IS  20.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  12.91
  ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      46.23
  PIPE TRAVEL TIME(MIN.) =   0.02    Tc(MIN.) =    9.99
  LONGEST FLOWPATH FROM NODE   3300.00 TO NODE   3326.00 =    2772.53 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3326.00 TO NODE   3327.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.565
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .2700
  S.C.S. CURVE NUMBER (AMC II) =  86
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.4740
  SUBAREA AREA(ACRES) =    0.72   SUBAREA RUNOFF(CFS) =    1.08
  TOTAL AREA(ACRES) =       15.8   TOTAL RUNOFF(CFS) =      46.23
  TC(MIN.) =    9.99
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

+----------------------------------------------------------------------------+
| COMPOSITE C FOR B & C SOILS                                                |
| SUBAREA - NATURAL                                                          |
| (0.25*0.39)+(0.30*0.330/0.72 = 0.27                                        |
+----------------------------------------------------------------------------+

****************************************************************************
```



```
  FLOW PROCESS FROM NODE   3327.00 TO NODE   3328.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   220.90  DOWNSTREAM(FEET) =   220.56
  FLOW LENGTH(FEET) =    30.92   MANNING'S N =  0.013
  DEPTH OF FLOW IN  33.0 INCH PIPE IS  23.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  10.23
  ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      46.23
  PIPE TRAVEL TIME(MIN.) =   0.05    Tc(MIN.) =   10.04
  LONGEST FLOWPATH FROM NODE   3300.00 TO NODE   3328.00 =    2803.45 FEET.
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =       15.8  TC(MIN.) =     10.04
  PEAK FLOW RATE(CFS)   =      46.23
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

```
****************************************************************************

          RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT
                       2003,1985,1981 HYDROLOGY MANUAL
        (c) Copyright 1982-2016 Advanced Engineering Software (aes)
            Ver. 23.0 Release Date: 07/01/2016  License ID 1509

                        Analysis prepared by:




 ************************** DESCRIPTION OF STUDY **************************
* OCEAN BREEZE RANCH - PA3                                                *
* SYSTEM 3350 - PROPOSED CONDITIONS                                       *
* NORTHEAST QUADRANT                                                      *
 ****************************************************************************

  FILE NAME: 3350P100.DAT
  TIME/DATE OF STUDY: 12:52 05/31/2024
----------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
----------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) = 100.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   3.300
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  ========  ================  ======  ===== ====== ===== =======
  1   18.0     12.0    0.020/0.020/0.015   0.50    1.50 0.0417 0.125 0.0165
  2   20.0     13.0    0.020/0.020/0.015   0.50    1.50 0.0417 0.125 0.0165
  3   16.0     11.0    0.020/0.020/0.015   0.50    1.50 0.0417 0.125 0.0165
  4   12.0      7.0    0.020/0.020/0.015   0.50    1.50 0.0100 0.010 0.0160
  5   17.0     12.0    0.020/0.020/0.015   0.33    1.50 0.0100 0.010 0.0160

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth = -0.10 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

****************************************************************************
  FLOW PROCESS FROM NODE   3356.00 TO NODE   3357.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  STREETS & ROADS (CURBS/STORM DRAINS) RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "C"
  S.C.S. CURVE NUMBER (AMC II) =  98
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    60.00
  UPSTREAM ELEVATION(FEET) =    252.78
```



```
  DOWNSTREAM ELEVATION(FEET) =    252.00
  ELEVATION DIFFERENCE(FEET) =      0.78
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.938
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.15
  TOTAL AREA(ACRES) =      0.02   TOTAL RUNOFF(CFS) =      0.15

****************************************************************************
  FLOW PROCESS FROM NODE   3357.00 TO NODE   3358.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  4 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  252.00  DOWNSTREAM ELEVATION(FEET) =  236.00
  STREET LENGTH(FEET) =   484.85   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 12.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   7.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.015
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0160
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       2.01
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.15
    HALFSTREET FLOOD WIDTH(FEET) =    8.04
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.11
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.47
  STREET FLOW TRAVEL TIME(MIN.) =   2.60   Tc(MIN.) =    5.53
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.144
  LIMITED INDUSTRIAL RUNOFF COEFFICIENT = .8400
  SOIL CLASSIFICATION IS "C"
  S.C.S. CURVE NUMBER (AMC II) =  96
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.841
  SUBAREA AREA(ACRES) =    0.54      SUBAREA RUNOFF(CFS) =    3.69
  TOTAL AREA(ACRES) =        0.6        PEAK FLOW RATE(CFS) =       3.84

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.20   HALFSTREET FLOOD WIDTH(FEET) =  10.28
  FLOW VELOCITY(FEET/SEC.) =  3.63   DEPTH*VELOCITY(FT*FT/SEC.) =   0.71
  LONGEST FLOWPATH FROM NODE   3356.00 TO NODE   3358.00 =     544.85 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3360.00 TO NODE   3358.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.144
  RESIDENTIAL (24. DU/AC OR LESS) RUNOFF COEFFICIENT = .6900
  SOIL CLASSIFICATION IS "C"
  S.C.S. CURVE NUMBER (AMC II) =  90
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.7588
  SUBAREA AREA(ACRES) =    0.67   SUBAREA RUNOFF(CFS) =    3.76
  TOTAL AREA(ACRES) =        1.2   TOTAL RUNOFF(CFS) =       7.60
  TC(MIN.) =    5.53

****************************************************************************
  FLOW PROCESS FROM NODE   3358.00 TO NODE   3361.00 IS CODE =  31
```

```
--------------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   230.98  DOWNSTREAM(FEET) =   230.22
  FLOW LENGTH(FEET) =    42.96   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   9.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.92
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       7.60
  PIPE TRAVEL TIME(MIN.) =   0.09    Tc(MIN.) =    5.62
  LONGEST FLOWPATH FROM NODE   3356.00 TO NODE   3361.00 =     587.81 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3361.00 TO NODE   3362.00 IS CODE =  81
--------------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.059
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3000
  SOIL CLASSIFICATION IS "C"
  S.C.S. CURVE NUMBER (AMC II) =  85
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.6892
  SUBAREA AREA(ACRES) =    0.22   SUBAREA RUNOFF(CFS) =    0.53
  TOTAL AREA(ACRES) =        1.5   TOTAL RUNOFF(CFS) =       8.05
  TC(MIN.) =    5.62

****************************************************************************
  FLOW PROCESS FROM NODE   3362.00 TO NODE   3363.00 IS CODE =  31
--------------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   227.20  DOWNSTREAM(FEET) =   226.80
  FLOW LENGTH(FEET) =    45.71   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  12.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.07
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       8.05
  PIPE TRAVEL TIME(MIN.) =   0.13    Tc(MIN.) =    5.75
  LONGEST FLOWPATH FROM NODE   3356.00 TO NODE   3363.00 =     633.52 FEET.
================================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =        1.5  TC(MIN.) =      5.75
  PEAK FLOW RATE(CFS)   =       8.05
================================================================================
================================================================================
  END OF RATIONAL METHOD ANALYSIS
```

```
****************************************************************************

          RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT
                       2003,1985,1981 HYDROLOGY MANUAL
        (c) Copyright 1982-2016 Advanced Engineering Software (aes)
            Ver. 23.0 Release Date: 07/01/2016  License ID 1509

                        Analysis prepared by:




 ************************** DESCRIPTION OF STUDY **************************
* OCEAN BREEZE RANCH - PA3                                                *
* SYSTEM 3400 - PROPOSED CONDITIONS                                       *
* NORTHEAST QUADRANT                                                      *
 ****************************************************************************

  FILE NAME: 3400P100.DAT
  TIME/DATE OF STUDY: 12:52 05/31/2024
----------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
----------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) = 100.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   3.300
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  ================  ======  =====  ====== =====  =======
  1   18.0     12.0    0.020/0.020/0.015   0.50    1.50 0.0417 0.125 0.0165
  2   20.0     13.0    0.020/0.020/0.015   0.50    1.50 0.0417 0.125 0.0165
  3   16.0     11.0    0.020/0.020/0.015   0.50    1.50 0.0417 0.125 0.0165
  4   12.0      7.0    0.020/0.020/0.015   0.50    1.50 0.0100 0.010 0.0160
  5   17.0     12.0    0.020/0.020/0.015   0.33    1.50 0.0100 0.010 0.0160

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth = -0.10 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

****************************************************************************
  FLOW PROCESS FROM NODE   3400.00 TO NODE   3401.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  88
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    466.00
```



```
  DOWNSTREAM ELEVATION(FEET) =    456.00
  ELEVATION DIFFERENCE(FEET) =     10.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.267
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.516
  SUBAREA RUNOFF(CFS) =      0.45
  TOTAL AREA(ACRES) =      0.17   TOTAL RUNOFF(CFS) =      0.45

****************************************************************************
  FLOW PROCESS FROM NODE   3401.00 TO NODE   3402.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    456.00  DOWNSTREAM(FEET) =    234.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   969.00   CHANNEL SLOPE =  0.2291
  CHANNEL BASE(FEET) =    3.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.305
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3360
  S.C.S. CURVE NUMBER (AMC II) =  88
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      16.09
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.23
  AVERAGE FLOW DEPTH(FEET) =   0.49   TRAVEL TIME(MIN.) =   1.96
  Tc(MIN.) =    8.23
  SUBAREA AREA(ACRES) =    14.62       SUBAREA RUNOFF(CFS) =   30.97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.336
  TOTAL AREA(ACRES) =       14.8         PEAK FLOW RATE(CFS) =      31.35

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.71   FLOW VELOCITY(FEET/SEC.) =  10.05
  LONGEST FLOWPATH FROM NODE   3400.00 TO NODE   3402.00 =    1069.00 FEET.

+--------------------------------------------------------------------------+
| COMPOSITE C FOR C & D SOILS                                              |
| SUBAREA - NATURAL                                                        |
| (0.3*4.08+0.35*10.54)/14.62=0.336                                        |
+--------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   3402.00 TO NODE   3406.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   229.53  DOWNSTREAM(FEET) =   229.30
  FLOW LENGTH(FEET) =    24.60   MANNING'S N =  0.013
  DEPTH OF FLOW IN  30.0 INCH PIPE IS  20.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.77
  ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      31.35
  PIPE TRAVEL TIME(MIN.) =   0.05    Tc(MIN.) =    8.28
  LONGEST FLOWPATH FROM NODE   3400.00 TO NODE   3406.00 =    1093.60 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3405.00 TO NODE   3406.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.282
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3000
```

```
  S.C.S. CURVE NUMBER (AMC II) =  88
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3338
  SUBAREA AREA(ACRES) =     1.01   SUBAREA RUNOFF(CFS) =     1.90
  TOTAL AREA(ACRES) =       15.8   TOTAL RUNOFF(CFS) =      33.13
  TC(MIN.) =    8.28

****************************************************************************
  FLOW PROCESS FROM NODE   3406.00 TO NODE   3403.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   229.30  DOWNSTREAM(FEET) =   229.10
  FLOW LENGTH(FEET) =    28.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  30.0 INCH PIPE IS  24.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.84
  ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      33.13
  PIPE TRAVEL TIME(MIN.) =   0.06    Tc(MIN.) =    8.34
  LONGEST FLOWPATH FROM NODE   3400.00 TO NODE   3403.00 =    1121.60 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3403.00 TO NODE   3404.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.253
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .2560
  S.C.S. CURVE NUMBER (AMC II) =  88
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3230
  SUBAREA AREA(ACRES) =     2.56   SUBAREA RUNOFF(CFS) =     4.10
  TOTAL AREA(ACRES) =       18.4   TOTAL RUNOFF(CFS) =      37.08
  TC(MIN.) =    8.34

+--------------------------------------------------------------------------+
| COMPOSITE C FOR A & C SOILS                                              |
| SUBAREA - NATURAL                                                        |
| (0.2*1.13+0.3*1.43)/2.56=0.256                                           |
+--------------------------------------------------------------------------+
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =       18.4  TC(MIN.) =      8.34
  PEAK FLOW RATE(CFS)   =      37.08
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

```
****************************************************************************

          RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT
                       2003,1985,1981 HYDROLOGY MANUAL
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            Ver. 23.0 Release Date: 07/01/2016  License ID 1509

                        Analysis prepared by:




 ************************** DESCRIPTION OF STUDY **************************
* OCEAN BREEZE RANCH - PA3                                                *
* SYSTEM 3450 - PROPOSED CONDITIONS                                       *
* NORTHEAST QUADRANT                                                      *
 ****************************************************************************

  FILE NAME: 3450P100.DAT
  TIME/DATE OF STUDY: 12:53 05/31/2024
----------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
----------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) = 100.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   3.300
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  ================  ======  =====  ====== =====  =======
  1   18.0     12.0    0.020/0.020/0.015   0.50    1.50 0.0417 0.125 0.0165
  2   20.0     13.0    0.020/0.020/0.015   0.50    1.50 0.0417 0.125 0.0165
  3   16.0     11.0    0.020/0.020/0.015   0.50    1.50 0.0417 0.125 0.0165
  4   12.0      7.0    0.020/0.020/0.015   0.50    1.50 0.0100 0.010 0.0160
  5   17.0     12.0    0.020/0.020/0.015   0.33    1.50 0.0100 0.010 0.0160

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth = -0.10 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

****************************************************************************
  FLOW PROCESS FROM NODE   3450.00 TO NODE   3451.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3000
  SOIL CLASSIFICATION IS "C"
  S.C.S. CURVE NUMBER (AMC II) =  85
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    520.00
```



```
  DOWNSTREAM ELEVATION(FEET) =    508.00
  ELEVATION DIFFERENCE(FEET) =     12.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.684
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.210
  SUBAREA RUNOFF(CFS) =      0.52
  TOTAL AREA(ACRES) =      0.24   TOTAL RUNOFF(CFS) =      0.52

****************************************************************************
  FLOW PROCESS FROM NODE   3451.00 TO NODE   3452.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    508.00  DOWNSTREAM(FEET) =    326.40
  CHANNEL LENGTH THRU SUBAREA(FEET) =   607.00   CHANNEL SLOPE =  0.2992
  CHANNEL BASE(FEET) =    6.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   5.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.295
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3000
  S.C.S. CURVE NUMBER (AMC II) =  85
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       6.59
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.47
  AVERAGE FLOW DEPTH(FEET) =   0.16   TRAVEL TIME(MIN.) =   1.56
  Tc(MIN.) =    8.25
  SUBAREA AREA(ACRES) =     6.40       SUBAREA RUNOFF(CFS) =   12.09
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.300
  TOTAL AREA(ACRES) =        6.6          PEAK FLOW RATE(CFS) =      12.54

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.23   FLOW VELOCITY(FEET/SEC.) =   8.08
  LONGEST FLOWPATH FROM NODE   3450.00 TO NODE   3452.00 =     707.00 FEET.

+--------------------------------------------------------------------------+
| COMPOSITE C FOR C & D SOILS                                              |
| LAND USE - NATURAL                                                       |
| (0.30*6.12)+(0.35*0.27)/6.40 = 0.30                                      |
+--------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   3453.00 TO NODE   3452.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.295
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3000
  S.C.S. CURVE NUMBER (AMC II) =  85
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3000
  SUBAREA AREA(ACRES) =    1.04   SUBAREA RUNOFF(CFS) =    1.96
  TOTAL AREA(ACRES) =       7.7   TOTAL RUNOFF(CFS) =      14.50
  TC(MIN.) =    8.25

+--------------------------------------------------------------------------+
| COMPOSITE C FOR C & D SOILS                                              |
| LAND USE - NATURAL                                                       |
| (0.30*0.91+0.35*0.07)/0.98 = 0.30                                        |
+--------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   3452.00 TO NODE   3454.00 IS CODE =  31
----------------------------------------------------------------------------
```

```
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   318.59  DOWNSTREAM(FEET) =   307.30
  FLOW LENGTH(FEET) =   104.15   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   8.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  18.35
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      14.50
  PIPE TRAVEL TIME(MIN.) =   0.09    Tc(MIN.) =    8.34
  LONGEST FLOWPATH FROM NODE   3450.00 TO NODE   3454.00 =     811.15 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3454.00 TO NODE   3455.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    308.00  DOWNSTREAM(FEET) =    208.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   934.00   CHANNEL SLOPE =  0.1071
  CHANNEL BASE(FEET) =    5.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   5.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.367
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3000
  SOIL CLASSIFICATION IS "C"
  S.C.S. CURVE NUMBER (AMC II) =  85
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      19.77
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.01
  AVERAGE FLOW DEPTH(FEET) =   0.45   TRAVEL TIME(MIN.) =   2.22
  Tc(MIN.) =   10.56
  SUBAREA AREA(ACRES) =     6.53       SUBAREA RUNOFF(CFS) =   10.51
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.300
  TOTAL AREA(ACRES) =       14.2         PEAK FLOW RATE(CFS) =      22.88

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.48   FLOW VELOCITY(FEET/SEC.) =   7.34
  LONGEST FLOWPATH FROM NODE   3450.00 TO NODE   3455.00 =    1745.15 FEET.
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =       14.2  TC(MIN.) =     10.56
  PEAK FLOW RATE(CFS)   =      22.88
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

```
************************************************************************

          RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT
                       2003,1985,1981 HYDROLOGY MANUAL
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           Ver. 23.0 Release Date: 07/01/2016  License ID 1509

                        Analysis prepared by:




 ************************** DESCRIPTION OF STUDY **************************
* OCEAN BREEZE RANCH - PA3                                                *
* SYSTEM 3500 - PROPOSED CONDITIONS                                       *
* NORTHEAST QUADRANT                                                      *
 ************************************************************************

  FILE NAME: 3500M100.DAT
  TIME/DATE OF STUDY: 12:54 05/31/2024
------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) = 100.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   3.300
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  ================  ======  =====  ====  =====  =======
  1   18.0     12.0    0.020/0.020/0.015   0.50    1.50 0.0417 0.125 0.0165
  2   20.0     13.0    0.020/0.020/0.015   0.50    1.50 0.0417 0.125 0.0165
  3   16.0     11.0    0.020/0.020/0.015   0.50    1.50 0.0417 0.125 0.0165
  4   12.0      7.0    0.020/0.020/0.015   0.50    1.50 0.0100 0.010 0.0160
  5   17.0     12.0    0.020/0.020/0.015   0.33    1.50 0.0100 0.010 0.0160

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth = -0.10 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

************************************************************************
  FLOW PROCESS FROM NODE   3500.00 TO NODE   3501.00 IS CODE =  21
------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
========================================================================
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3000
  SOIL CLASSIFICATION IS "C"
  S.C.S. CURVE NUMBER (AMC II) =  85
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    600.00
```



```
  DOWNSTREAM ELEVATION(FEET) =    578.00
  ELEVATION DIFFERENCE(FEET) =     22.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.684
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.210
  SUBAREA RUNOFF(CFS) =      0.35
  TOTAL AREA(ACRES) =      0.16   TOTAL RUNOFF(CFS) =      0.35

************************************************************************
  FLOW PROCESS FROM NODE   3501.00 TO NODE   3502.00 IS CODE =  51
------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    578.00  DOWNSTREAM(FEET) =    243.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1951.00   CHANNEL SLOPE =  0.1717
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   6.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   5.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.953
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3000
  S.C.S. CURVE NUMBER (AMC II) =  85
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      26.59
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.16
  AVERAGE FLOW DEPTH(FEET) =   0.36   TRAVEL TIME(MIN.) =   5.28
  Tc(MIN.) =   11.96
  SUBAREA AREA(ACRES) =    34.27       SUBAREA RUNOFF(CFS) =   50.92
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.300
  TOTAL AREA(ACRES) =       34.4          PEAK FLOW RATE(CFS) =      51.16

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.51   FLOW VELOCITY(FEET/SEC.) =   7.61
  LONGEST FLOWPATH FROM NODE   3500.00 TO NODE   3502.00 =    2051.00 FEET.

+----------------------------------------------------------------------+
| COMPOSITE C FOR B & C SOILS                                          |
| LAND USE - NATURAL                                                   |
| (3.3*.25+30.75*.30)/34.05 = 0.30                                     |
+----------------------------------------------------------------------+

************************************************************************
  FLOW PROCESS FROM NODE   3502.00 TO NODE   3503.00 IS CODE =  31
------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   242.23  DOWNSTREAM(FEET) =   233.29
  FLOW LENGTH(FEET) =   168.36   MANNING'S N =  0.013
  DEPTH OF FLOW IN  27.0 INCH PIPE IS  17.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  19.12
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      51.16
  PIPE TRAVEL TIME(MIN.) =   0.15    Tc(MIN.) =   12.11
  LONGEST FLOWPATH FROM NODE   3500.00 TO NODE   3503.00 =    2219.36 FEET.

************************************************************************
  FLOW PROCESS FROM NODE   3502.00 TO NODE   3503.00 IS CODE =   1
------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
========================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   12.11
```

```
  RAINFALL INTENSITY(INCH/HR) =   4.91
  TOTAL STREAM AREA(ACRES) =    34.43
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     51.16

****************************************************************************
  FLOW PROCESS FROM NODE   3012.00 TO NODE   3503.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<
============================================================================
  USER-SPECIFIED VALUES ARE AS FOLLOWS:
  TC(MIN) =  13.70   RAIN INTENSITY(INCH/HOUR) =  4.54
  TOTAL AREA(ACRES) =     3.00   TOTAL RUNOFF(CFS) =      3.00

****************************************************************************
  FLOW PROCESS FROM NODE   3012.00 TO NODE   3503.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   13.70
  RAINFALL INTENSITY(INCH/HR) =   4.54
  TOTAL STREAM AREA(ACRES) =     3.00
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.00

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       51.16    12.11        4.914         34.43
      2        3.00    13.70        4.538          3.00

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF       Tc      INTENSITY
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)
      1       53.81    12.11        4.914
      2       50.25    13.70        4.538

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      53.81   Tc(MIN.) =   12.11
  TOTAL AREA(ACRES) =       37.4
  LONGEST FLOWPATH FROM NODE   3500.00 TO NODE   3503.00 =    2219.36 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3503.00 TO NODE   3013.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    234.00  DOWNSTREAM(FEET) =    208.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   598.00   CHANNEL SLOPE =  0.0435
  CHANNEL BASE(FEET) =    8.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   5.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.559
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3000
  SOIL CLASSIFICATION IS "C"
  S.C.S. CURVE NUMBER (AMC II) =  85
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      57.20
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.66
  AVERAGE FLOW DEPTH(FEET) =   0.82   TRAVEL TIME(MIN.) =   1.50
```



```
  Tc(MIN.) =   13.61
  SUBAREA AREA(ACRES) =     4.95       SUBAREA RUNOFF(CFS) =     6.77
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.294
  TOTAL AREA(ACRES) =       42.4         PEAK FLOW RATE(CFS) =      56.87

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.82   FLOW VELOCITY(FEET/SEC.) =   6.64
  LONGEST FLOWPATH FROM NODE   3500.00 TO NODE   3013.00 =    2817.36 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3503.00 TO NODE   3013.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE   3455.00 TO NODE   3013.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<
============================================================================
  USER-SPECIFIED VALUES ARE AS FOLLOWS:
  TC(MIN) =  10.60   RAIN INTENSITY(INCH/HOUR) =  5.36
  TOTAL AREA(ACRES) =    14.10   TOTAL RUNOFF(CFS) =     22.90

****************************************************************************
  FLOW PROCESS FROM NODE   3455.00 TO NODE   3013.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY     AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)   (ACRE)
      1       22.90    10.60        5.355       14.10
  LONGEST FLOWPATH FROM NODE   3500.00 TO NODE   3013.00 =    2817.36 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY     AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)   (ACRE)
      1       56.87    13.61        4.559       42.38
  LONGEST FLOWPATH FROM NODE   3500.00 TO NODE   3013.00 =    2817.36 FEET.

  ** PEAK FLOW RATE TABLE **
  STREAM    RUNOFF       Tc      INTENSITY
  NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
      1      67.20      10.60        5.355
      2      76.36      13.61        4.559

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      76.36   Tc(MIN.) =   13.61
  TOTAL AREA(ACRES) =       56.5

****************************************************************************
  FLOW PROCESS FROM NODE   3563.00 TO NODE   3013.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.559
   *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3020
  S.C.S. CURVE NUMBER (AMC II) =  85
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.2970
  SUBAREA AREA(ACRES) =    4.27   SUBAREA RUNOFF(CFS) =    5.88
```

```
  TOTAL AREA(ACRES) =       60.8   TOTAL RUNOFF(CFS) =      82.24
  TC(MIN.) =   13.61

+-------------------------------------------------------------------------+
|                                                                         |
|                                                                         |
+-------------------------------------------------------------------------+

**************************************************************************
  FLOW PROCESS FROM NODE   3013.00 TO NODE   3556.00 IS CODE =  51
--------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
==========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    208.00  DOWNSTREAM(FEET) =    202.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1023.00   CHANNEL SLOPE =  0.0059
  CHANNEL BASE(FEET) =    8.00   "Z" FACTOR =   8.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   5.00
  CHANNEL FLOW THRU SUBAREA(CFS) =      82.24
  FLOW VELOCITY(FEET/SEC.) =   3.00   FLOW DEPTH(FEET) =   1.42
  TRAVEL TIME(MIN.) =   5.68   Tc(MIN.) =   19.28
  LONGEST FLOWPATH FROM NODE   3500.00 TO NODE   3556.00 =    3840.36 FEET.

**************************************************************************
  FLOW PROCESS FROM NODE   3013.00 TO NODE   3556.00 IS CODE =   1
--------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
==========================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   19.28
  RAINFALL INTENSITY(INCH/HR) =   3.64
  TOTAL STREAM AREA(ACRES) =    60.75
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     82.24

**************************************************************************
  FLOW PROCESS FROM NODE   3558.00 TO NODE   3559.00 IS CODE =  21
--------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==========================================================================
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3000
  SOIL CLASSIFICATION IS "C"
  S.C.S. CURVE NUMBER (AMC II) =  85
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    385.50
  DOWNSTREAM ELEVATION(FEET) =    352.00
  ELEVATION DIFFERENCE(FEET) =     33.50
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.684
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.210
  SUBAREA RUNOFF(CFS) =      0.74
  TOTAL AREA(ACRES) =      0.34   TOTAL RUNOFF(CFS) =      0.74

**************************************************************************
  FLOW PROCESS FROM NODE   3559.00 TO NODE   3556.00 IS CODE =  51
--------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
==========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    352.00  DOWNSTREAM(FEET) =    202.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1301.00   CHANNEL SLOPE =  0.1153
  CHANNEL BASE(FEET) =    8.00   "Z" FACTOR =   3.000
```



```
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   2.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.469
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .2500
  S.C.S. CURVE NUMBER (AMC II) =  85
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      16.33
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.07
  AVERAGE FLOW DEPTH(FEET) =   0.30   TRAVEL TIME(MIN.) =   3.57
  Tc(MIN.) =   10.26
  SUBAREA AREA(ACRES) =    22.12       SUBAREA RUNOFF(CFS) =   30.24
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.251
  TOTAL AREA(ACRES) =       22.5          PEAK FLOW RATE(CFS) =      30.80

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.44   FLOW VELOCITY(FEET/SEC.) =   7.56
  LONGEST FLOWPATH FROM NODE   3558.00 TO NODE   3556.00 =    1401.00 FEET.

+-------------------------------------------------------------------------+
| LAND USE - NATURAL                                                      |
| COMPOSITE C FOR A, C, & D SOILS                                         |
| (0.20*7.18)+(0.30*14.12)+(0.35*0.82)/22.12=0.27                         |
+-------------------------------------------------------------------------+

**************************************************************************
  FLOW PROCESS FROM NODE   3564.00 TO NODE   3556.00 IS CODE =  81
--------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.469
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3000
  S.C.S. CURVE NUMBER (AMC II) =  85
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.2644
  SUBAREA AREA(ACRES) =    8.62   SUBAREA RUNOFF(CFS) =   14.14
  TOTAL AREA(ACRES) =       31.1   TOTAL RUNOFF(CFS) =      44.95
  TC(MIN.) =   10.26

+-------------------------------------------------------------------------+
| LAND USE - NATURAL                                                      |
| COMPOSITIE FOR C & D SOILS                                              |
| (0.30*8.33)+(0.35*0.29)/8.62 = 0.3                                      |
+-------------------------------------------------------------------------+

**************************************************************************
  FLOW PROCESS FROM NODE   3565.00 TO NODE   3556.00 IS CODE =  81
--------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.469
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .2800
  S.C.S. CURVE NUMBER (AMC II) =  85
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.2688
  SUBAREA AREA(ACRES) =   12.33   SUBAREA RUNOFF(CFS) =   18.88
  TOTAL AREA(ACRES) =       43.4   TOTAL RUNOFF(CFS) =      63.83
  TC(MIN.) =   10.26

+-------------------------------------------------------------------------+
| LAND USE NATURAL                                                        |
| COMPOSITE SOIL TYPE A & C & D                                           |
| (0.20*5.56)+(0.30*0.71)+(0.35*6.07)/12.33=0.28                          |
+-------------------------------------------------------------------------+
```

```
****************************************************************************
  FLOW PROCESS FROM NODE   3566.00 TO NODE   3556.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.469
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .2100
  S.C.S. CURVE NUMBER (AMC II) =  85
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.2542
  SUBAREA AREA(ACRES) =   14.32   SUBAREA RUNOFF(CFS) =   16.45
  TOTAL AREA(ACRES) =       57.7   TOTAL RUNOFF(CFS) =      80.27
  TC(MIN.) =   10.26

+--------------------------------------------------------------------------+
| LAND USE - NATURAL                                                       |
| COMPOSITE SOIL TYPE A & D                                                |
| (0.20*13.77)+(0.35*0.55)/14.32=0.21                                      |
+--------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   3559.00 TO NODE   3556.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   10.26
  RAINFALL INTENSITY(INCH/HR) =   5.47
  TOTAL STREAM AREA(ACRES) =    57.73
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     80.27

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       82.24    19.28        3.641         60.75
      2       80.27    10.26        5.469         57.73

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)
      1      124.03    10.26       5.469
      2      135.68    19.28       3.641

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     135.68   Tc(MIN.) =   19.28
  TOTAL AREA(ACRES) =      118.5
  LONGEST FLOWPATH FROM NODE   3500.00 TO NODE   3556.00 =    3840.36 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3556.00 TO NODE   3557.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    202.00  DOWNSTREAM(FEET) =    200.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   548.00   CHANNEL SLOPE =  0.0036
  CHANNEL BASE(FEET) =    8.00   "Z" FACTOR =   8.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   5.00
```



```
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.302
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .3200
  S.C.S. CURVE NUMBER (AMC II) =  85
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     141.56
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   2.90
  AVERAGE FLOW DEPTH(FEET) =   2.02   TRAVEL TIME(MIN.) =   3.15
  Tc(MIN.) =   22.43
  SUBAREA AREA(ACRES) =    11.13       SUBAREA RUNOFF(CFS) =   11.76
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.280
  TOTAL AREA(ACRES) =      129.6         PEAK FLOW RATE(CFS) =     135.68

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.98   FLOW VELOCITY(FEET/SEC.) =   2.87
  LONGEST FLOWPATH FROM NODE   3500.00 TO NODE   3557.00 =    4388.36 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3567.00 TO NODE   3557.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.302
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .2500
  S.C.S. CURVE NUMBER (AMC II) =  85
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.2763
  SUBAREA AREA(ACRES) =   17.82   SUBAREA RUNOFF(CFS) =   14.71
  TOTAL AREA(ACRES) =      147.4   TOTAL RUNOFF(CFS) =     135.68
  TC(MIN.) =   22.43
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

+--------------------------------------------------------------------------+
| LAND USE - NATURAL                                                       |
| COMPOSITE SOIL TYPE A & D                                                |
| (0.20*12.33)+(0.35*0.59)/17.82=0.25                                      |
+--------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   3557.00 TO NODE   3016.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    200.00  DOWNSTREAM(FEET) =    195.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1580.00   CHANNEL SLOPE =  0.0032
  CHANNEL BASE(FEET) =   20.00   "Z" FACTOR =  12.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   5.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.562
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .2100
  S.C.S. CURVE NUMBER (AMC II) =  85
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     142.76
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   2.44
  AVERAGE FLOW DEPTH(FEET) =   1.53   TRAVEL TIME(MIN.) =  10.81
  Tc(MIN.) =   33.24
  SUBAREA AREA(ACRES) =    26.29       SUBAREA RUNOFF(CFS) =   14.15
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.266
  TOTAL AREA(ACRES) =      173.7         PEAK FLOW RATE(CFS) =     135.68

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.49   FLOW VELOCITY(FEET/SEC.) =   2.40
  LONGEST FLOWPATH FROM NODE   3500.00 TO NODE   3016.00 =    5968.36 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE   3557.00 TO NODE   3016.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   33.24
  RAINFALL INTENSITY(INCH/HR) =   2.56
  TOTAL STREAM AREA(ACRES) =   173.72
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    135.68

****************************************************************************
  FLOW PROCESS FROM NODE   3560.00 TO NODE   3561.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3000
  SOIL CLASSIFICATION IS "C"
  S.C.S. CURVE NUMBER (AMC II) =  85
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =   3550.00
  DOWNSTREAM ELEVATION(FEET) =    278.00
  ELEVATION DIFFERENCE(FEET) =   3272.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.684
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.210
  SUBAREA RUNOFF(CFS) =      0.56
  TOTAL AREA(ACRES) =      0.26   TOTAL RUNOFF(CFS) =      0.56

****************************************************************************
  FLOW PROCESS FROM NODE   3561.00 TO NODE   3562.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    278.00  DOWNSTREAM(FEET) =    204.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   356.00   CHANNEL SLOPE =  0.2079
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   2.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.589
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =  85
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      10.76
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.93
  AVERAGE FLOW DEPTH(FEET) =   0.17   TRAVEL TIME(MIN.) =   1.00
  Tc(MIN.) =    7.69
  SUBAREA AREA(ACRES) =     8.88       SUBAREA RUNOFF(CFS) =   20.48
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.349
  TOTAL AREA(ACRES) =        9.1         PEAK FLOW RATE(CFS) =      20.99

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.26   FLOW VELOCITY(FEET/SEC.) =   7.42
  LONGEST FLOWPATH FROM NODE   3560.00 TO NODE   3562.00 =     456.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3562.00 TO NODE   3016.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    204.00  DOWNSTREAM(FEET) =    195.00
```



```
  CHANNEL LENGTH THRU SUBAREA(FEET) =   275.00   CHANNEL SLOPE =  0.0327
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =      20.99
  FLOW VELOCITY(FEET/SEC.) =   4.14   FLOW DEPTH(FEET) =   0.45
  TRAVEL TIME(MIN.) =   1.11   Tc(MIN.) =    8.79
  LONGEST FLOWPATH FROM NODE   3560.00 TO NODE   3016.00 =     731.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3562.00 TO NODE   3016.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    8.79
  RAINFALL INTENSITY(INCH/HR) =   6.04
  TOTAL STREAM AREA(ACRES) =     9.14
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     20.99

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1      135.68    33.24        2.562        173.72
      2       20.99     8.79        6.041          9.14

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       78.54     8.79       6.041
      2      144.58    33.24       2.562

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     144.58   Tc(MIN.) =   33.24
  TOTAL AREA(ACRES) =      182.9
  LONGEST FLOWPATH FROM NODE   3500.00 TO NODE   3016.00 =    5968.36 FEET.
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =      182.9  TC(MIN.) =     33.24
  PEAK FLOW RATE(CFS)   =     144.58
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

```
****************************************************************************

          RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT
                       2003,1985,1981 HYDROLOGY MANUAL
        (c) Copyright 1982-2016 Advanced Engineering Software (aes)
            Ver. 23.0 Release Date: 07/01/2016  License ID 1509

                        Analysis prepared by:




 ************************** DESCRIPTION OF STUDY **************************
* OCEAN BREEZE RANCH - PA3                                                *
* SYSTEM 3500 - PROPOSED CONDITIONS                                       *
* NORTHEAST QUADRANT                                                      *
 ****************************************************************************

  FILE NAME: 3500P100.DAT
  TIME/DATE OF STUDY: 12:54 05/31/2024
----------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
----------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) = 100.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   3.300
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  ================  ======  =====  ====== =====  =======
  1   18.0     12.0    0.020/0.020/0.015   0.50    1.50 0.0417 0.125 0.0165
  2   20.0     13.0    0.020/0.020/0.015   0.50    1.50 0.0417 0.125 0.0165
  3   16.0     11.0    0.020/0.020/0.015   0.50    1.50 0.0417 0.125 0.0165
  4   12.0      7.0    0.020/0.020/0.015   0.50    1.50 0.0100 0.010 0.0160
  5   17.0     12.0    0.020/0.020/0.015   0.33    1.50 0.0100 0.010 0.0160

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth = -0.10 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

****************************************************************************
  FLOW PROCESS FROM NODE   3500.00 TO NODE   3501.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3000
  SOIL CLASSIFICATION IS "C"
  S.C.S. CURVE NUMBER (AMC II) =  85
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    600.00
```



```
  DOWNSTREAM ELEVATION(FEET) =    578.00
  ELEVATION DIFFERENCE(FEET) =     22.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.684
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.210
  SUBAREA RUNOFF(CFS) =      0.35
  TOTAL AREA(ACRES) =      0.16   TOTAL RUNOFF(CFS) =      0.35

****************************************************************************
  FLOW PROCESS FROM NODE   3501.00 TO NODE   3502.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    578.00  DOWNSTREAM(FEET) =    243.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1951.00   CHANNEL SLOPE =  0.1717
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   6.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   5.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.953
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3000
  S.C.S. CURVE NUMBER (AMC II) =  85
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      26.59
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.16
  AVERAGE FLOW DEPTH(FEET) =   0.36   TRAVEL TIME(MIN.) =   5.28
  Tc(MIN.) =   11.96
  SUBAREA AREA(ACRES) =    34.27       SUBAREA RUNOFF(CFS) =   50.92
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.300
  TOTAL AREA(ACRES) =       34.4          PEAK FLOW RATE(CFS) =      51.16

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.51   FLOW VELOCITY(FEET/SEC.) =   7.61
  LONGEST FLOWPATH FROM NODE   3500.00 TO NODE   3502.00 =    2051.00 FEET.

+--------------------------------------------------------------------------+
| COMPOSITE C FOR B & C SOILS                                              |
| LAND USE - NATURAL                                                       |
| (3.3*.25+30.75*.30)/34.05 = 0.30                                         |
+--------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   3502.00 TO NODE   3503.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   242.23  DOWNSTREAM(FEET) =   233.29
  FLOW LENGTH(FEET) =   168.36   MANNING'S N =  0.013
  DEPTH OF FLOW IN  27.0 INCH PIPE IS  17.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  19.12
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      51.16
  PIPE TRAVEL TIME(MIN.) =   0.15    Tc(MIN.) =   12.11
  LONGEST FLOWPATH FROM NODE   3500.00 TO NODE   3503.00 =    2219.36 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3502.00 TO NODE   3503.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   12.11
```

```
  RAINFALL INTENSITY(INCH/HR) =   4.91
  TOTAL STREAM AREA(ACRES) =    34.43
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     51.16

****************************************************************************
  FLOW PROCESS FROM NODE   3012.00 TO NODE   3503.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<
============================================================================
  USER-SPECIFIED VALUES ARE AS FOLLOWS:
  TC(MIN) =   6.70   RAIN INTENSITY(INCH/HOUR) =  7.20
  TOTAL AREA(ACRES) =     3.00   TOTAL RUNOFF(CFS) =     13.50

****************************************************************************
  FLOW PROCESS FROM NODE   3012.00 TO NODE   3503.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    6.70
  RAINFALL INTENSITY(INCH/HR) =   7.20
  TOTAL STREAM AREA(ACRES) =     3.00
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     13.50

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       51.16    12.11        4.914         34.43
      2       13.50     6.70        7.199          3.00

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF       Tc      INTENSITY
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)
      1       41.81     6.70        7.199
      2       60.38    12.11        4.914

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      60.38   Tc(MIN.) =   12.11
  TOTAL AREA(ACRES) =       37.4
  LONGEST FLOWPATH FROM NODE   3500.00 TO NODE   3503.00 =    2219.36 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3503.00 TO NODE   3013.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    234.00  DOWNSTREAM(FEET) =    208.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   598.00   CHANNEL SLOPE =  0.0435
  CHANNEL BASE(FEET) =    8.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   5.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.569
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3000
  SOIL CLASSIFICATION IS "C"
  S.C.S. CURVE NUMBER (AMC II) =  85
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      63.77
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.88
  AVERAGE FLOW DEPTH(FEET) =   0.87   TRAVEL TIME(MIN.) =   1.45
```



```
  Tc(MIN.) =   13.56
  SUBAREA AREA(ACRES) =     4.95       SUBAREA RUNOFF(CFS) =     6.79
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.323
  TOTAL AREA(ACRES) =       42.4         PEAK FLOW RATE(CFS) =      62.55

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.86   FLOW VELOCITY(FEET/SEC.) =   6.83
  LONGEST FLOWPATH FROM NODE   3500.00 TO NODE   3013.00 =    2817.36 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3503.00 TO NODE   3013.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE   3455.00 TO NODE   3013.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<
============================================================================
  USER-SPECIFIED VALUES ARE AS FOLLOWS:
  TC(MIN) =  10.60   RAIN INTENSITY(INCH/HOUR) =  5.36
  TOTAL AREA(ACRES) =    14.10   TOTAL RUNOFF(CFS) =     22.80

****************************************************************************
  FLOW PROCESS FROM NODE   3455.00 TO NODE   3013.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY     AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)   (ACRE)
      1       22.80    10.60        5.355       14.10
  LONGEST FLOWPATH FROM NODE   3500.00 TO NODE   3013.00 =    2817.36 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY     AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)   (ACRE)
      1       62.55    13.56        4.569       42.38
  LONGEST FLOWPATH FROM NODE   3500.00 TO NODE   3013.00 =    2817.36 FEET.

  ** PEAK FLOW RATE TABLE **
  STREAM    RUNOFF       Tc      INTENSITY
  NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
      1      71.71      10.60        5.355
      2      82.00      13.56        4.569

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      82.00   Tc(MIN.) =   13.56
  TOTAL AREA(ACRES) =       56.5

****************************************************************************
  FLOW PROCESS FROM NODE   3563.00 TO NODE   3013.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.569
   *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3020
  S.C.S. CURVE NUMBER (AMC II) =  85
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3166
  SUBAREA AREA(ACRES) =    4.27   SUBAREA RUNOFF(CFS) =    5.89
```

```
  TOTAL AREA(ACRES) =       60.8   TOTAL RUNOFF(CFS) =      87.89
  TC(MIN.) =   13.56

+-------------------------------------------------------------------------+
|                                                                         |
|                                                                         |
+-------------------------------------------------------------------------+

**************************************************************************
  FLOW PROCESS FROM NODE   3013.00 TO NODE   3556.00 IS CODE =  51
--------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
==========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    208.00  DOWNSTREAM(FEET) =    202.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1023.00   CHANNEL SLOPE =  0.0059
  CHANNEL BASE(FEET) =    8.00   "Z" FACTOR =   8.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   5.00
  CHANNEL FLOW THRU SUBAREA(CFS) =      87.89
  FLOW VELOCITY(FEET/SEC.) =   3.06   FLOW DEPTH(FEET) =   1.46
  TRAVEL TIME(MIN.) =   5.57   Tc(MIN.) =   19.13
  LONGEST FLOWPATH FROM NODE   3500.00 TO NODE   3556.00 =    3840.36 FEET.

**************************************************************************
  FLOW PROCESS FROM NODE   3013.00 TO NODE   3556.00 IS CODE =   1
--------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
==========================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   19.13
  RAINFALL INTENSITY(INCH/HR) =   3.66
  TOTAL STREAM AREA(ACRES) =    60.75
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     87.89

**************************************************************************
  FLOW PROCESS FROM NODE   3558.00 TO NODE   3559.00 IS CODE =  21
--------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==========================================================================
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3000
  SOIL CLASSIFICATION IS "C"
  S.C.S. CURVE NUMBER (AMC II) =  85
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    385.50
  DOWNSTREAM ELEVATION(FEET) =    352.00
  ELEVATION DIFFERENCE(FEET) =     33.50
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.684
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.210
  SUBAREA RUNOFF(CFS) =      0.74
  TOTAL AREA(ACRES) =      0.34   TOTAL RUNOFF(CFS) =      0.74

**************************************************************************
  FLOW PROCESS FROM NODE   3559.00 TO NODE   3556.00 IS CODE =  51
--------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
==========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    352.00  DOWNSTREAM(FEET) =    202.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1301.00   CHANNEL SLOPE =  0.1153
  CHANNEL BASE(FEET) =    8.00   "Z" FACTOR =   3.000
```



```
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   2.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.469
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .2500
  S.C.S. CURVE NUMBER (AMC II) =  85
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      16.33
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.07
  AVERAGE FLOW DEPTH(FEET) =   0.30   TRAVEL TIME(MIN.) =   3.57
  Tc(MIN.) =   10.26
  SUBAREA AREA(ACRES) =    22.12       SUBAREA RUNOFF(CFS) =   30.24
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.251
  TOTAL AREA(ACRES) =       22.5          PEAK FLOW RATE(CFS) =      30.80

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.44   FLOW VELOCITY(FEET/SEC.) =   7.56
  LONGEST FLOWPATH FROM NODE   3558.00 TO NODE   3556.00 =    1401.00 FEET.

+-------------------------------------------------------------------------+
| LAND USE - NATURAL                                                      |
| COMPOSITE C FOR A, C, & D SOILS                                         |
| (0.20*7.18)+(0.30*14.12)+(0.35*0.82)/22.12=0.27                         |
+-------------------------------------------------------------------------+

**************************************************************************
  FLOW PROCESS FROM NODE   3564.00 TO NODE   3556.00 IS CODE =  81
--------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.469
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3000
  S.C.S. CURVE NUMBER (AMC II) =  85
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.2644
  SUBAREA AREA(ACRES) =    8.62   SUBAREA RUNOFF(CFS) =   14.14
  TOTAL AREA(ACRES) =       31.1   TOTAL RUNOFF(CFS) =      44.95
  TC(MIN.) =   10.26

+-------------------------------------------------------------------------+
| LAND USE - NATURAL                                                      |
| COMPOSITIE FOR C & D SOILS                                              |
| (0.30*8.33)+(0.35*0.29)/8.62 = 0.3                                      |
+-------------------------------------------------------------------------+

**************************************************************************
  FLOW PROCESS FROM NODE   3565.00 TO NODE   3556.00 IS CODE =  81
--------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.469
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .2800
  S.C.S. CURVE NUMBER (AMC II) =  85
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.2688
  SUBAREA AREA(ACRES) =   12.33   SUBAREA RUNOFF(CFS) =   18.88
  TOTAL AREA(ACRES) =       43.4   TOTAL RUNOFF(CFS) =      63.83
  TC(MIN.) =   10.26

+-------------------------------------------------------------------------+
| LAND USE NATURAL                                                        |
| COMPOSITE SOIL TYPE A & C & D                                           |
| (0.20*5.56)+(0.30*0.71)+(0.35*6.07)/12.33=0.28                          |
+-------------------------------------------------------------------------+
```

```
****************************************************************************
  FLOW PROCESS FROM NODE   3566.00 TO NODE   3556.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.469
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .2100
  S.C.S. CURVE NUMBER (AMC II) =  85
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.2542
  SUBAREA AREA(ACRES) =   14.32   SUBAREA RUNOFF(CFS) =   16.45
  TOTAL AREA(ACRES) =       57.7   TOTAL RUNOFF(CFS) =      80.27
  TC(MIN.) =   10.26

+--------------------------------------------------------------------------+
| LAND USE - NATURAL                                                       |
| COMPOSITE SOIL TYPE A & D                                                |
| (0.20*13.77)+(0.35*0.55)/14.32=0.21                                      |
+--------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   3559.00 TO NODE   3556.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   10.26
  RAINFALL INTENSITY(INCH/HR) =   5.47
  TOTAL STREAM AREA(ACRES) =    57.73
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     80.27

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       87.89    19.13        3.659         60.75
      2       80.27    10.26        5.469         57.73

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)
      1      127.41    10.26       5.469
      2      141.60    19.13       3.659

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     141.60   Tc(MIN.) =   19.13
  TOTAL AREA(ACRES) =      118.5
  LONGEST FLOWPATH FROM NODE   3500.00 TO NODE   3556.00 =    3840.36 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3556.00 TO NODE   3557.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    202.00  DOWNSTREAM(FEET) =    200.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   548.00   CHANNEL SLOPE =  0.0036
  CHANNEL BASE(FEET) =    8.00   "Z" FACTOR =   8.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   5.00
```



```
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.320
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .3200
  S.C.S. CURVE NUMBER (AMC II) =  85
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     147.51
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   2.93
  AVERAGE FLOW DEPTH(FEET) =   2.06   TRAVEL TIME(MIN.) =   3.11
  Tc(MIN.) =   22.25
  SUBAREA AREA(ACRES) =    11.13       SUBAREA RUNOFF(CFS) =   11.82
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.289
  TOTAL AREA(ACRES) =      129.6         PEAK FLOW RATE(CFS) =     141.60

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  2.02   FLOW VELOCITY(FEET/SEC.) =   2.90
  LONGEST FLOWPATH FROM NODE   3500.00 TO NODE   3557.00 =    4388.36 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3567.00 TO NODE   3557.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.320
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .2500
  S.C.S. CURVE NUMBER (AMC II) =  85
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.2844
  SUBAREA AREA(ACRES) =   17.82   SUBAREA RUNOFF(CFS) =   14.79
  TOTAL AREA(ACRES) =      147.4   TOTAL RUNOFF(CFS) =     141.60
  TC(MIN.) =   22.25
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

+--------------------------------------------------------------------------+
| LAND USE - NATURAL                                                       |
| COMPOSITE SOIL TYPE A & D                                                |
| (0.20*12.33)+(0.35*0.59)/17.82=0.25                                      |
+--------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   3557.00 TO NODE   3016.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    200.00  DOWNSTREAM(FEET) =    195.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1580.00   CHANNEL SLOPE =  0.0032
  CHANNEL BASE(FEET) =   20.00   "Z" FACTOR =  12.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   5.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.578
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .2100
  S.C.S. CURVE NUMBER (AMC II) =  85
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     148.73
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   2.46
  AVERAGE FLOW DEPTH(FEET) =   1.56   TRAVEL TIME(MIN.) =  10.69
  Tc(MIN.) =   32.93
  SUBAREA AREA(ACRES) =    26.29       SUBAREA RUNOFF(CFS) =   14.23
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.273
  TOTAL AREA(ACRES) =      173.7         PEAK FLOW RATE(CFS) =     141.60

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.52   FLOW VELOCITY(FEET/SEC.) =   2.43
  LONGEST FLOWPATH FROM NODE   3500.00 TO NODE   3016.00 =    5968.36 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE   3557.00 TO NODE   3016.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   32.93
  RAINFALL INTENSITY(INCH/HR) =   2.58
  TOTAL STREAM AREA(ACRES) =   173.72
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    141.60

****************************************************************************
  FLOW PROCESS FROM NODE   3560.00 TO NODE   3561.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3000
  SOIL CLASSIFICATION IS "C"
  S.C.S. CURVE NUMBER (AMC II) =  85
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =   3550.00
  DOWNSTREAM ELEVATION(FEET) =    278.00
  ELEVATION DIFFERENCE(FEET) =   3272.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.684
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.210
  SUBAREA RUNOFF(CFS) =      0.56
  TOTAL AREA(ACRES) =      0.26   TOTAL RUNOFF(CFS) =      0.56

****************************************************************************
  FLOW PROCESS FROM NODE   3561.00 TO NODE   3562.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    278.00  DOWNSTREAM(FEET) =    204.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   356.00   CHANNEL SLOPE =  0.2079
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   2.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.589
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =  85
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      10.76
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.93
  AVERAGE FLOW DEPTH(FEET) =   0.17   TRAVEL TIME(MIN.) =   1.00
  Tc(MIN.) =    7.69
  SUBAREA AREA(ACRES) =     8.88       SUBAREA RUNOFF(CFS) =   20.48
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.349
  TOTAL AREA(ACRES) =        9.1         PEAK FLOW RATE(CFS) =      20.99

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.26   FLOW VELOCITY(FEET/SEC.) =   7.42
  LONGEST FLOWPATH FROM NODE   3560.00 TO NODE   3562.00 =     456.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3562.00 TO NODE   3016.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    204.00  DOWNSTREAM(FEET) =    195.00
```



```
  CHANNEL LENGTH THRU SUBAREA(FEET) =   275.00   CHANNEL SLOPE =  0.0327
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =      20.99
  FLOW VELOCITY(FEET/SEC.) =   4.14   FLOW DEPTH(FEET) =   0.45
  TRAVEL TIME(MIN.) =   1.11   Tc(MIN.) =    8.79
  LONGEST FLOWPATH FROM NODE   3560.00 TO NODE   3016.00 =     731.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3562.00 TO NODE   3016.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    8.79
  RAINFALL INTENSITY(INCH/HR) =   6.04
  TOTAL STREAM AREA(ACRES) =     9.14
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     20.99

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1      141.60    32.93        2.578        173.72
      2       20.99     8.79        6.041          9.14

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       81.41     8.79       6.041
      2      150.56    32.93       2.578

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     150.56   Tc(MIN.) =   32.93
  TOTAL AREA(ACRES) =      182.9
  LONGEST FLOWPATH FROM NODE   3500.00 TO NODE   3016.00 =    5968.36 FEET.
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =      182.9  TC(MIN.) =     32.93
  PEAK FLOW RATE(CFS)   =     150.56
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

```
**************************************************************************

          RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT
                       2003,1985,1981 HYDROLOGY MANUAL
       (c) Copyright 1982-2016 Advanced Engineering Software (aes)
           Ver. 23.0 Release Date: 07/01/2016  License ID 1509

                        Analysis prepared by:




 ************************* DESCRIPTION OF STUDY *************************
* OCEAN BREEZE RANCH - PA3                                              *
* SYSTEM 3550 - PROPOSED CONDITIONS                                     *
* NORTHEAST QUADRANT                                                    *
 ************************************************************************

  FILE NAME: 3550P100.DAT
  TIME/DATE OF STUDY: 12:55 05/31/2024
------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) = 100.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   3.300
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  ========  ================  ======  =====  ====  =====  =======
  1   18.0     12.0    0.020/0.020/0.015   0.50    1.50 0.0417 0.125 0.0165
  2   20.0     13.0    0.020/0.020/0.015   0.50    1.50 0.0417 0.125 0.0165
  3   16.0     11.0    0.020/0.020/0.015   0.50    1.50 0.0417 0.125 0.0165
  4   12.0      7.0    0.020/0.020/0.015   0.50    1.50 0.0100 0.010 0.0160
  5   17.0     12.0    0.020/0.020/0.015   0.33    1.50 0.0100 0.010 0.0160

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth = -0.10 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

**************************************************************************
  FLOW PROCESS FROM NODE   3545.00 TO NODE   3546.00 IS CODE =  21
------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
========================================================================
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .2500
  SOIL CLASSIFICATION IS "B"
  S.C.S. CURVE NUMBER (AMC II) =  77
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    430.00
```



```
  DOWNSTREAM ELEVATION(FEET) =    396.00
  ELEVATION DIFFERENCE(FEET) =     34.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    7.102
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.933
  SUBAREA RUNOFF(CFS) =      0.12
  TOTAL AREA(ACRES) =      0.07   TOTAL RUNOFF(CFS) =      0.12

**************************************************************************
  FLOW PROCESS FROM NODE   3546.00 TO NODE   3547.00 IS CODE =  51
------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    396.00  DOWNSTREAM(FEET) =    356.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   576.00   CHANNEL SLOPE =  0.0694
  CHANNEL BASE(FEET) =    5.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   5.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.416
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .2900
  S.C.S. CURVE NUMBER (AMC II) =  77
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       3.58
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   2.90
  AVERAGE FLOW DEPTH(FEET) =   0.22   TRAVEL TIME(MIN.) =   3.31
  Tc(MIN.) =   10.42
  SUBAREA AREA(ACRES) =     4.38       SUBAREA RUNOFF(CFS) =     6.88
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.289
  TOTAL AREA(ACRES) =        4.5         PEAK FLOW RATE(CFS) =       6.97

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.32   FLOW VELOCITY(FEET/SEC.) =   3.69
  LONGEST FLOWPATH FROM NODE   3545.00 TO NODE   3547.00 =     676.00 FEET.

**************************************************************************
  FLOW PROCESS FROM NODE   3547.00 TO NODE   3548.00 IS CODE =  31
------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   252.00  DOWNSTREAM(FEET) =   250.70
  FLOW LENGTH(FEET) =   120.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  10.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.43
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       6.97
  PIPE TRAVEL TIME(MIN.) =   0.31    Tc(MIN.) =   10.73
  LONGEST FLOWPATH FROM NODE   3545.00 TO NODE   3548.00 =     796.00 FEET.

**************************************************************************
  FLOW PROCESS FROM NODE   3547.00 TO NODE   3548.00 IS CODE =   1
------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
========================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   10.73
  RAINFALL INTENSITY(INCH/HR) =   5.31
  TOTAL STREAM AREA(ACRES) =     4.45
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      6.97

**************************************************************************
  FLOW PROCESS FROM NODE   3549.00 TO NODE   3550.00 IS CODE =  21
```

```
------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
========================================================================
  RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .3600
  SOIL CLASSIFICATION IS "C"
  S.C.S. CURVE NUMBER (AMC II) =  76
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    50.00
  UPSTREAM ELEVATION(FEET) =    248.50
  DOWNSTREAM ELEVATION(FEET) =    248.14
  ELEVATION DIFFERENCE(FEET) =      0.36
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =   10.508
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.385
  SUBAREA RUNOFF(CFS) =      0.16
  TOTAL AREA(ACRES) =      0.08   TOTAL RUNOFF(CFS) =      0.16

************************************************************************
  FLOW PROCESS FROM NODE   3550.00 TO NODE   3548.00 IS CODE =  51
------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    248.14  DOWNSTREAM(FEET) =    245.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   369.00   CHANNEL SLOPE =  0.0085
  CHANNEL BASE(FEET) =   20.00   "Z" FACTOR =   1.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   1.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.858
  RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .3600
  SOIL CLASSIFICATION IS "C"
  S.C.S. CURVE NUMBER (AMC II) =  76
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.91
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   0.86
  AVERAGE FLOW DEPTH(FEET) =   0.11   TRAVEL TIME(MIN.) =   7.11
  Tc(MIN.) =   17.62
  SUBAREA AREA(ACRES) =     2.44       SUBAREA RUNOFF(CFS) =    3.39
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.360
  TOTAL AREA(ACRES) =        2.5         PEAK FLOW RATE(CFS) =       3.50

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.16   FLOW VELOCITY(FEET/SEC.) =   1.12
  LONGEST FLOWPATH FROM NODE   3549.00 TO NODE   3548.00 =     419.00 FEET.

************************************************************************
  FLOW PROCESS FROM NODE   3550.00 TO NODE   3548.00 IS CODE =   1
------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
========================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   17.62
  RAINFALL INTENSITY(INCH/HR) =   3.86
  TOTAL STREAM AREA(ACRES) =     2.52
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.50

  ** CONFLUENCE DATA **
  STREAM      RUNOFF        Tc       INTENSITY       AREA
  NUMBER       (CFS)      (MIN.)    (INCH/HOUR)     (ACRE)
      1         6.97     10.73         5.314          4.45
      2         3.50     17.62         3.858          2.52

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.
```



```
  ** PEAK FLOW RATE TABLE **
  STREAM      RUNOFF        Tc       INTENSITY
  NUMBER       (CFS)      (MIN.)    (INCH/HOUR)
      1         9.10     10.73         5.314
      2         8.56     17.62         3.858

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       9.10   Tc(MIN.) =   10.73
  TOTAL AREA(ACRES) =        7.0
  LONGEST FLOWPATH FROM NODE   3545.00 TO NODE   3548.00 =     796.00 FEET.

************************************************************************
  FLOW PROCESS FROM NODE   3548.00 TO NODE   3551.00 IS CODE =  31
------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   251.70  DOWNSTREAM(FEET) =   248.40
  FLOW LENGTH(FEET) =   330.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  13.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.55
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       9.10
  PIPE TRAVEL TIME(MIN.) =   0.84    Tc(MIN.) =   11.57
  LONGEST FLOWPATH FROM NODE   3545.00 TO NODE   3551.00 =    1126.00 FEET.

************************************************************************
  FLOW PROCESS FROM NODE   3548.00 TO NODE   3551.00 IS CODE =   1
------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
========================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   11.57
  RAINFALL INTENSITY(INCH/HR) =   5.06
  TOTAL STREAM AREA(ACRES) =     6.97
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      9.10

************************************************************************
  FLOW PROCESS FROM NODE   3543.00 TO NODE   3544.00 IS CODE =  21
------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
========================================================================
  RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .3600
  SOIL CLASSIFICATION IS "C"
  S.C.S. CURVE NUMBER (AMC II) =  76
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    81.50
  UPSTREAM ELEVATION(FEET) =    245.50
  DOWNSTREAM ELEVATION(FEET) =    245.00
  ELEVATION DIFFERENCE(FEET) =      0.50
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =   11.577
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    54.54
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.059
  SUBAREA RUNOFF(CFS) =      0.25
  TOTAL AREA(ACRES) =      0.14   TOTAL RUNOFF(CFS) =      0.25

************************************************************************
  FLOW PROCESS FROM NODE   3543.00 TO NODE   3552.00 IS CODE =  51
------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
```

```
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
==========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    245.00  DOWNSTREAM(FEET) =    241.20
  CHANNEL LENGTH THRU SUBAREA(FEET) =   332.00   CHANNEL SLOPE =  0.0114
  CHANNEL BASE(FEET) =   20.00   "Z" FACTOR =   1.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   1.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.841
  RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .3600
  SOIL CLASSIFICATION IS "C"
  S.C.S. CURVE NUMBER (AMC II) =  76
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.70
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   0.90
  AVERAGE FLOW DEPTH(FEET) =   0.09   TRAVEL TIME(MIN.) =   6.17
  Tc(MIN.) =   17.74
  SUBAREA AREA(ACRES) =     2.04       SUBAREA RUNOFF(CFS) =    2.82
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.360
  TOTAL AREA(ACRES) =        2.2         PEAK FLOW RATE(CFS) =       3.01

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.13   FLOW VELOCITY(FEET/SEC.) =   1.18
  LONGEST FLOWPATH FROM NODE   3543.00 TO NODE   3552.00 =     413.50 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3552.00 TO NODE   3551.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   249.40  DOWNSTREAM(FEET) =   248.40
  FLOW LENGTH(FEET) =    51.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   5.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.42
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       3.01
  PIPE TRAVEL TIME(MIN.) =   0.13    Tc(MIN.) =   17.88
  LONGEST FLOWPATH FROM NODE   3543.00 TO NODE   3551.00 =     464.50 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3552.00 TO NODE   3551.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
==========================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   17.88
  RAINFALL INTENSITY(INCH/HR) =   3.82
  TOTAL STREAM AREA(ACRES) =     2.18
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.01

****************************************************************************
  FLOW PROCESS FROM NODE   3553.00 TO NODE   3554.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==========================================================================
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3000
  SOIL CLASSIFICATION IS "C"
  S.C.S. CURVE NUMBER (AMC II) =  85
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    630.00
  DOWNSTREAM ELEVATION(FEET) =    624.00
  ELEVATION DIFFERENCE(FEET) =      6.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    7.925
```



```
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.460
  SUBAREA RUNOFF(CFS) =      0.66
  TOTAL AREA(ACRES) =      0.34   TOTAL RUNOFF(CFS) =      0.66

****************************************************************************
  FLOW PROCESS FROM NODE   3554.00 TO NODE   3551.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
==========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    624.00  DOWNSTREAM(FEET) =    243.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2511.00   CHANNEL SLOPE =  0.1517
  CHANNEL BASE(FEET) =    5.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   5.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.655
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .2900
  S.C.S. CURVE NUMBER (AMC II) =  85
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      34.66
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.98
  AVERAGE FLOW DEPTH(FEET) =   0.63   TRAVEL TIME(MIN.) =   5.25
  Tc(MIN.) =   13.17
  SUBAREA AREA(ACRES) =    49.20       SUBAREA RUNOFF(CFS) =   66.42
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.290
  TOTAL AREA(ACRES) =       49.5         PEAK FLOW RATE(CFS) =      66.90

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.90   FLOW VELOCITY(FEET/SEC.) =   9.61
  LONGEST FLOWPATH FROM NODE   3553.00 TO NODE   3551.00 =    2611.00 FEET.

+--------------------------------------------------------------------------+
| COMPOSITE C FOR B,C, & D SOILS                                           |
| SUBAREA - NATURAL                                                        |
| (16.03*0.25)+(27.33*0.30)+(5.84*0.35)/49.20 = 0.29                       |
+--------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   3554.00 TO NODE   3551.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
==========================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
  TIME OF CONCENTRATION(MIN.) =   13.17
  RAINFALL INTENSITY(INCH/HR) =   4.66
  TOTAL STREAM AREA(ACRES) =    49.54
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     66.90

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        9.10    11.57        5.062          6.97
      2        3.01    17.88        3.823          2.18
      3       66.90    13.17        4.655         49.54

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  3 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF       Tc      INTENSITY
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)
      1       69.81    11.57        5.062
```

```
      2       77.49    13.17       4.655
      3       64.82    17.88       3.823

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      77.49   Tc(MIN.) =   13.17
  TOTAL AREA(ACRES) =       58.7
  LONGEST FLOWPATH FROM NODE   3553.00 TO NODE   3551.00 =    2611.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3551.00 TO NODE   3555.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   239.94  DOWNSTREAM(FEET) =   235.26
  FLOW LENGTH(FEET) =   166.95   MANNING'S N =  0.013
  DEPTH OF FLOW IN  33.0 INCH PIPE IS  24.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  16.44
  ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      77.49
  PIPE TRAVEL TIME(MIN.) =   0.17    Tc(MIN.) =   13.34
  LONGEST FLOWPATH FROM NODE   3553.00 TO NODE   3555.00 =    2777.95 FEET.
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =       58.7  TC(MIN.) =     13.34
  PEAK FLOW RATE(CFS)   =      77.49
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

```
************************************************************************

          RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT
                       2003,1985,1981 HYDROLOGY MANUAL
        (c) Copyright 1982-2016 Advanced Engineering Software (aes)
            Ver. 23.0 Release Date: 07/01/2016  License ID 1509

                        Analysis prepared by:




 ************************** DESCRIPTION OF STUDY **************************
* OCEAN BREEZE RANCH - PA3                                                *
* SYSTEM 3600 - PROPOSED CONDITIONS                                       *
* NORTHEAST QUADRANT                                                      *
 *************************************************************************

  FILE NAME: 3600P100.DAT
  TIME/DATE OF STUDY: 12:56 05/31/2024
------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) = 100.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   3.300
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  ================  ======  =====  ====  =====  =======
  1   18.0     12.0    0.020/0.020/0.015   0.50    1.50 0.0417 0.125 0.0165
  2   20.0     13.0    0.020/0.020/0.015   0.50    1.50 0.0417 0.125 0.0165
  3   16.0     11.0    0.020/0.020/0.015   0.50    1.50 0.0417 0.125 0.0165
  4   12.0      7.0    0.020/0.020/0.015   0.50    1.50 0.0100 0.010 0.0160
  5   17.0     12.0    0.020/0.020/0.015   0.33    1.50 0.0100 0.010 0.0160

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth = -0.10 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

************************************************************************
  FLOW PROCESS FROM NODE   3600.00 TO NODE   3601.00 IS CODE =  21
------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
========================================================================
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .3700
  S.C.S. CURVE NUMBER (AMC II) =  85
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    90.00
  UPSTREAM ELEVATION(FEET) =    890.00
```



```
  DOWNSTREAM ELEVATION(FEET) =    880.00
  ELEVATION DIFFERENCE(FEET) =     10.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    5.787
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.913
  SUBAREA RUNOFF(CFS) =      1.14
  TOTAL AREA(ACRES) =      0.39   TOTAL RUNOFF(CFS) =      1.14

+------------------------------------------------------------------------+
| COMPOSITE C AND D SOILS 1 DU/AC                                        |
| C=(0.28*0.36+0.11*0.41)/0.39=0.37                                      |
|                                                                        |
+------------------------------------------------------------------------+

************************************************************************
  FLOW PROCESS FROM NODE   3601.00 TO NODE   3602.00 IS CODE =  51
------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    880.00  DOWNSTREAM(FEET) =    680.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1272.00   CHANNEL SLOPE =  0.1572
  CHANNEL BASE(FEET) =    8.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   5.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.352
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .3600
  S.C.S. CURVE NUMBER (AMC II) =  85
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      64.55
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   9.03
  AVERAGE FLOW DEPTH(FEET) =   0.71   TRAVEL TIME(MIN.) =   2.35
  Tc(MIN.) =    8.14
  SUBAREA AREA(ACRES) =    54.73       SUBAREA RUNOFF(CFS) =  125.15
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.360
  TOTAL AREA(ACRES) =       55.1         PEAK FLOW RATE(CFS) =     126.06

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.03   FLOW VELOCITY(FEET/SEC.) =  11.10
  LONGEST FLOWPATH FROM NODE   3600.00 TO NODE   3602.00 =    1362.00 FEET.

+------------------------------------------------------------------------+
| COMPOSITE C FOR C & D SOILS                                            |
| SUBAREA - 1.0 DU/A OR LESS                                             |
| (52.11*0.36)+(2.62*0.41)/54.73 = 0.36                                  |
+------------------------------------------------------------------------+

************************************************************************
  FLOW PROCESS FROM NODE   3602.00 TO NODE   3603.00 IS CODE =  51
------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    680.00  DOWNSTREAM(FEET) =    304.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  4599.00   CHANNEL SLOPE =  0.0818
  CHANNEL BASE(FEET) =   12.00   "Z" FACTOR =   5.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   6.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.164
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =  85
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     321.71
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  10.20
  AVERAGE FLOW DEPTH(FEET) =   1.58   TRAVEL TIME(MIN.) =   7.52
```

```
  Tc(MIN.) =   15.65
  SUBAREA AREA(ACRES) =   262.19       SUBAREA RUNOFF(CFS) =  382.16
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.352
  TOTAL AREA(ACRES) =      317.3        PEAK FLOW RATE(CFS) =     464.81

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.91   FLOW VELOCITY(FEET/SEC.) =  11.29
  LONGEST FLOWPATH FROM NODE   3600.00 TO NODE   3603.00 =    5961.00 FEET.

+-----------------------------------------------------------------------------+
| COMPOSITE C FOR B, C, & D SOILS                                             |
| SUBAREA - 1.0 DU/A OR LESS                                                  |
| (60.51*0.32+187.75*0.36+13.93*0.41)/262.19=0.35                             |
+-----------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   3602.00 TO NODE   3603.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   15.65
  RAINFALL INTENSITY(INCH/HR) =   4.16
  TOTAL STREAM AREA(ACRES) =   317.31
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    464.81

****************************************************************************
  FLOW PROCESS FROM NODE   3604.00 TO NODE   3605.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .4100
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  82
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    70.00
  UPSTREAM ELEVATION(FEET) =   1000.00
  DOWNSTREAM ELEVATION(FEET) =    980.00
  ELEVATION DIFFERENCE(FEET) =     20.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    4.824
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      1.68
  TOTAL AREA(ACRES) =      0.47   TOTAL RUNOFF(CFS) =      1.68

****************************************************************************
  FLOW PROCESS FROM NODE   3605.00 TO NODE   3606.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    980.00  DOWNSTREAM(FEET) =    750.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1376.00   CHANNEL SLOPE =  0.1672
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   4.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   6.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.266
  RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .4100
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  82
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      29.84
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.58
  AVERAGE FLOW DEPTH(FEET) =   0.39   TRAVEL TIME(MIN.) =   3.48
```



```
  Tc(MIN.) =    8.31
  SUBAREA AREA(ACRES) =    21.35       SUBAREA RUNOFF(CFS) =   54.85
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.410
  TOTAL AREA(ACRES) =       21.8        PEAK FLOW RATE(CFS) =      56.06

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.56   FLOW VELOCITY(FEET/SEC.) =   8.15
  LONGEST FLOWPATH FROM NODE   3604.00 TO NODE   3606.00 =    1446.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3606.00 TO NODE   3603.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    750.00  DOWNSTREAM(FEET) =    304.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  3950.00   CHANNEL SLOPE =  0.1129
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   4.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   6.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.362
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .3700
  S.C.S. CURVE NUMBER (AMC II) =  82
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     196.39
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  10.51
  AVERAGE FLOW DEPTH(FEET) =   1.25   TRAVEL TIME(MIN.) =   6.26
  Tc(MIN.) =   14.57
  SUBAREA AREA(ACRES) =   169.49       SUBAREA RUNOFF(CFS) =  273.53
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.375
  TOTAL AREA(ACRES) =      191.3        PEAK FLOW RATE(CFS) =     312.55

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.59   FLOW VELOCITY(FEET/SEC.) =  12.02
  LONGEST FLOWPATH FROM NODE   3604.00 TO NODE   3603.00 =    5396.00 FEET.

+-----------------------------------------------------------------------------+
| COMPOSITE C FPR B, C, & D SOILS                                             |
| SUBAREA - 1.0 DU/A OR LESS                                                  |
| (12.08*0.32+119.64*0.36+37.77*0.41)/169.49=0.37                             |
+-----------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   3606.00 TO NODE   3603.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   14.57
  RAINFALL INTENSITY(INCH/HR) =   4.36
  TOTAL STREAM AREA(ACRES) =   191.31
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    312.55

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc       INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1      464.81    15.65        4.164        317.31
      2      312.55    14.57        4.362        191.31

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.
```

```
  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF       Tc       INTENSITY
  NUMBER      (CFS)     (MIN.)    (INCH/HOUR)
      1      745.18    14.57        4.362
      2      763.23    15.65        4.164

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     763.23   Tc(MIN.) =   15.65
  TOTAL AREA(ACRES) =      508.6
  LONGEST FLOWPATH FROM NODE   3600.00 TO NODE   3603.00 =    5961.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3603.00 TO NODE   3607.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    304.00  DOWNSTREAM(FEET) =    286.30
  CHANNEL LENGTH THRU SUBAREA(FEET) =   729.00   CHANNEL SLOPE =  0.0243
  CHANNEL BASE(FEET) =   20.00   "Z" FACTOR =   4.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   5.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.937
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .3800
  S.C.S. CURVE NUMBER (AMC II) =  82
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     811.52
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.53
  AVERAGE FLOW DEPTH(FEET) =   2.98   TRAVEL TIME(MIN.) =   1.42
  Tc(MIN.) =   17.08
  SUBAREA AREA(ACRES) =    64.56       SUBAREA RUNOFF(CFS) =   96.59
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.363
  TOTAL AREA(ACRES) =      573.2         PEAK FLOW RATE(CFS) =     818.13

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  2.99   FLOW VELOCITY(FEET/SEC.) =   8.55
  LONGEST FLOWPATH FROM NODE   3600.00 TO NODE   3607.00 =    6690.00 FEET.

+--------------------------------------------------------------------------+
| COMPOSITE B, C, D SOILS 1 DU/AC                                          |
| C=(17.7*0.32+6.86*0.36+40*0.41)/64.56=0.38                               |
|                                                                          |
+--------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   3607.00 TO NODE   3608.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.937
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .3300
  S.C.S. CURVE NUMBER (AMC II) =  82
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3618
  SUBAREA AREA(ACRES) =   13.32   SUBAREA RUNOFF(CFS) =   17.31
  TOTAL AREA(ACRES) =      586.5   TOTAL RUNOFF(CFS) =     835.43
  TC(MIN.) =   17.08

+--------------------------------------------------------------------------+
| NATURAL W/ IMPERVIOUS AREA USE 1 DU/AC                                   |
| COMPOSITE C (B, C, D)                                                    |
| (9.37*0.2+3.87*0.36+0.08*0.41)/13.32=0.33                                |
+--------------------------------------------------------------------------+
============================================================================
```



```
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)      =      586.5  TC(MIN.) =     17.08
  PEAK FLOW RATE(CFS)    =     835.43
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

```
****************************************************************************

          RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT
                       2003,1985,1981 HYDROLOGY MANUAL
        (c) Copyright 1982-2016 Advanced Engineering Software (aes)
            Ver. 23.0 Release Date: 07/01/2016  License ID 1509

                        Analysis prepared by:




 ************************** DESCRIPTION OF STUDY **************************
* OCEAN BREEZE RANCH - PA3                                                *
* SYSTEM 3650 - PROPOSED CONDITIONS                                       *
* NORTHEAST QUADRANT                                                      *
 ****************************************************************************

  FILE NAME: 3650P100.DAT
  TIME/DATE OF STUDY: 12:57 05/31/2024
----------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
----------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) = 100.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   3.300
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  ================  ======  =====  ====== =====  =======
  1   18.0     12.0    0.020/0.020/0.015   0.50    1.50 0.0417 0.125 0.0165
  2   20.0     13.0    0.020/0.020/0.015   0.50    1.50 0.0417 0.125 0.0165
  3   16.0     11.0    0.020/0.020/0.015   0.50    1.50 0.0417 0.125 0.0165
  4   12.0      7.0    0.020/0.020/0.015   0.50    1.50 0.0100 0.010 0.0160
  5   17.0     12.0    0.020/0.020/0.015   0.33    1.50 0.0100 0.010 0.0160

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth = -0.10 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

****************************************************************************
  FLOW PROCESS FROM NODE   3650.00 TO NODE   3651.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .2500
  SOIL CLASSIFICATION IS "B"
  S.C.S. CURVE NUMBER (AMC II) =  77
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    738.00
```



```
  DOWNSTREAM ELEVATION(FEET) =    698.00
  ELEVATION DIFFERENCE(FEET) =     40.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    7.102
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.933
  SUBAREA RUNOFF(CFS) =      0.50
  TOTAL AREA(ACRES) =      0.29   TOTAL RUNOFF(CFS) =      0.50

****************************************************************************
  FLOW PROCESS FROM NODE   3651.00 TO NODE   3652.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    698.00  DOWNSTREAM(FEET) =    246.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  3266.00   CHANNEL SLOPE =  0.1384
  CHANNEL BASE(FEET) =    6.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   5.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.329
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .2600
  S.C.S. CURVE NUMBER (AMC II) =  77
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      29.74
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.13
  AVERAGE FLOW DEPTH(FEET) =   0.55   TRAVEL TIME(MIN.) =   7.64
  Tc(MIN.) =   14.74
  SUBAREA AREA(ACRES) =    49.92       SUBAREA RUNOFF(CFS) =   56.18
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.260
  TOTAL AREA(ACRES) =       50.2          PEAK FLOW RATE(CFS) =      56.50

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.78   FLOW VELOCITY(FEET/SEC.) =   8.67
  LONGEST FLOWPATH FROM NODE   3650.00 TO NODE   3652.00 =    3366.00 FEET.

+--------------------------------------------------------------------------+
| COMPOSITE C FOR A, B, C SOILS                                            |
| NATURAL                                                                  |
| (0.20*0.26)_(0.25*36.05)+(0.30*13.61)/49.92 = 0.26                       |
+--------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   3651.00 TO NODE   3652.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   14.74
  RAINFALL INTENSITY(INCH/HR) =   4.33
  TOTAL STREAM AREA(ACRES) =    50.21
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     56.50

****************************************************************************
  FLOW PROCESS FROM NODE   3663.00 TO NODE   3664.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  88
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    840.00
  DOWNSTREAM ELEVATION(FEET) =    796.00
```

```
  ELEVATION DIFFERENCE(FEET) =     44.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.267
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.516
  SUBAREA RUNOFF(CFS) =      0.50
  TOTAL AREA(ACRES) =      0.19   TOTAL RUNOFF(CFS) =      0.50

****************************************************************************
  FLOW PROCESS FROM NODE   3664.00 TO NODE   3665.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    796.00  DOWNSTREAM(FEET) =    316.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2096.00   CHANNEL SLOPE =  0.2290
  CHANNEL BASE(FEET) =   12.00   "Z" FACTOR =   6.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   5.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.751
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  88
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      15.49
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.38
  AVERAGE FLOW DEPTH(FEET) =   0.22   TRAVEL TIME(MIN.) =   6.49
  Tc(MIN.) =   12.76
  SUBAREA AREA(ACRES) =    17.20       SUBAREA RUNOFF(CFS) =   28.60
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.350
  TOTAL AREA(ACRES) =       17.4         PEAK FLOW RATE(CFS) =      28.92

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.31   FLOW VELOCITY(FEET/SEC.) =   6.73
  LONGEST FLOWPATH FROM NODE   3663.00 TO NODE   3665.00 =    2196.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3666.00 TO NODE   3665.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.751
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3360
  S.C.S. CURVE NUMBER (AMC II) =  88
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3466
  SUBAREA AREA(ACRES) =    5.49   SUBAREA RUNOFF(CFS) =    8.76
  TOTAL AREA(ACRES) =       22.9   TOTAL RUNOFF(CFS) =      37.68
  TC(MIN.) =   12.76

+--------------------------------------------------------------------------+
| COMPOSITE C (C & D)                                                      |
| (1.55*0.3+3.94*0.35)/5.49=0.336                                          |
|                                                                          |
+--------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   3667.00 TO NODE   3665.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.751
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3100
  S.C.S. CURVE NUMBER (AMC II) =  88
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3444
```



```
  SUBAREA AREA(ACRES) =    1.51   SUBAREA RUNOFF(CFS) =    2.22
  TOTAL AREA(ACRES) =       24.4   TOTAL RUNOFF(CFS) =      39.91
  TC(MIN.) =   12.76

+--------------------------------------------------------------------------+
| COMPOSITE C (C & D)                                                      |
| (1.29*0.3+0.22*0.35)/1.51=0.31                                           |
|                                                                          |
+--------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   3665.00 TO NODE   3652.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    316.00  DOWNSTREAM(FEET) =    269.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   658.00   CHANNEL SLOPE =  0.0714
  CHANNEL BASE(FEET) =   12.00   "Z" FACTOR =   6.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   5.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.309
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3000
  SOIL CLASSIFICATION IS "C"
  S.C.S. CURVE NUMBER (AMC II) =  85
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      44.61
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.25
  AVERAGE FLOW DEPTH(FEET) =   0.55   TRAVEL TIME(MIN.) =   2.09
  Tc(MIN.) =   14.85
  SUBAREA AREA(ACRES) =     7.27       SUBAREA RUNOFF(CFS) =    9.40
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.334
  TOTAL AREA(ACRES) =       31.7         PEAK FLOW RATE(CFS) =      45.59

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.56   FLOW VELOCITY(FEET/SEC.) =   5.28
  LONGEST FLOWPATH FROM NODE   3663.00 TO NODE   3652.00 =    2854.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3665.00 TO NODE   3652.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   14.85
  RAINFALL INTENSITY(INCH/HR) =   4.31
  TOTAL STREAM AREA(ACRES) =    31.66
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     45.59

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       56.50    14.74        4.329         50.21
      2       45.59    14.85        4.309         31.66

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF       Tc      INTENSITY
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)
      1      101.77    14.74        4.329
      2      101.83    14.85        4.309
```

```
  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     101.83   Tc(MIN.) =   14.85
  TOTAL AREA(ACRES) =       81.9
  LONGEST FLOWPATH FROM NODE   3650.00 TO NODE   3652.00 =    3366.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3652.00 TO NODE   3658.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    246.00  DOWNSTREAM(FEET) =    241.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   278.00   CHANNEL SLOPE =  0.0180
  CHANNEL BASE(FEET) =   12.00   "Z" FACTOR =   6.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   5.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     101.83
  FLOW VELOCITY(FEET/SEC.) =   4.12   FLOW DEPTH(FEET) =   1.26
  TRAVEL TIME(MIN.) =   1.12   Tc(MIN.) =   15.97
  LONGEST FLOWPATH FROM NODE   3650.00 TO NODE   3658.00 =    3644.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3652.00 TO NODE   3658.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   15.97
  RAINFALL INTENSITY(INCH/HR) =   4.11
  TOTAL STREAM AREA(ACRES) =    81.87
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    101.83

****************************************************************************
  FLOW PROCESS FROM NODE   3659.00 TO NODE   3660.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3000
  SOIL CLASSIFICATION IS "C"
  S.C.S. CURVE NUMBER (AMC II) =  85
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    868.00
  DOWNSTREAM ELEVATION(FEET) =    836.00
  ELEVATION DIFFERENCE(FEET) =     32.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.684
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.210
  SUBAREA RUNOFF(CFS) =      0.52
  TOTAL AREA(ACRES) =      0.24   TOTAL RUNOFF(CFS) =      0.52

****************************************************************************
  FLOW PROCESS FROM NODE   3660.00 TO NODE   3654.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    836.00  DOWNSTREAM(FEET) =    262.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  3137.00   CHANNEL SLOPE =  0.1830
  CHANNEL BASE(FEET) =   12.00   "Z" FACTOR =   6.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   5.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.375
  *USER SPECIFIED(SUBAREA):
```



```
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3400
  S.C.S. CURVE NUMBER (AMC II) =  85
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      36.15
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.69
  AVERAGE FLOW DEPTH(FEET) =   0.38   TRAVEL TIME(MIN.) =   7.82
  Tc(MIN.) =   14.50
  SUBAREA AREA(ACRES) =    46.06       SUBAREA RUNOFF(CFS) =   68.52
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.340
  TOTAL AREA(ACRES) =       46.3         PEAK FLOW RATE(CFS) =      68.83

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.55   FLOW VELOCITY(FEET/SEC.) =   8.24
  LONGEST FLOWPATH FROM NODE   3659.00 TO NODE   3654.00 =    3237.00 FEET.

+--------------------------------------------------------------------------+
| COMPOSITE C - C & D SOILS NATURAL                                        |
| -                                                                        |
| (10.78*0.3+35.28*0.35)/46.06=0.34                                        |
+--------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   3661.00 TO NODE   3654.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.375
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3100
  S.C.S. CURVE NUMBER (AMC II) =  85
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3340
  SUBAREA AREA(ACRES) =   11.29   SUBAREA RUNOFF(CFS) =   15.31
  TOTAL AREA(ACRES) =       57.6   TOTAL RUNOFF(CFS) =      84.15
  TC(MIN.) =   14.50

+--------------------------------------------------------------------------+
| COMPOSITE C - C & D SOILS                                                |
| (8.94*0.3+2.35*0.35)/11.29=0.31                                          |
|                                                                          |
+--------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   3654.00 TO NODE   3658.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    262.00  DOWNSTREAM(FEET) =    242.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   628.00   CHANNEL SLOPE =  0.0318
  CHANNEL BASE(FEET) =   12.00   "Z" FACTOR =   6.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   5.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.002
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .2900
  S.C.S. CURVE NUMBER (AMC II) =  85
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      88.02
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.86
  AVERAGE FLOW DEPTH(FEET) =   1.00   TRAVEL TIME(MIN.) =   2.15
  Tc(MIN.) =   16.65
  SUBAREA AREA(ACRES) =     6.68       SUBAREA RUNOFF(CFS) =    7.75
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.329
  TOTAL AREA(ACRES) =       64.3         PEAK FLOW RATE(CFS) =      84.71

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
```

```
  DEPTH(FEET) =  0.99   FLOW VELOCITY(FEET/SEC.) =   4.79
  LONGEST FLOWPATH FROM NODE   3659.00 TO NODE   3658.00 =    3865.00 FEET.

+----------------------------------------------------------------------------+
| COMPOSITE C - A & C SOILS                                                  |
| (1.24*0.2+5.44*0.3)/6.68=0.29                                              |
|                                                                            |
+----------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   3654.00 TO NODE   3658.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   16.65
  RAINFALL INTENSITY(INCH/HR) =   4.00
  TOTAL STREAM AREA(ACRES) =    64.27
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     84.71

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER       (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1      101.83    15.97        4.111         81.87
      2       84.71    16.65        4.002         64.27

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER       (CFS)    (MIN.)   (INCH/HOUR)
      1      183.08    15.97       4.111
      2      183.84    16.65       4.002

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     183.84   Tc(MIN.) =   16.65
  TOTAL AREA(ACRES) =      146.1
  LONGEST FLOWPATH FROM NODE   3659.00 TO NODE   3658.00 =    3865.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3658.00 TO NODE   3653.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    242.00  DOWNSTREAM(FEET) =    228.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   835.00   CHANNEL SLOPE =  0.0168
  CHANNEL BASE(FEET) =   12.00   "Z" FACTOR =   6.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   5.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.611
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .2500
  S.C.S. CURVE NUMBER (AMC II) =  85
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     195.91
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.84
  AVERAGE FLOW DEPTH(FEET) =   1.78   TRAVEL TIME(MIN.) =   2.87
  Tc(MIN.) =   19.53
  SUBAREA AREA(ACRES) =    26.73       SUBAREA RUNOFF(CFS) =   24.13
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.298
  TOTAL AREA(ACRES) =      172.9         PEAK FLOW RATE(CFS) =     185.92
```



```
  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.74   FLOW VELOCITY(FEET/SEC.) =   4.78
  LONGEST FLOWPATH FROM NODE   3659.00 TO NODE   3653.00 =    4700.00 FEET.

+----------------------------------------------------------------------------+
| COMPOSITE C (A AND C)                                                      |
|                                                                            |
| (12.23*0.2+14.5*0.3)/26.73=0.25                                            |
+----------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   3653.00 TO NODE   3655.00 IS CODE =  37
----------------------------------------------------------------------------
  >>>>>COMPUTE CULVERT TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED CULVERT SIZE<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   228.11  DOWNSTREAM(FEET) =   226.97
  FLOW LENGTH(FEET) =    79.38   MANNING'S N =  0.014
  Notes:
    1. Reference: "Hydraulic Charts for the Selection of
       Highway Culverts", Hydraulic Engineering Circular No. 5,
       December 1965, Federal Highway Administration.
    2. INLET control for all Culvert Analysis.
    3. Headwater depth is ASSUMED to be 3 FEET above the culvert soffit.
  GIVEN BOX CULVERT HEIGHT(FEET) =   5.00
  ESTIMATED BOX CULVERT BASEWIDTH(FEET) =    3.38
  CULVERT-FLOW VELOCITY(FEET/SEC.) =  11.00
  CULVERT-FLOW(CFS) =     185.92
  CULVERT-FLOW TRAVEL TIME(MIN.) =   0.12    Tc(MIN.) =   19.65
  LONGEST FLOWPATH FROM NODE   3659.00 TO NODE   3655.00 =    4779.38 FEET.
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =      172.9  TC(MIN.) =     19.65
  PEAK FLOW RATE(CFS)   =     185.92
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

```
************************************************************************

          RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT
                       2003,1985,1981 HYDROLOGY MANUAL
       (c) Copyright 1982-2016 Advanced Engineering Software (aes)
           Ver. 23.0 Release Date: 07/01/2016  License ID 1509

                        Analysis prepared by:




 ************************** DESCRIPTION OF STUDY **************************
* OCEAN BREEZE RANCH - PA3                                                *
* SYSTEM 3700 - PROPOSED CONDITIONS                                       *
* NORTHEAST QUADRANT                                                      *
 ************************************************************************

  FILE NAME: 3700P100.DAT
  TIME/DATE OF STUDY: 12:57 05/31/2024
------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) = 100.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   3.300
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  ================  ======  =====  ====  =====  =======
  1   18.0     12.0    0.020/0.020/0.015   0.50    1.50 0.0417 0.125 0.0165
  2   20.0     13.0    0.020/0.020/0.015   0.50    1.50 0.0417 0.125 0.0165
  3   16.0     11.0    0.020/0.020/0.015   0.50    1.50 0.0417 0.125 0.0165
  4   12.0      7.0    0.020/0.020/0.015   0.50    1.50 0.0100 0.010 0.0160
  5   17.0     12.0    0.020/0.020/0.015   0.33    1.50 0.0100 0.010 0.0160

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth = -0.10 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

************************************************************************
  FLOW PROCESS FROM NODE   3700.00 TO NODE   3701.00 IS CODE =  21
------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
========================================================================
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  88
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    466.00
```



```
  DOWNSTREAM ELEVATION(FEET) =    456.00
  ELEVATION DIFFERENCE(FEET) =     10.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.267
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.516
  SUBAREA RUNOFF(CFS) =      0.50
  TOTAL AREA(ACRES) =      0.19   TOTAL RUNOFF(CFS) =      0.50

************************************************************************
  FLOW PROCESS FROM NODE   3701.00 TO NODE   3702.00 IS CODE =  51
------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    456.00  DOWNSTREAM(FEET) =    228.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   401.00   CHANNEL SLOPE =  0.5686
  CHANNEL BASE(FEET) =    6.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.849
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  88
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       7.00
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.88
  AVERAGE FLOW DEPTH(FEET) =   0.16   TRAVEL TIME(MIN.) =   0.97
  Tc(MIN.) =    7.24
  SUBAREA AREA(ACRES) =     5.41       SUBAREA RUNOFF(CFS) =   12.97
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.350
  TOTAL AREA(ACRES) =        5.6          PEAK FLOW RATE(CFS) =      13.42

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.23   FLOW VELOCITY(FEET/SEC.) =   8.65
  LONGEST FLOWPATH FROM NODE   3700.00 TO NODE   3702.00 =     501.00 FEET.

************************************************************************
  FLOW PROCESS FROM NODE   3702.00 TO NODE   3703.00 IS CODE =  31
------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   223.60  DOWNSTREAM(FEET) =   222.22
  FLOW LENGTH(FEET) =   138.04   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  15.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.23
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      13.42
  PIPE TRAVEL TIME(MIN.) =   0.32    Tc(MIN.) =    7.56
  LONGEST FLOWPATH FROM NODE   3700.00 TO NODE   3703.00 =     639.04 FEET.

************************************************************************
  FLOW PROCESS FROM NODE   3703.00 TO NODE   3704.00 IS CODE =  81
------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
========================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.661
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3200
  S.C.S. CURVE NUMBER (AMC II) =  88
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3451
  SUBAREA AREA(ACRES) =    1.10   SUBAREA RUNOFF(CFS) =    2.34
  TOTAL AREA(ACRES) =        6.7   TOTAL RUNOFF(CFS) =      15.40
  TC(MIN.) =    7.56
```

```
+-------------------------------------------------------------------------+
| COMPOSITE C FOR A, C, & D SOILS                                         |
| SUBAREA - NATURAL                                                       |
| (0.11*0.20)+(0.37*0.30)+(0.62*0.35)/1.09 = 0.32                         |
+-------------------------------------------------------------------------+
=========================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =         6.7  TC(MIN.) =      7.56
  PEAK FLOW RATE(CFS)   =      15.40
=========================================================================
=========================================================================
  END OF RATIONAL METHOD ANALYSIS
```

```
****************************************************************************

          RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT
                       2003,1985,1981 HYDROLOGY MANUAL
        (c) Copyright 1982-2016 Advanced Engineering Software (aes)
            Ver. 23.0 Release Date: 07/01/2016  License ID 1509

                        Analysis prepared by:




 ************************** DESCRIPTION OF STUDY **************************
* OCEAN BREEZE RANCH - PA3                                                *
* SYSTEM 3750 - PROPOSED CONDITIONS                                       *
* NORTHEAST QUADRANT                                                      *
 ***************************************************************************

  FILE NAME: 3750P100.DAT
  TIME/DATE OF STUDY: 12:58 05/31/2024
----------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
----------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) = 100.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   3.300
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  ========  ================  ======  =====  ====  ====  =======
  1   18.0     12.0    0.020/0.020/0.015   0.50    1.50 0.0417 0.125 0.0165
  2   20.0     13.0    0.020/0.020/0.015   0.50    1.50 0.0417 0.125 0.0165
  3   16.0     11.0    0.020/0.020/0.015   0.50    1.50 0.0417 0.125 0.0165
  4   12.0      7.0    0.020/0.020/0.015   0.50    1.50 0.0100 0.010 0.0160
  5   17.0     12.0    0.020/0.020/0.015   0.33    1.50 0.0100 0.010 0.0160

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth = -0.10 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

****************************************************************************
  FLOW PROCESS FROM NODE   3750.00 TO NODE   3751.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  STREETS & ROADS (CURBS/STORM DRAINS) RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  98
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    60.00
  UPSTREAM ELEVATION(FEET) =    252.78
```



```
  DOWNSTREAM ELEVATION(FEET) =    250.85
  ELEVATION DIFFERENCE(FEET) =      1.93
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.172
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.15
  TOTAL AREA(ACRES) =      0.02   TOTAL RUNOFF(CFS) =      0.15

****************************************************************************
  FLOW PROCESS FROM NODE   3751.00 TO NODE   3752.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  4 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  250.85  DOWNSTREAM ELEVATION(FEET) =  229.39
  STREET LENGTH(FEET) =   692.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 12.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   7.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.015
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0160
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       2.40
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.16
    HALFSTREET FLOOD WIDTH(FEET) =    8.69
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.17
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.52
  STREET FLOW TRAVEL TIME(MIN.) =   3.63   Tc(MIN.) =    5.81
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.895
  *USER SPECIFIED(SUBAREA):
  LIMITED INDUSTRIAL RUNOFF COEFFICIENT = .8400
  S.C.S. CURVE NUMBER (AMC II) =  98
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.841
  SUBAREA AREA(ACRES) =    0.67      SUBAREA RUNOFF(CFS) =    4.44
  TOTAL AREA(ACRES) =        0.7        PEAK FLOW RATE(CFS) =       4.58

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.21   HALFSTREET FLOOD WIDTH(FEET) =  11.10
  FLOW VELOCITY(FEET/SEC.) =  3.72   DEPTH*VELOCITY(FT*FT/SEC.) =   0.79
  LONGEST FLOWPATH FROM NODE   3750.00 TO NODE   3752.00 =     752.00 FEET.

+--------------------------------------------------------------------------+
| COMPOSITE C FOR A, B, C, & D SOILS                                       |
| SUBAREA - LIMITED INDUSTRIAL, CALCULATED IMPERVIOUS ~90%                 |
| (0.83*0.26)+(0.84*0.18)*(0.84*0.05)+(0.85*0.18)/0.67 =0.84               |
+--------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   3753.00 TO NODE   3752.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.895
  *USER SPECIFIED(SUBAREA):
  LIMITED INDUSTRIAL RUNOFF COEFFICIENT = .8500
  S.C.S. CURVE NUMBER (AMC II) =  98
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.8453
```

```
  SUBAREA AREA(ACRES) =    0.66   SUBAREA RUNOFF(CFS) =    4.43
  TOTAL AREA(ACRES) =        1.4   TOTAL RUNOFF(CFS) =       9.01
  TC(MIN.) =    5.81

+----------------------------------------------------------------------------+
| COMPOSITE C FOR A, B, C, & D SOILS                                         |
| SUBAREA - LIMITED INDUSTRIAL, CALCULATED IMPERVIOUS ~90%                   |
| (0.83*0.15)+(0.84*0.18)+(0.84*0..06)+(0.85*0.28)/0.66 = 0.85               |
+----------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   3752.00 TO NODE   3754.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   223.16  DOWNSTREAM(FEET) =   223.00
  FLOW LENGTH(FEET) =    15.71   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  13.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.59
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       9.01
  PIPE TRAVEL TIME(MIN.) =   0.04    Tc(MIN.) =    5.85
  LONGEST FLOWPATH FROM NODE   3750.00 TO NODE   3754.00 =     767.71 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3754.00 TO NODE   3755.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.860
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .2000
  SOIL CLASSIFICATION IS "A"
  S.C.S. CURVE NUMBER (AMC II) =  63
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.7967
  SUBAREA AREA(ACRES) =    0.11   SUBAREA RUNOFF(CFS) =    0.17
  TOTAL AREA(ACRES) =        1.5   TOTAL RUNOFF(CFS) =       9.14
  TC(MIN.) =    5.85

****************************************************************************
  FLOW PROCESS FROM NODE   3755.00 TO NODE   3756.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   222.37  DOWNSTREAM(FEET) =   222.29
  FLOW LENGTH(FEET) =    15.23   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  14.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.19
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       9.14
  PIPE TRAVEL TIME(MIN.) =   0.05    Tc(MIN.) =    5.90
  LONGEST FLOWPATH FROM NODE   3750.00 TO NODE   3756.00 =     782.94 FEET.
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =        1.5  TC(MIN.) =      5.90
  PEAK FLOW RATE(CFS)   =       9.14
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

```
****************************************************************************

          RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT
                       2003,1985,1981 HYDROLOGY MANUAL
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            Ver. 23.0 Release Date: 07/01/2016  License ID 1509

                        Analysis prepared by:




 ************************** DESCRIPTION OF STUDY **************************
* OCEAN BREEZE RANCH - PA3                                                *
* SYSTEM 3800 - PROPOSED CONDITIONS                                       *
* NORTHEAST QUADRANT                                                      *
 ****************************************************************************

  FILE NAME: 3800P100.DAT
  TIME/DATE OF STUDY: 12:58 05/31/2024
----------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
----------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) = 100.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   3.300
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  ================  ======  =====  ====== =====  =======
  1   18.0     12.0    0.020/0.020/0.015   0.50    1.50 0.0417 0.125 0.0165
  2   20.0     13.0    0.020/0.020/0.015   0.50    1.50 0.0417 0.125 0.0165
  3   16.0     11.0    0.020/0.020/0.015   0.50    1.50 0.0417 0.125 0.0165
  4   12.0      7.0    0.020/0.020/0.015   0.50    1.50 0.0100 0.010 0.0160
  5   17.0     12.0    0.020/0.020/0.015   0.33    1.50 0.0100 0.010 0.0160

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth = -0.10 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

****************************************************************************
  FLOW PROCESS FROM NODE   3800.00 TO NODE   3801.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  88
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    562.00
```



```
  DOWNSTREAM ELEVATION(FEET) =    532.00
  ELEVATION DIFFERENCE(FEET) =     30.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.267
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.516
  SUBAREA RUNOFF(CFS) =      0.47
  TOTAL AREA(ACRES) =      0.18   TOTAL RUNOFF(CFS) =      0.47

****************************************************************************
  FLOW PROCESS FROM NODE   3801.00 TO NODE   3802.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    532.00  DOWNSTREAM(FEET) =    228.25
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1053.00   CHANNEL SLOPE =  0.2885
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.837
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3400
  S.C.S. CURVE NUMBER (AMC II) =  88
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      12.45
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.84
  AVERAGE FLOW DEPTH(FEET) =   0.20   TRAVEL TIME(MIN.) =   3.01
  Tc(MIN.) =    9.27
  SUBAREA AREA(ACRES) =    11.84       SUBAREA RUNOFF(CFS) =   23.50
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.340
  TOTAL AREA(ACRES) =       12.0          PEAK FLOW RATE(CFS) =      23.87

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.29   FLOW VELOCITY(FEET/SEC.) =   7.44
  LONGEST FLOWPATH FROM NODE   3800.00 TO NODE   3802.00 =    1153.00 FEET.

+--------------------------------------------------------------------------+
| COMPOSITE C FOR B & D SOILS                                              |
| SUBAREA - NATURAL                                                        |
| (0.90*0.25)+(0.64*0.35)/11.54 = 0.34                                     |
+--------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   3802.00 TO NODE   3803.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   225.82  DOWNSTREAM(FEET) =   225.50
  FLOW LENGTH(FEET) =    65.15   MANNING'S N =  0.013
  DEPTH OF FLOW IN  30.0 INCH PIPE IS  21.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.41
  ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      23.87
  PIPE TRAVEL TIME(MIN.) =   0.17    Tc(MIN.) =    9.44
  LONGEST FLOWPATH FROM NODE   3800.00 TO NODE   3803.00 =    1218.15 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3803.00 TO NODE   3803.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.769
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .2300
```

```
  S.C.S. CURVE NUMBER (AMC II) =  88
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3334
  SUBAREA AREA(ACRES) =    0.79   SUBAREA RUNOFF(CFS) =    1.05
  TOTAL AREA(ACRES) =       12.8   TOTAL RUNOFF(CFS) =      24.64
  TC(MIN.) =    9.44
================================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =       12.8  TC(MIN.) =      9.44
  PEAK FLOW RATE(CFS)   =      24.64
================================================================================
================================================================================
  END OF RATIONAL METHOD ANALYSIS
```

```
****************************************************************************

          RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT
                       2003,1985,1981 HYDROLOGY MANUAL
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            Ver. 23.0 Release Date: 07/01/2016  License ID 1509

                        Analysis prepared by:




 ************************** DESCRIPTION OF STUDY **************************
* OCEAN BREEZE RANCH - PA3                                                *
* SYSTEM 3900 - PROPOSED CONDITIONS                                       *
* NORTHEAST QUADRANT                                                      *
 ****************************************************************************

  FILE NAME: 3900P100.DAT
  TIME/DATE OF STUDY: 12:59 05/31/2024
----------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
----------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) = 100.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   3.300
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  ================  ======  =====  ====== =====  =======
  1   18.0     12.0    0.020/0.020/0.015   0.50    1.50 0.0417 0.125 0.0165
  2   20.0     13.0    0.020/0.020/0.015   0.50    1.50 0.0417 0.125 0.0165
  3   16.0     11.0    0.020/0.020/0.015   0.50    1.50 0.0417 0.125 0.0165
  4   12.0      7.0    0.020/0.020/0.015   0.50    1.50 0.0100 0.010 0.0160
  5   17.0     12.0    0.020/0.020/0.015   0.33    1.50 0.0100 0.010 0.0160

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth = -0.10 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

****************************************************************************
  FLOW PROCESS FROM NODE   3900.00 TO NODE   3901.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  88
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    634.00
```



```
  DOWNSTREAM ELEVATION(FEET) =    604.00
  ELEVATION DIFFERENCE(FEET) =     30.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.267
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.516
  SUBAREA RUNOFF(CFS) =      0.13
  TOTAL AREA(ACRES) =      0.05   TOTAL RUNOFF(CFS) =      0.13

****************************************************************************
  FLOW PROCESS FROM NODE   3901.00 TO NODE   3902.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    604.00  DOWNSTREAM(FEET) =    246.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   785.00   CHANNEL SLOPE =  0.4561
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.966
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =  88
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       5.49
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.85
  AVERAGE FLOW DEPTH(FEET) =   0.11   TRAVEL TIME(MIN.) =   2.70
  Tc(MIN.) =    8.97
  SUBAREA AREA(ACRES) =     5.06       SUBAREA RUNOFF(CFS) =   10.57
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.350
  TOTAL AREA(ACRES) =        5.1          PEAK FLOW RATE(CFS) =      10.67

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.16   FLOW VELOCITY(FEET/SEC.) =   6.48
  LONGEST FLOWPATH FROM NODE   3900.00 TO NODE   3902.00 =     885.00 FEET.

+--------------------------------------------------------------------------+
| COMPOSITE C FOR B & D SOILS                                              |
| SUBAREA - NATURAL                                                        |
| (0.26*0.25)+(5.10*0.35)/5.36 = 0.35                                      |
+--------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   3902.00 TO NODE   3903.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   230.84  DOWNSTREAM(FEET) =   229.19
  FLOW LENGTH(FEET) =   315.16   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  16.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.29
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      10.67
  PIPE TRAVEL TIME(MIN.) =   0.99    Tc(MIN.) =    9.96
  LONGEST FLOWPATH FROM NODE   3900.00 TO NODE   3903.00 =    1200.16 FEET.
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)      =        5.1  TC(MIN.) =      9.96
  PEAK FLOW RATE(CFS)    =      10.67
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

```
****************************************************************************

           RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
           Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT
                        2003,1985,1981 HYDROLOGY MANUAL
        (c) Copyright 1982-2016 Advanced Engineering Software (aes)
            Ver. 23.0 Release Date: 07/01/2016  License ID 1509

                        Analysis prepared by:




 ************************** DESCRIPTION OF STUDY **************************
* OCEAN BREEZE RANCH - PA3                                                *
* NORTHEAST QUADRANT                                                      *
* SYSTEM 3950                                                             *
 ****************************************************************************

  FILE NAME: 3950P100.DAT
  TIME/DATE OF STUDY: 12:59 05/31/2024
----------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
----------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) = 100.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   3.300
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  ========  ================  ======  =====  ====  ====  =======
  1   18.0     12.0    0.020/0.020/0.015   0.50    1.50 0.0417 0.125 0.0165
  2   20.0     13.0    0.020/0.020/0.015   0.50    1.50 0.0417 0.125 0.0165
  3   16.0     11.0    0.020/0.020/0.015   0.50    1.50 0.0417 0.125 0.0165
  4   12.0      7.0    0.020/0.020/0.015   0.50    1.50 0.0100 0.010 0.0160
  5   17.0     12.0    0.020/0.020/0.015   0.33    1.50 0.0100 0.010 0.0160

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth = -0.10 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

****************************************************************************
  FLOW PROCESS FROM NODE   3950.00 TO NODE   3951.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  STREETS & ROADS (CURBS/STORM DRAINS) RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  98
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    60.00
  UPSTREAM ELEVATION(FEET) =    262.00
```



```
  DOWNSTREAM ELEVATION(FEET) =    254.00
  ELEVATION DIFFERENCE(FEET) =      8.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    1.489
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.30
  TOTAL AREA(ACRES) =      0.04   TOTAL RUNOFF(CFS) =      0.30

****************************************************************************
  FLOW PROCESS FROM NODE   3951.00 TO NODE   3952.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  4 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  254.00  DOWNSTREAM ELEVATION(FEET) =  236.80
  STREET LENGTH(FEET) =  1420.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 12.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   7.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.015
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0160
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.90
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.18
    HALFSTREET FLOOD WIDTH(FEET) =    9.51
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.11
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.38
  STREET FLOW TRAVEL TIME(MIN.) =  11.24   Tc(MIN.) =   12.73
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.759
  *USER SPECIFIED(SUBAREA):
  LIMITED INDUSTRIAL RUNOFF COEFFICIENT = .8500
  S.C.S. CURVE NUMBER (AMC II) =  98
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.851
  SUBAREA AREA(ACRES) =    0.74      SUBAREA RUNOFF(CFS) =    2.99
  TOTAL AREA(ACRES) =        0.8        PEAK FLOW RATE(CFS) =       3.16

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.22   HALFSTREET FLOOD WIDTH(FEET) =  11.54
  FLOW VELOCITY(FEET/SEC.) =  2.37   DEPTH*VELOCITY(FT*FT/SEC.) =   0.52
  LONGEST FLOWPATH FROM NODE   3950.00 TO NODE   3952.00 =    1480.00 FEET.

+--------------------------------------------------------------------------+
| COMPOSITE C FOR B, C, & D SOILS                                          |
| SUBAREA - LIMITED INDUSTRIAL, CALCULATED IMPERVIOUS ~90%                 |
| (0.84*0.38)+(0.84*0.15)+(0.85*0.22)/0.74 = 0.85                          |
+--------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   3953.00 TO NODE   3952.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.759
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (24. DU/AC OR LESS) RUNOFF COEFFICIENT = .6800
  S.C.S. CURVE NUMBER (AMC II) =  98
```

```
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.7464
  SUBAREA AREA(ACRES) =    1.23   SUBAREA RUNOFF(CFS) =    3.98
  TOTAL AREA(ACRES) =        2.0   TOTAL RUNOFF(CFS) =       7.14
  TC(MIN.) =   12.73

+---------------------------------------------------------------------------+
| COMPOSITE C FOR B, C, & D SOILS                                           |
| SUBAREA - 24.0 DU/A OR LESS, CALCULATED IMPERVIOUS ~65%                   |
| (0.67*0.75)+(0.69*0.24)+(0.71*0.24)/1.23 = 0.68                           |
+---------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   3952.00 TO NODE   3954.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   232.83  DOWNSTREAM(FEET) =   232.50
  FLOW LENGTH(FEET) =    69.50   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  12.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.74
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       7.14
  PIPE TRAVEL TIME(MIN.) =   0.24    Tc(MIN.) =   12.97
  LONGEST FLOWPATH FROM NODE   3950.00 TO NODE   3954.00 =    1549.50 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   3954.00 TO NODE   3955.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.701
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .2500
  SOIL CLASSIFICATION IS "B"
  S.C.S. CURVE NUMBER (AMC II) =  77
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.7140
  SUBAREA AREA(ACRES) =    0.14   SUBAREA RUNOFF(CFS) =    0.16
  TOTAL AREA(ACRES) =        2.2   TOTAL RUNOFF(CFS) =       7.22
  TC(MIN.) =   12.97

****************************************************************************
  FLOW PROCESS FROM NODE   3955.00 TO NODE   3956.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   229.51  DOWNSTREAM(FEET) =   228.95
  FLOW LENGTH(FEET) =    56.40   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  11.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.26
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       7.22
  PIPE TRAVEL TIME(MIN.) =   0.15    Tc(MIN.) =   13.12
  LONGEST FLOWPATH FROM NODE   3950.00 TO NODE   3956.00 =    1605.90 FEET.
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =        2.2  TC(MIN.) =     13.12
  PEAK FLOW RATE(CFS)   =       7.22
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

W. LILAC

```
**************************************************************************

          RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT
                       2003,1985,1981 HYDROLOGY MANUAL
        (c) Copyright 1982-2016 Advanced Engineering Software (aes)
            Ver. 23.0 Release Date: 07/01/2016  License ID 1509

                        Analysis prepared by:




 ************************* DESCRIPTION OF STUDY *************************
* OCEAN BREEZE RANCH - W. LILAC                                         *
* SYSTEM 4000 TO BASIN 2H - PROPOSED CONDITIONS                         *
* SOUTHWEST QUADRANT                                                    *
 ************************************************************************

  FILE NAME: 4000P100.DAT
  TIME/DATE OF STUDY: 09:15 08/05/2024
------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) = 100.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   3.300
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  ================  ======  =====  ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0312 0.167 0.0150
  2   20.0     12.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  1.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

**************************************************************************
  FLOW PROCESS FROM NODE   4000.00 TO NODE   4001.00 IS CODE =  21
--------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==========================================================================
  STREETS & ROADS (CURBS/STORM DRAINS) RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "B"
  S.C.S. CURVE NUMBER (AMC II) =  98
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    60.00
  UPSTREAM ELEVATION(FEET) =    304.00
  DOWNSTREAM ELEVATION(FEET) =    299.80
  ELEVATION DIFFERENCE(FEET) =      4.20
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    1.677
```



```
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.38
  TOTAL AREA(ACRES) =      0.05   TOTAL RUNOFF(CFS) =      0.38

**************************************************************************
  FLOW PROCESS FROM NODE   4001.00 TO NODE   4002.00 IS CODE =  62
--------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
==========================================================================
  UPSTREAM ELEVATION(FEET) =  299.80  DOWNSTREAM ELEVATION(FEET) =  259.50
  STREET LENGTH(FEET) =  1005.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 20.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  12.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0300

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       3.93
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.31
    HALFSTREET FLOOD WIDTH(FEET) =    8.98
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.25
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.30
  STREET FLOW TRAVEL TIME(MIN.) =   3.94   Tc(MIN.) =    5.62
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.063
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (24. DU/AC OR LESS) RUNOFF COEFFICIENT = .7100
  S.C.S. CURVE NUMBER (AMC II) =  98
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.716
  SUBAREA AREA(ACRES) =    1.21      SUBAREA RUNOFF(CFS) =    6.93
  TOTAL AREA(ACRES) =       1.3        PEAK FLOW RATE(CFS) =       7.28

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.36   HALFSTREET FLOOD WIDTH(FEET) =  11.70
  FLOW VELOCITY(FEET/SEC.) =  4.89   DEPTH*VELOCITY(FT*FT/SEC.) =   1.76
  LONGEST FLOWPATH FROM NODE   4000.00 TO NODE   4002.00 =    1065.00 FEET.

**************************************************************************
  FLOW PROCESS FROM NODE   4002.00 TO NODE   4044.00 IS CODE =  31
--------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   254.30  DOWNSTREAM(FEET) =   245.00
  FLOW LENGTH(FEET) =   457.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   9.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.26
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       7.28
  PIPE TRAVEL TIME(MIN.) =   0.92    Tc(MIN.) =    6.54
  LONGEST FLOWPATH FROM NODE   4000.00 TO NODE   4044.00 =    1522.00 FEET.

**************************************************************************
  FLOW PROCESS FROM NODE   4044.00 TO NODE   4003.00 IS CODE =  31
--------------------------------------------------------------------------
```

```
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   245.00  DOWNSTREAM(FEET) =   244.00
  FLOW LENGTH(FEET) =    56.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   9.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.86
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       7.28
  PIPE TRAVEL TIME(MIN.) =   0.12    Tc(MIN.) =    6.66
  LONGEST FLOWPATH FROM NODE   4000.00 TO NODE   4003.00 =    1578.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   4044.00 TO NODE   4033.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =    6.66
  RAINFALL INTENSITY(INCH/HR) =   7.23
  TOTAL STREAM AREA(ACRES) =     1.26
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      7.28

****************************************************************************
  FLOW PROCESS FROM NODE   4048.00 TO NODE   4049.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  RESIDENTIAL (24. DU/AC OR LESS) RUNOFF COEFFICIENT = .7100
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  92
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    85.00
  UPSTREAM ELEVATION(FEET) =    261.00
  DOWNSTREAM ELEVATION(FEET) =    258.00
  ELEVATION DIFFERENCE(FEET) =      3.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    4.251
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.49
  TOTAL AREA(ACRES) =      0.08   TOTAL RUNOFF(CFS) =      0.49

****************************************************************************
  FLOW PROCESS FROM NODE   4049.00 TO NODE   4054.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  258.00  DOWNSTREAM ELEVATION(FEET) =  249.00
  STREET LENGTH(FEET) =   429.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 20.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  12.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0300

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       2.19
```



```
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.29
    HALFSTREET FLOOD WIDTH(FEET) =    7.97
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.91
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.83
  STREET FLOW TRAVEL TIME(MIN.) =   2.46   Tc(MIN.) =    6.71
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.191
  RESIDENTIAL (24. DU/AC OR LESS) RUNOFF COEFFICIENT = .7100
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  92
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.710
  SUBAREA AREA(ACRES) =    0.66      SUBAREA RUNOFF(CFS) =    3.37
  TOTAL AREA(ACRES) =        0.7        PEAK FLOW RATE(CFS) =       3.78

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.33   HALFSTREET FLOOD WIDTH(FEET) =  10.20
  FLOW VELOCITY(FEET/SEC.) =  3.26   DEPTH*VELOCITY(FT*FT/SEC.) =   1.08
  LONGEST FLOWPATH FROM NODE   4048.00 TO NODE   4054.00 =     514.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   4054.00 TO NODE   4003.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   245.00  DOWNSTREAM(FEET) =   244.00
  FLOW LENGTH(FEET) =    12.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   4.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  11.49
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       3.78
  PIPE TRAVEL TIME(MIN.) =   0.02    Tc(MIN.) =    6.73
  LONGEST FLOWPATH FROM NODE   4048.00 TO NODE   4003.00 =     526.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   4054.00 TO NODE   4003.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    6.73
  RAINFALL INTENSITY(INCH/HR) =   7.18
  TOTAL STREAM AREA(ACRES) =     0.74
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.78

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        7.28     6.66        7.226          1.26
      2        3.78     6.73        7.179          0.74

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF       Tc      INTENSITY
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)
      1       11.02     6.66        7.226
      2       11.01     6.73        7.179
```

```
  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      11.02   Tc(MIN.) =    6.66
  TOTAL AREA(ACRES) =        2.0
  LONGEST FLOWPATH FROM NODE   4000.00 TO NODE   4003.00 =    1578.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   4003.00 TO NODE   4014.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   240.39  DOWNSTREAM(FEET) =   239.39
  FLOW LENGTH(FEET) =   100.02   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  13.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.98
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      11.02
  PIPE TRAVEL TIME(MIN.) =   0.24    Tc(MIN.) =    6.90
  LONGEST FLOWPATH FROM NODE   4000.00 TO NODE   4014.00 =    1678.02 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   4003.00 TO NODE   4014.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE   4020.00 TO NODE   4021.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  RESIDENTIAL (43. DU/AC OR LESS) RUNOFF COEFFICIENT = .7900
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  94
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    60.00
  UPSTREAM ELEVATION(FEET) =    275.69
  DOWNSTREAM ELEVATION(FEET) =    274.85
  ELEVATION DIFFERENCE(FEET) =      0.84
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.864
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.27
  TOTAL AREA(ACRES) =      0.04   TOTAL RUNOFF(CFS) =      0.27

****************************************************************************
  FLOW PROCESS FROM NODE   4021.00 TO NODE   4018.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  274.85  DOWNSTREAM ELEVATION(FEET) =  248.72
  STREET LENGTH(FEET) =   340.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 20.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  12.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0300
```



```
    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.47
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.22
    HALFSTREET FLOOD WIDTH(FEET) =    4.52
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.55
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.99
  STREET FLOW TRAVEL TIME(MIN.) =   1.25   Tc(MIN.) =    5.11
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.573
  STREETS & ROADS (CURBS/STORM DRAINS) RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  98
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.861
  SUBAREA AREA(ACRES) =    0.32      SUBAREA RUNOFF(CFS) =    2.39
  TOTAL AREA(ACRES) =        0.4        PEAK FLOW RATE(CFS) =       2.66

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.25   HALFSTREET FLOOD WIDTH(FEET) =   6.40
  FLOW VELOCITY(FEET/SEC.) =  5.04   DEPTH*VELOCITY(FT*FT/SEC.) =   1.28
  LONGEST FLOWPATH FROM NODE   4020.00 TO NODE   4018.00 =     400.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   4018.00 TO NODE   4019.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   243.80  DOWNSTREAM(FEET) =   243.40
  FLOW LENGTH(FEET) =    40.50   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   6.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.84
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       2.66
  PIPE TRAVEL TIME(MIN.) =   0.14    Tc(MIN.) =    5.25
  LONGEST FLOWPATH FROM NODE   4020.00 TO NODE   4019.00 =     440.50 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   4019.00 TO NODE   4019.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.426
  LIMITED INDUSTRIAL RUNOFF COEFFICIENT = .8500
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  96
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.8563
  SUBAREA AREA(ACRES) =    0.27   SUBAREA RUNOFF(CFS) =    1.93
  TOTAL AREA(ACRES) =        0.6   TOTAL RUNOFF(CFS) =       4.55
  TC(MIN.) =    5.25

****************************************************************************
  FLOW PROCESS FROM NODE   4019.00 TO NODE   4019.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =    5.25
  RAINFALL INTENSITY(INCH/HR) =   8.43
  TOTAL STREAM AREA(ACRES) =     0.63
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.55

****************************************************************************
```

```
  FLOW PROCESS FROM NODE   4045.00 TO NODE   4046.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  88
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    95.00
  UPSTREAM ELEVATION(FEET) =    358.00
  DOWNSTREAM ELEVATION(FEET) =    344.00
  ELEVATION DIFFERENCE(FEET) =     14.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.108
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.642
  SUBAREA RUNOFF(CFS) =      0.13
  TOTAL AREA(ACRES) =      0.05   TOTAL RUNOFF(CFS) =      0.13

****************************************************************************
  FLOW PROCESS FROM NODE   4046.00 TO NODE   4022.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    344.00  DOWNSTREAM(FEET) =    258.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   569.00   CHANNEL SLOPE =  0.1511
  CHANNEL BASE(FEET) =    5.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =   2.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.956
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  88
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.26
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.29
  AVERAGE FLOW DEPTH(FEET) =   0.07   TRAVEL TIME(MIN.) =   2.88
  Tc(MIN.) =    8.99
  SUBAREA AREA(ACRES) =     1.06       SUBAREA RUNOFF(CFS) =    2.21
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.350
  TOTAL AREA(ACRES) =        1.1         PEAK FLOW RATE(CFS) =       2.31

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.10   FLOW VELOCITY(FEET/SEC.) =   4.19
  LONGEST FLOWPATH FROM NODE   4045.00 TO NODE   4022.00 =     664.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   4022.00 TO NODE   4019.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   245.40  DOWNSTREAM(FEET) =   240.90
  FLOW LENGTH(FEET) =   102.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   4.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.96
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       2.31
  PIPE TRAVEL TIME(MIN.) =   0.21    Tc(MIN.) =    9.20
  LONGEST FLOWPATH FROM NODE   4045.00 TO NODE   4019.00 =     766.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   4022.00 TO NODE   4019.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
```



```
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    9.20
  RAINFALL INTENSITY(INCH/HR) =   5.87
  TOTAL STREAM AREA(ACRES) =     1.11
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.31

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        4.55     5.25        8.426          0.63
      2        2.31     9.20        5.866          1.11

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF       Tc      INTENSITY
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)
      1        5.87     5.25        8.426
      2        5.48     9.20        5.866

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       5.87   Tc(MIN.) =    5.25
  TOTAL AREA(ACRES) =        1.7
  LONGEST FLOWPATH FROM NODE   4045.00 TO NODE   4019.00 =     766.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   4019.00 TO NODE   4014.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   243.07  DOWNSTREAM(FEET) =   242.87
  FLOW LENGTH(FEET) =    19.64   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   9.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.03
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       5.87
  PIPE TRAVEL TIME(MIN.) =   0.05    Tc(MIN.) =    5.30
  LONGEST FLOWPATH FROM NODE   4045.00 TO NODE   4014.00 =     785.64 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   4019.00 TO NODE   4015.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY     AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)   (ACRE)
      1        5.87     5.30        8.370         1.74
  LONGEST FLOWPATH FROM NODE   4045.00 TO NODE   4015.00 =     785.64 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY     AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)   (ACRE)
      1       11.02     6.90        7.064         2.00
  LONGEST FLOWPATH FROM NODE   4000.00 TO NODE   4015.00 =    1678.02 FEET.
```

```
  ** PEAK FLOW RATE TABLE **
  STREAM    RUNOFF       Tc      INTENSITY
  NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
      1      14.33       5.30        8.370
      2      15.97       6.90        7.064

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      15.97   Tc(MIN.) =    6.90
  TOTAL AREA(ACRES) =        3.7

****************************************************************************
  FLOW PROCESS FROM NODE   4014.00 TO NODE   4015.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   242.54  DOWNSTREAM(FEET) =   239.89
  FLOW LENGTH(FEET) =    72.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  12.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  12.38
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      15.97
  PIPE TRAVEL TIME(MIN.) =   0.10    Tc(MIN.) =    7.00
  LONGEST FLOWPATH FROM NODE   4000.00 TO NODE   4015.00 =    1750.02 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   4055.00 TO NODE   4056.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =    7.00
  RAINFALL INTENSITY(INCH/HR) =   7.00
  TOTAL STREAM AREA(ACRES) =     3.74
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     15.97

****************************************************************************
  FLOW PROCESS FROM NODE   4055.00 TO NODE   4056.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  88
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   121.00
  UPSTREAM ELEVATION(FEET) =    367.20
  DOWNSTREAM ELEVATION(FEET) =    356.00
  ELEVATION DIFFERENCE(FEET) =     11.20
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.430
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =   100.00
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.392
  SUBAREA RUNOFF(CFS) =      0.16
  TOTAL AREA(ACRES) =      0.06   TOTAL RUNOFF(CFS) =      0.16

****************************************************************************
  FLOW PROCESS FROM NODE   4056.00 TO NODE   4057.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
```



```
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    356.00  DOWNSTREAM(FEET) =    252.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   604.00   CHANNEL SLOPE =  0.1722
  CHANNEL BASE(FEET) =    5.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =   1.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.119
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  88
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       2.74
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.60
  AVERAGE FLOW DEPTH(FEET) =   0.11   TRAVEL TIME(MIN.) =   2.19
  Tc(MIN.) =    8.62
  SUBAREA AREA(ACRES) =     2.39       SUBAREA RUNOFF(CFS) =    5.12
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.350
  TOTAL AREA(ACRES) =        2.5         PEAK FLOW RATE(CFS) =       5.25

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.16   FLOW VELOCITY(FEET/SEC.) =   5.79
  LONGEST FLOWPATH FROM NODE   4055.00 TO NODE   4057.00 =     725.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   4057.00 TO NODE   4015.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   245.00  DOWNSTREAM(FEET) =   239.89
  FLOW LENGTH(FEET) =    38.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   4.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  14.97
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       5.25
  PIPE TRAVEL TIME(MIN.) =   0.04    Tc(MIN.) =    8.66
  LONGEST FLOWPATH FROM NODE   4055.00 TO NODE   4015.00 =     763.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   4057.00 TO NODE   4015.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    8.66
  RAINFALL INTENSITY(INCH/HR) =   6.10
  TOTAL STREAM AREA(ACRES) =     2.45
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      5.25

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       15.97     7.00        7.000          3.74
      2        5.25     8.66        6.099          2.45

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF       Tc      INTENSITY
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)
      1       20.21     7.00        7.000
```

```
      2       19.16     8.66       6.099

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      20.21   Tc(MIN.) =    7.00
  TOTAL AREA(ACRES) =        6.2
  LONGEST FLOWPATH FROM NODE   4000.00 TO NODE   4015.00 =    1750.02 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   4015.00 TO NODE   4017.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   239.06  DOWNSTREAM(FEET) =   234.62
  FLOW LENGTH(FEET) =   207.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  15.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  10.63
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      20.21
  PIPE TRAVEL TIME(MIN.) =   0.32    Tc(MIN.) =    7.32
  LONGEST FLOWPATH FROM NODE   4000.00 TO NODE   4017.00 =    1957.02 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   4015.00 TO NODE   4017.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =    7.32
  RAINFALL INTENSITY(INCH/HR) =   6.80
  TOTAL STREAM AREA(ACRES) =     6.19
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     20.21

****************************************************************************
  FLOW PROCESS FROM NODE   4013.00 TO NODE   4058.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  STREETS & ROADS (CURBS/STORM DRAINS) RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  98
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    60.00
  UPSTREAM ELEVATION(FEET) =    249.50
  DOWNSTREAM ELEVATION(FEET) =    247.80
  ELEVATION DIFFERENCE(FEET) =      1.70
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.266
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.83
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.83

****************************************************************************
  FLOW PROCESS FROM NODE   4058.00 TO NODE   4059.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  247.80  DOWNSTREAM ELEVATION(FEET) =  245.00
  STREET LENGTH(FEET) =   317.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 20.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  12.00
```



```
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0300

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       3.25
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.35
    HALFSTREET FLOOD WIDTH(FEET) =   11.42
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.29
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.81
  STREET FLOW TRAVEL TIME(MIN.) =   2.31   Tc(MIN.) =    4.58
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  STREETS & ROADS (CURBS/STORM DRAINS) RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  98
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    0.64      SUBAREA RUNOFF(CFS) =    4.84
  TOTAL AREA(ACRES) =        0.8        PEAK FLOW RATE(CFS) =       5.67

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.41   HALFSTREET FLOOD WIDTH(FEET) =  14.42
  FLOW VELOCITY(FEET/SEC.) =  2.58   DEPTH*VELOCITY(FT*FT/SEC.) =   1.07
  LONGEST FLOWPATH FROM NODE   4013.00 TO NODE   4059.00 =     377.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   4059.00 TO NODE   4017.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   235.00  DOWNSTREAM(FEET) =   234.62
  FLOW LENGTH(FEET) =    18.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   7.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.85
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       5.67
  PIPE TRAVEL TIME(MIN.) =   0.04    Tc(MIN.) =    4.62
  LONGEST FLOWPATH FROM NODE   4013.00 TO NODE   4017.00 =     395.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   4059.00 TO NODE   4017.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    4.62
  RAINFALL INTENSITY(INCH/HR) =   8.69
  TOTAL STREAM AREA(ACRES) =     0.75
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      5.67

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       20.21     7.32        6.799          6.19
      2        5.67     4.62        8.695          0.75
```

```
  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)
      1       21.47     4.62       8.695
      2       24.64     7.32       6.799

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      24.64   Tc(MIN.) =    7.32
  TOTAL AREA(ACRES) =        6.9
  LONGEST FLOWPATH FROM NODE   4000.00 TO NODE   4017.00 =    1957.02 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   4017.00 TO NODE   4004.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   234.29  DOWNSTREAM(FEET) =   191.97
  FLOW LENGTH(FEET) =   869.13   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  13.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  15.44
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      24.64
  PIPE TRAVEL TIME(MIN.) =   0.94    Tc(MIN.) =    8.26
  LONGEST FLOWPATH FROM NODE   4000.00 TO NODE   4004.00 =    2826.15 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   4017.00 TO NODE   4004.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =    8.26
  RAINFALL INTENSITY(INCH/HR) =   6.29
  TOTAL STREAM AREA(ACRES) =     6.94
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     24.64

****************************************************************************
  FLOW PROCESS FROM NODE   4065.00 TO NODE   4066.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  RESIDENTIAL (24. DU/AC OR LESS) RUNOFF COEFFICIENT = .7100
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  92
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    45.00
  UPSTREAM ELEVATION(FEET) =    255.00
  DOWNSTREAM ELEVATION(FEET) =    244.30
  ELEVATION DIFFERENCE(FEET) =     10.70
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.186
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.99
  TOTAL AREA(ACRES) =      0.16   TOTAL RUNOFF(CFS) =      0.99

****************************************************************************
  FLOW PROCESS FROM NODE   4066.00 TO NODE   4004.00 IS CODE =  62
```



```
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  244.30  DOWNSTREAM ELEVATION(FEET) =  203.00
  STREET LENGTH(FEET) =   820.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 20.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  12.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0300

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       3.39
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.29
    HALFSTREET FLOOD WIDTH(FEET) =    7.97
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.50
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.29
  STREET FLOW TRAVEL TIME(MIN.) =   3.04   Tc(MIN.) =    5.22
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.452
  RESIDENTIAL (24. DU/AC OR LESS) RUNOFF COEFFICIENT = .7100
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  92
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.710
  SUBAREA AREA(ACRES) =    0.80      SUBAREA RUNOFF(CFS) =    4.80
  TOTAL AREA(ACRES) =        1.0         PEAK FLOW RATE(CFS) =       5.76

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.33   HALFSTREET FLOOD WIDTH(FEET) =  10.11
  FLOW VELOCITY(FEET/SEC.) =  5.05   DEPTH*VELOCITY(FT*FT/SEC.) =   1.66
  LONGEST FLOWPATH FROM NODE   4065.00 TO NODE   4004.00 =     865.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   4066.00 TO NODE   4004.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    5.22
  RAINFALL INTENSITY(INCH/HR) =   8.45
  TOTAL STREAM AREA(ACRES) =     0.96
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      5.76

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       24.64     8.26       6.290          6.94
      2        5.76     5.22       8.452          0.96

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)
      1       24.10     5.22       8.452
```

```
      2       28.93     8.26       6.290

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      28.93   Tc(MIN.) =    8.26
  TOTAL AREA(ACRES) =        7.9
  LONGEST FLOWPATH FROM NODE   4000.00 TO NODE   4004.00 =    2826.15 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   4004.00 TO NODE   4005.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   191.64  DOWNSTREAM(FEET) =   191.07
  FLOW LENGTH(FEET) =    35.61   MANNING'S N =  0.013
  DEPTH OF FLOW IN  27.0 INCH PIPE IS  17.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  10.56
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      28.93
  PIPE TRAVEL TIME(MIN.) =   0.06    Tc(MIN.) =    8.32
  LONGEST FLOWPATH FROM NODE   4000.00 TO NODE   4005.00 =    2861.76 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   4005.00 TO NODE   4006.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.262
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  88
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.5637
  SUBAREA AREA(ACRES) =    0.44   SUBAREA RUNOFF(CFS) =    0.96
  TOTAL AREA(ACRES) =        8.3   TOTAL RUNOFF(CFS) =      29.44
  TC(MIN.) =    8.32

****************************************************************************
  FLOW PROCESS FROM NODE   4006.00 TO NODE   4007.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   187.87  DOWNSTREAM(FEET) =   187.20
  FLOW LENGTH(FEET) =    14.67   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  15.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  15.51
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      29.44
  PIPE TRAVEL TIME(MIN.) =   0.02    Tc(MIN.) =    8.33
  LONGEST FLOWPATH FROM NODE   4000.00 TO NODE   4007.00 =    2876.43 FEET.
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =        8.3  TC(MIN.) =      8.33
  PEAK FLOW RATE(CFS)   =      29.44
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

```
****************************************************************************

          RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT
                       2003,1985,1981 HYDROLOGY MANUAL
        (c) Copyright 1982-2016 Advanced Engineering Software (aes)
            Ver. 23.0 Release Date: 07/01/2016  License ID 1509

                          Analysis prepared by:




 ************************** DESCRIPTION OF STUDY **************************
* OBR PROPOSED CONDITIONS                                                 *
* SYSTEM 4016 100 YEAR MITIGATED                                          *
* SOUTHWEST QUADRANT                                                      *
 ****************************************************************************

  FILE NAME: 4016M100.DAT
  TIME/DATE OF STUDY: 09:36 08/05/2024
----------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
----------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) = 100.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   3.300
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  ==================  ======  =====  ====  =====  =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0312 0.167 0.0150
  2   20.0     12.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  1.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

****************************************************************************
  FLOW PROCESS FROM NODE   4008.00 TO NODE   4009.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3000
  SOIL CLASSIFICATION IS "C"
  S.C.S. CURVE NUMBER (AMC II) =  85
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    358.09
  DOWNSTREAM ELEVATION(FEET) =    340.00
  ELEVATION DIFFERENCE(FEET) =     18.09
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.684
```



```
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.210
  SUBAREA RUNOFF(CFS) =      0.58
  TOTAL AREA(ACRES) =      0.27   TOTAL RUNOFF(CFS) =      0.58

****************************************************************************
  FLOW PROCESS FROM NODE   4009.00 TO NODE   4010.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    340.00  DOWNSTREAM(FEET) =    201.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   645.00   CHANNEL SLOPE =  0.2155
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   5.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.657
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3000
  SOIL CLASSIFICATION IS "C"
  S.C.S. CURVE NUMBER (AMC II) =  85
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       4.15
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.52
  AVERAGE FLOW DEPTH(FEET) =   0.11   TRAVEL TIME(MIN.) =   3.05
  Tc(MIN.) =    9.74
  SUBAREA AREA(ACRES) =     4.15       SUBAREA RUNOFF(CFS) =    7.04
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.300
  TOTAL AREA(ACRES) =        4.4         PEAK FLOW RATE(CFS) =       7.50

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.16   FLOW VELOCITY(FEET/SEC.) =   4.25
  LONGEST FLOWPATH FROM NODE   4008.00 TO NODE   4010.00 =     745.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   4024.00 TO NODE   4010.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.657
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3100
  S.C.S. CURVE NUMBER (AMC II) =  85
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3020
  SUBAREA AREA(ACRES) =    1.12   SUBAREA RUNOFF(CFS) =    1.96
  TOTAL AREA(ACRES) =        5.5   TOTAL RUNOFF(CFS) =       9.47
  TC(MIN.) =    9.74

****************************************************************************
  FLOW PROCESS FROM NODE   4009.00 TO NODE   4010.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =    9.74
  RAINFALL INTENSITY(INCH/HR) =   5.66
  TOTAL STREAM AREA(ACRES) =     5.54
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      9.47

****************************************************************************
  FLOW PROCESS FROM NODE   4075.00 TO NODE   4076.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  STREETS & ROADS (CURBS/STORM DRAINS) RUNOFF COEFFICIENT = .8700
```

```
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  98
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    48.00
  UPSTREAM ELEVATION(FEET) =    214.00
  DOWNSTREAM ELEVATION(FEET) =    211.00
  ELEVATION DIFFERENCE(FEET) =      3.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    1.557
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.15
  TOTAL AREA(ACRES) =      0.02   TOTAL RUNOFF(CFS) =      0.15

****************************************************************************
  FLOW PROCESS FROM NODE   4076.00 TO NODE   4010.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  211.00  DOWNSTREAM ELEVATION(FEET) =  200.00
  STREET LENGTH(FEET) =   222.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 20.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  12.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0300

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       0.45
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.16
    HALFSTREET FLOOD WIDTH(FEET) =    1.50
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.19
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.66
  STREET FLOW TRAVEL TIME(MIN.) =   0.88   Tc(MIN.) =    2.44
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  STREETS & ROADS (CURBS/STORM DRAINS) RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  98
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    0.08      SUBAREA RUNOFF(CFS) =    0.61
  TOTAL AREA(ACRES) =        0.1        PEAK FLOW RATE(CFS) =       0.76

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.19   HALFSTREET FLOOD WIDTH(FEET) =   3.10
  FLOW VELOCITY(FEET/SEC.) =  3.53   DEPTH*VELOCITY(FT*FT/SEC.) =   0.66
  LONGEST FLOWPATH FROM NODE   4075.00 TO NODE   4010.00 =     270.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   4076.00 TO NODE   4010.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    2.44
  RAINFALL INTENSITY(INCH/HR) =   8.69
  TOTAL STREAM AREA(ACRES) =     0.10
```



```
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      0.76

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        9.47     9.74        5.657          5.54
      2        0.76     2.44        8.695          0.10

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF       Tc      INTENSITY
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)
      1        3.13     2.44        8.695
      2        9.96     9.74        5.657

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       9.96   Tc(MIN.) =    9.74
  TOTAL AREA(ACRES) =        5.6
  LONGEST FLOWPATH FROM NODE   4008.00 TO NODE   4010.00 =     745.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   4010.00 TO NODE   4007.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   191.02  DOWNSTREAM(FEET) =   187.70
  FLOW LENGTH(FEET) =    82.88   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   8.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  11.52
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       9.96
  PIPE TRAVEL TIME(MIN.) =   0.12    Tc(MIN.) =    9.86
  LONGEST FLOWPATH FROM NODE   4008.00 TO NODE   4007.00 =     827.88 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   4010.00 TO NODE   4007.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =    9.86
  RAINFALL INTENSITY(INCH/HR) =   5.61
  TOTAL STREAM AREA(ACRES) =     5.64
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      9.96

****************************************************************************
  FLOW PROCESS FROM NODE   4006.00 TO NODE   4007.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<
============================================================================
  USER-SPECIFIED VALUES ARE AS FOLLOWS:
  TC(MIN) =  12.33   RAIN INTENSITY(INCH/HOUR) =  4.86
  TOTAL AREA(ACRES) =     8.30   TOTAL RUNOFF(CFS) =     16.16

****************************************************************************
  FLOW PROCESS FROM NODE   4006.00 TO NODE   4007.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
```

```
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
================================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   12.33
  RAINFALL INTENSITY(INCH/HR) =   4.86
  TOTAL STREAM AREA(ACRES) =     8.30
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     16.16

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        9.96     9.86        5.613          5.64
      2       16.16    12.33        4.858          8.30

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF       Tc      INTENSITY
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)
      1       22.87     9.86        5.613
      2       24.78    12.33        4.858

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      24.78   Tc(MIN.) =   12.33
  TOTAL AREA(ACRES) =       13.9
  LONGEST FLOWPATH FROM NODE   4008.00 TO NODE   4007.00 =     827.88 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   4007.00 TO NODE   4016.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   189.87  DOWNSTREAM(FEET) =   184.97
  FLOW LENGTH(FEET) =    44.17   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  11.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  21.04
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      24.78
  PIPE TRAVEL TIME(MIN.) =   0.03    Tc(MIN.) =   12.36
  LONGEST FLOWPATH FROM NODE   4008.00 TO NODE   4016.00 =     872.05 FEET.
================================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =       13.9  TC(MIN.) =     12.36
  PEAK FLOW RATE(CFS)   =      24.78
================================================================================
================================================================================
  END OF RATIONAL METHOD ANALYSIS
```

```
****************************************************************************

          RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT
                       2003,1985,1981 HYDROLOGY MANUAL
        (c) Copyright 1982-2016 Advanced Engineering Software (aes)
            Ver. 23.0 Release Date: 07/01/2016  License ID 1509

                        Analysis prepared by:




 ************************** DESCRIPTION OF STUDY **************************
* OBR PROPOSED CONDITIONS                                                 *
* SYSTEM 4016 100 YEAR UNMITIGATED                                        *
* SOUTHWEST QUADRANT                                                      *
 ****************************************************************************

  FILE NAME: 4016P100.DAT
  TIME/DATE OF STUDY: 09:37 08/05/2024
----------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
----------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) = 100.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   3.300
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  ==================  ======  =====  ====  =====  =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0312 0.167 0.0150
  2   20.0     12.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  1.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

****************************************************************************
  FLOW PROCESS FROM NODE   4008.00 TO NODE   4009.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3000
  SOIL CLASSIFICATION IS "C"
  S.C.S. CURVE NUMBER (AMC II) =  85
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    358.09
  DOWNSTREAM ELEVATION(FEET) =    340.00
  ELEVATION DIFFERENCE(FEET) =     18.09
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.684
```



```
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.210
  SUBAREA RUNOFF(CFS) =      0.58
  TOTAL AREA(ACRES) =      0.27   TOTAL RUNOFF(CFS) =      0.58

****************************************************************************
  FLOW PROCESS FROM NODE   4009.00 TO NODE   4010.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    340.00  DOWNSTREAM(FEET) =    201.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   645.00   CHANNEL SLOPE =  0.2155
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   5.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.657
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3000
  SOIL CLASSIFICATION IS "C"
  S.C.S. CURVE NUMBER (AMC II) =  85
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       4.15
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.52
  AVERAGE FLOW DEPTH(FEET) =   0.11   TRAVEL TIME(MIN.) =   3.05
  Tc(MIN.) =    9.74
  SUBAREA AREA(ACRES) =     4.15       SUBAREA RUNOFF(CFS) =    7.04
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.300
  TOTAL AREA(ACRES) =        4.4         PEAK FLOW RATE(CFS) =       7.50

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.16   FLOW VELOCITY(FEET/SEC.) =   4.25
  LONGEST FLOWPATH FROM NODE   4008.00 TO NODE   4010.00 =     745.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   4024.00 TO NODE   4010.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.657
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3100
  S.C.S. CURVE NUMBER (AMC II) =  85
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3020
  SUBAREA AREA(ACRES) =    1.12   SUBAREA RUNOFF(CFS) =    1.96
  TOTAL AREA(ACRES) =        5.5   TOTAL RUNOFF(CFS) =       9.47
  TC(MIN.) =    9.74

****************************************************************************
  FLOW PROCESS FROM NODE   4009.00 TO NODE   4010.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =    9.74
  RAINFALL INTENSITY(INCH/HR) =   5.66
  TOTAL STREAM AREA(ACRES) =     5.54
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      9.47

****************************************************************************
  FLOW PROCESS FROM NODE   4075.00 TO NODE   4076.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  STREETS & ROADS (CURBS/STORM DRAINS) RUNOFF COEFFICIENT = .8700
```

```
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  98
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    48.00
  UPSTREAM ELEVATION(FEET) =    214.00
  DOWNSTREAM ELEVATION(FEET) =    211.00
  ELEVATION DIFFERENCE(FEET) =      3.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    1.557
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.15
  TOTAL AREA(ACRES) =      0.02   TOTAL RUNOFF(CFS) =      0.15

****************************************************************************
  FLOW PROCESS FROM NODE   4076.00 TO NODE   4010.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  211.00  DOWNSTREAM ELEVATION(FEET) =  200.00
  STREET LENGTH(FEET) =   222.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 20.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  12.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0300

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       0.45
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.16
    HALFSTREET FLOOD WIDTH(FEET) =    1.50
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.19
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.66
  STREET FLOW TRAVEL TIME(MIN.) =   0.88   Tc(MIN.) =    2.44
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  STREETS & ROADS (CURBS/STORM DRAINS) RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  98
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    0.08      SUBAREA RUNOFF(CFS) =    0.61
  TOTAL AREA(ACRES) =        0.1        PEAK FLOW RATE(CFS) =       0.76

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.19   HALFSTREET FLOOD WIDTH(FEET) =   3.10
  FLOW VELOCITY(FEET/SEC.) =  3.53   DEPTH*VELOCITY(FT*FT/SEC.) =   0.66
  LONGEST FLOWPATH FROM NODE   4075.00 TO NODE   4010.00 =     270.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   4076.00 TO NODE   4010.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    2.44
  RAINFALL INTENSITY(INCH/HR) =   8.69
  TOTAL STREAM AREA(ACRES) =     0.10
```



```
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      0.76

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        9.47     9.74        5.657          5.54
      2        0.76     2.44        8.695          0.10

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF       Tc      INTENSITY
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)
      1        3.13     2.44        8.695
      2        9.96     9.74        5.657

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       9.96   Tc(MIN.) =    9.74
  TOTAL AREA(ACRES) =        5.6
  LONGEST FLOWPATH FROM NODE   4008.00 TO NODE   4010.00 =     745.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   4010.00 TO NODE   4007.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   191.02  DOWNSTREAM(FEET) =   187.70
  FLOW LENGTH(FEET) =    82.88   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   8.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  11.52
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       9.96
  PIPE TRAVEL TIME(MIN.) =   0.12    Tc(MIN.) =    9.86
  LONGEST FLOWPATH FROM NODE   4008.00 TO NODE   4007.00 =     827.88 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   4010.00 TO NODE   4007.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =    9.86
  RAINFALL INTENSITY(INCH/HR) =   5.61
  TOTAL STREAM AREA(ACRES) =     5.64
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      9.96

****************************************************************************
  FLOW PROCESS FROM NODE   4006.00 TO NODE   4007.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<
============================================================================
  USER-SPECIFIED VALUES ARE AS FOLLOWS:
  TC(MIN) =   8.33   RAIN INTENSITY(INCH/HOUR) =  6.26
  TOTAL AREA(ACRES) =     8.30   TOTAL RUNOFF(CFS) =     29.44

****************************************************************************
  FLOW PROCESS FROM NODE   4006.00 TO NODE   4007.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
```

```
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
================================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    8.33
  RAINFALL INTENSITY(INCH/HR) =   6.26
  TOTAL STREAM AREA(ACRES) =     8.30
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     29.44

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        9.96     9.86        5.613          5.64
      2       29.44     8.33        6.256          8.30

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF       Tc      INTENSITY
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)
      1       38.37     8.33        6.256
      2       36.37     9.86        5.613

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      38.37   Tc(MIN.) =    8.33
  TOTAL AREA(ACRES) =       13.9
  LONGEST FLOWPATH FROM NODE   4008.00 TO NODE   4007.00 =     827.88 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   4007.00 TO NODE   4016.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   189.87  DOWNSTREAM(FEET) =   184.97
  FLOW LENGTH(FEET) =    44.17   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  13.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  23.44
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      38.37
  PIPE TRAVEL TIME(MIN.) =   0.03    Tc(MIN.) =    8.36
  LONGEST FLOWPATH FROM NODE   4008.00 TO NODE   4016.00 =     872.05 FEET.
================================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =       13.9  TC(MIN.) =      8.36
  PEAK FLOW RATE(CFS)   =      38.37
================================================================================
================================================================================
  END OF RATIONAL METHOD ANALYSIS
```

```
****************************************************************************

          RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT
                       2003,1985,1981 HYDROLOGY MANUAL
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            Ver. 23.0 Release Date: 07/01/2016  License ID 1509

                        Analysis prepared by:




 ************************** DESCRIPTION OF STUDY **************************
* OCEAN BREEZE RANCH - W. LILAC                                           *
* SYSTEM 4030 - PROPOSED CONDITIONS                                       *
* SOUTHWEST QUADRANT                                                      *
 ****************************************************************************

  FILE NAME: 4030P100.DAT
  TIME/DATE OF STUDY: 13:35 05/31/2024
----------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
----------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) = 100.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   3.300
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  ================  ======  =====  ====== =====  =======
  1   18.0     12.0    0.020/0.020/0.015   0.50    1.50 0.0313 0.125 0.0150
  2   20.0     13.0    0.020/0.020/0.015   0.50    1.50 0.0313 0.125 0.0150
  3   16.0     11.0    0.020/0.020/0.015   0.50    1.50 0.0313 0.125 0.0150
  4   12.0      7.0    0.020/0.020/0.015   0.50    1.50 0.0100 0.010 0.0160
  5   17.0     12.0    0.020/0.020/0.015   0.33    1.50 0.0100 0.010 0.0160

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth = -0.10 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

****************************************************************************
  FLOW PROCESS FROM NODE   4030.00 TO NODE   4031.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  88
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    412.70
```



```
  DOWNSTREAM ELEVATION(FEET) =    390.00
  ELEVATION DIFFERENCE(FEET) =     22.70
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.267
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.516
  SUBAREA RUNOFF(CFS) =      0.66
  TOTAL AREA(ACRES) =      0.25   TOTAL RUNOFF(CFS) =      0.66

****************************************************************************
  FLOW PROCESS FROM NODE   4031.00 TO NODE   4032.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    392.00  DOWNSTREAM(FEET) =    271.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1209.00   CHANNEL SLOPE =  0.1001
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   5.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.994
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3300
  S.C.S. CURVE NUMBER (AMC II) =  88
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       9.14
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.63
  AVERAGE FLOW DEPTH(FEET) =   0.23   TRAVEL TIME(MIN.) =   5.54
  Tc(MIN.) =   11.81
  SUBAREA AREA(ACRES) =     9.88       SUBAREA RUNOFF(CFS) =   16.28
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.330
  TOTAL AREA(ACRES) =       10.1          PEAK FLOW RATE(CFS) =      16.72

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.32   FLOW VELOCITY(FEET/SEC.) =   4.45
  LONGEST FLOWPATH FROM NODE   4030.00 TO NODE   4032.00 =    1309.00 FEET.

+--------------------------------------------------------------------------+
| COMPOSITE C FOR C & D SOILS                                              |
| SUBAREA - NATURAL                                                        |
| (3.79*0.3+6.09*0.35)/9.88=0.33                                           |
+--------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   4031.00 TO NODE   4032.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   11.81
  RAINFALL INTENSITY(INCH/HR) =   4.99
  TOTAL STREAM AREA(ACRES) =    10.13
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     16.72

****************************************************************************
  FLOW PROCESS FROM NODE   4035.00 TO NODE   4036.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  88
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    376.30
  DOWNSTREAM ELEVATION(FEET) =    363.80
```

```
  ELEVATION DIFFERENCE(FEET) =     12.50
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.267
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.516
  SUBAREA RUNOFF(CFS) =      0.68
  TOTAL AREA(ACRES) =      0.26   TOTAL RUNOFF(CFS) =      0.68

****************************************************************************
  FLOW PROCESS FROM NODE   4036.00 TO NODE   4032.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    363.80  DOWNSTREAM(FEET) =    271.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   750.00   CHANNEL SLOPE =  0.1237
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   5.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.475
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3200
  S.C.S. CURVE NUMBER (AMC II) =  88
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       5.06
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.14
  AVERAGE FLOW DEPTH(FEET) =   0.15   TRAVEL TIME(MIN.) =   3.98
  Tc(MIN.) =   10.24
  SUBAREA AREA(ACRES) =     4.87       SUBAREA RUNOFF(CFS) =     8.53
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.322
  TOTAL AREA(ACRES) =        5.1         PEAK FLOW RATE(CFS) =       9.03

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.21   FLOW VELOCITY(FEET/SEC.) =   3.88
  LONGEST FLOWPATH FROM NODE   4035.00 TO NODE   4032.00 =     850.00 FEET.

+--------------------------------------------------------------------------+
| COMPOSITE FOR C & D SOILS                                                |
| SUBAREA - NATURAL                                                        |
| (2.67*0.3+2.2*0.35)/4.87=0.32                                            |
+--------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   4036.00 TO NODE   4032.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   10.24
  RAINFALL INTENSITY(INCH/HR) =   5.47
  TOTAL STREAM AREA(ACRES) =     5.13
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      9.03

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       16.72    11.81        4.994         10.13
      2        9.03    10.24        5.475          5.13

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
```



```
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)
      1       23.53    10.24        5.475
      2       24.96    11.81        4.994

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      24.96   Tc(MIN.) =   11.81
  TOTAL AREA(ACRES) =       15.3
  LONGEST FLOWPATH FROM NODE   4030.00 TO NODE   4032.00 =    1309.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   4032.00 TO NODE   4033.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   267.10  DOWNSTREAM(FEET) =   266.41
  FLOW LENGTH(FEET) =    69.47   MANNING'S N =  0.013
  DEPTH OF FLOW IN  27.0 INCH PIPE IS  18.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.46
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      24.96
  PIPE TRAVEL TIME(MIN.) =   0.14    Tc(MIN.) =   11.95
  LONGEST FLOWPATH FROM NODE   4030.00 TO NODE   4033.00 =    1378.47 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   4034.00 TO NODE   4033.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.957
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3300
  S.C.S. CURVE NUMBER (AMC II) =  88
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3280
  SUBAREA AREA(ACRES) =    3.63   SUBAREA RUNOFF(CFS) =    5.94
  TOTAL AREA(ACRES) =       18.9   TOTAL RUNOFF(CFS) =      30.71
  TC(MIN.) =   11.95

+--------------------------------------------------------------------------+
| COMPOSITE C FOR C & D SOILS                                              |
| SUBAREA NATURAL                                                          |
| (1.7*0.3+1.93*0.35)/3.63=0.33                                            |
+--------------------------------------------------------------------------+
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =       18.9  TC(MIN.) =     11.95
  PEAK FLOW RATE(CFS)   =      30.71
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

```
****************************************************************************

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                        Analysis prepared by:




 ************************** DESCRIPTION OF STUDY **************************
* OCEAN BREEZE RANCH - W. LILAC                                           *
* SYSTEM 4040 - PROPOSED CONDITIONS                                       *
* SOUTHWEST QUADRANT                                                      *
 ****************************************************************************

  FILE NAME: 4040P100.DAT
  TIME/DATE OF STUDY: 13:36 05/31/2024
----------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
----------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) = 100.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   3.300
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  ================  ======  =====  ====== =====  =======
  1   18.0     12.0    0.020/0.020/0.015   0.50    1.50 0.0313 0.125 0.0150
  2   20.0     13.0    0.020/0.020/0.015   0.50    1.50 0.0313 0.125 0.0150
  3   16.0     11.0    0.020/0.020/0.015   0.50    1.50 0.0313 0.125 0.0150
  4   12.0      7.0    0.020/0.020/0.015   0.50    1.50 0.0100 0.010 0.0160
  5   17.0     12.0    0.020/0.020/0.015   0.33    1.50 0.0100 0.010 0.0160

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth = -0.10 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

****************************************************************************
  FLOW PROCESS FROM NODE   4040.00 TO NODE   4041.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  88
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    64.00
  UPSTREAM ELEVATION(FEET) =    372.60
```



```
  DOWNSTREAM ELEVATION(FEET) =    362.00
  ELEVATION DIFFERENCE(FEET) =     10.60
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    5.013
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.680
  SUBAREA RUNOFF(CFS) =      0.58
  TOTAL AREA(ACRES) =      0.19   TOTAL RUNOFF(CFS) =      0.58

****************************************************************************
  FLOW PROCESS FROM NODE   4041.00 TO NODE   4042.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    362.00  DOWNSTREAM(FEET) =    264.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   494.00   CHANNEL SLOPE =  0.1984
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   5.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.765
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3200
  S.C.S. CURVE NUMBER (AMC II) =  88
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       4.62
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.48
  AVERAGE FLOW DEPTH(FEET) =   0.12   TRAVEL TIME(MIN.) =   2.36
  Tc(MIN.) =    7.38
  SUBAREA AREA(ACRES) =     3.66       SUBAREA RUNOFF(CFS) =    7.92
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.321
  TOTAL AREA(ACRES) =        3.9         PEAK FLOW RATE(CFS) =       8.37

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.18   FLOW VELOCITY(FEET/SEC.) =   4.31
  LONGEST FLOWPATH FROM NODE   4040.00 TO NODE   4042.00 =     558.00 FEET.

+--------------------------------------------------------------------------+
| COMPOSITE C FOR C & D SOILS                                              |
| SUBAREA - NATURAL                                                        |
| (2.15*0.3+1.15*0.35)/3.66=0.32                                           |
+--------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   4042.00 TO NODE   4043.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   250.40  DOWNSTREAM(FEET) =   249.61
  FLOW LENGTH(FEET) =    79.46   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  12.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.44
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       8.37
  PIPE TRAVEL TIME(MIN.) =   0.21    Tc(MIN.) =    7.58
  LONGEST FLOWPATH FROM NODE   4040.00 TO NODE   4043.00 =     637.46 FEET.
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)      =        3.9  TC(MIN.) =      7.58
  PEAK FLOW RATE(CFS)    =       8.37
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

```
****************************************************************************

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                        Analysis prepared by:




 ************************** DESCRIPTION OF STUDY **************************
* OCEAN BREEZE RANCH - W. LILAC                                           *
* SYSTEM 4050 - PROPOSED CONDITIONS                                       *
* SOUTHWEST QUADRANT                                                      *
 ****************************************************************************

  FILE NAME: 4050P100.DAT
  TIME/DATE OF STUDY: 13:36 05/31/2024
----------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
----------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) = 100.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   3.300
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  ================  ======  ===== ====== ===== =======
  1   18.0     12.0    0.020/0.020/0.015   0.50    1.50 0.0313 0.125 0.0150
  2   20.0     13.0    0.020/0.020/0.015   0.50    1.50 0.0313 0.125 0.0150
  3   16.0     11.0    0.020/0.020/0.015   0.50    1.50 0.0313 0.125 0.0150
  4   12.0      7.0    0.020/0.020/0.015   0.50    1.50 0.0100 0.010 0.0160
  5   17.0     12.0    0.020/0.020/0.015   0.33    1.50 0.0100 0.010 0.0160

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth = -0.10 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

****************************************************************************
  FLOW PROCESS FROM NODE   4050.00 TO NODE   4051.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  88
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    352.00
```



```
  DOWNSTREAM ELEVATION(FEET) =    339.00
  ELEVATION DIFFERENCE(FEET) =     13.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.267
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.516
  SUBAREA RUNOFF(CFS) =      0.13
  TOTAL AREA(ACRES) =      0.05   TOTAL RUNOFF(CFS) =      0.13

****************************************************************************
  FLOW PROCESS FROM NODE   4051.00 TO NODE   4052.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    339.00  DOWNSTREAM(FEET) =    253.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   496.00   CHANNEL SLOPE =  0.1734
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   5.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.541
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  88
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.48
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   2.18
  AVERAGE FLOW DEPTH(FEET) =   0.07   TRAVEL TIME(MIN.) =   3.79
  Tc(MIN.) =   10.05
  SUBAREA AREA(ACRES) =     1.37       SUBAREA RUNOFF(CFS) =    2.66
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.350
  TOTAL AREA(ACRES) =        1.4          PEAK FLOW RATE(CFS) =       2.75

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.09   FLOW VELOCITY(FEET/SEC.) =   2.79
  LONGEST FLOWPATH FROM NODE   4050.00 TO NODE   4052.00 =     596.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   4047.00 TO NODE   4052.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.541
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =  88
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
  SUBAREA AREA(ACRES) =    1.18   SUBAREA RUNOFF(CFS) =    2.29
  TOTAL AREA(ACRES) =        2.6   TOTAL RUNOFF(CFS) =       5.04
  TC(MIN.) =   10.05

****************************************************************************
  FLOW PROCESS FROM NODE   4052.00 TO NODE   4053.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   250.40  DOWNSTREAM(FEET) =   249.61
  FLOW LENGTH(FEET) =    79.46   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   8.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.76
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       5.04
  PIPE TRAVEL TIME(MIN.) =   0.23    Tc(MIN.) =   10.28
  LONGEST FLOWPATH FROM NODE   4050.00 TO NODE   4053.00 =     675.46 FEET.
```

```
==============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =         2.6  TC(MIN.) =     10.28
  PEAK FLOW RATE(CFS)   =        5.04
==============================================================================
==============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

```
 ************************************************************************

           RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
           Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT
                        2003,1985,1981 HYDROLOGY MANUAL
        (c) Copyright 1982-2016 Advanced Engineering Software (aes)
            Ver. 23.0 Release Date: 07/01/2016  License ID 1509

                        Analysis prepared by:




 ************************** DESCRIPTION OF STUDY **************************
* OCEAN BREEZE RANCH - W. LILAC                                          *
* SYSTEM 4060 - PROPOSED CONDITIONS                                      *
* SOUTHWEST QUADRANT                                                     *
 ************************************************************************

  FILE NAME: 4060P100.DAT
  TIME/DATE OF STUDY: 09:51 08/05/2024
------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) = 100.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   3.300
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  ==================  ======  =====  ====  =====  =======
  1   18.0     12.0    0.020/0.020/0.015   0.50    1.50 0.0313 0.125 0.0150
  2   20.0     13.0    0.020/0.020/0.015   0.50    1.50 0.0313 0.125 0.0150
  3   16.0     11.0    0.020/0.020/0.015   0.50    1.50 0.0313 0.125 0.0150
  4   12.0      7.0    0.020/0.020/0.015   0.50    0.10 0.0100 0.010 0.0150
  5   17.0     12.0    0.020/0.020/0.015   0.33    0.10 0.0100 0.010 0.0160
  6   20.0     12.0    0.020/0.020/0.015   0.33    0.10 0.0100 0.010 0.0160
  7   13.0      7.0    0.020/0.020/0.015   0.33    0.10 0.0100 0.010 0.0160

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth = -0.10 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

************************************************************************
  FLOW PROCESS FROM NODE   4060.00 TO NODE   4061.00 IS CODE =  21
------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
========================================================================
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3000
  SOIL CLASSIFICATION IS "C"
  S.C.S. CURVE NUMBER (AMC II) =  85
```



```
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    331.57
  DOWNSTREAM ELEVATION(FEET) =    318.00
  ELEVATION DIFFERENCE(FEET) =     13.57
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.684
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.210
  SUBAREA RUNOFF(CFS) =      0.19
  TOTAL AREA(ACRES) =      0.09   TOTAL RUNOFF(CFS) =      0.19

************************************************************************
  FLOW PROCESS FROM NODE   4061.00 TO NODE   4062.00 IS CODE =  51
------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    318.00  DOWNSTREAM(FEET) =    230.20
  CHANNEL LENGTH THRU SUBAREA(FEET) =   688.00   CHANNEL SLOPE =  0.1276
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   5.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.136
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3300
  S.C.S. CURVE NUMBER (AMC II) =  85
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       2.66
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   2.48
  AVERAGE FLOW DEPTH(FEET) =   0.10   TRAVEL TIME(MIN.) =   4.62
  Tc(MIN.) =   11.31
  SUBAREA AREA(ACRES) =     2.86       SUBAREA RUNOFF(CFS) =    4.85
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.329
  TOTAL AREA(ACRES) =        2.9         PEAK FLOW RATE(CFS) =       4.99

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.15   FLOW VELOCITY(FEET/SEC.) =   3.14
  LONGEST FLOWPATH FROM NODE   4060.00 TO NODE   4062.00 =     788.00 FEET.

************************************************************************
  FLOW PROCESS FROM NODE   4061.00 TO NODE   4062.00 IS CODE =   1
------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
========================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   11.31
  RAINFALL INTENSITY(INCH/HR) =   5.14
  TOTAL STREAM AREA(ACRES) =     2.95
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.99

************************************************************************
  FLOW PROCESS FROM NODE   5032.00 TO NODE   5033.00 IS CODE =  21
------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
========================================================================
  STREETS & ROADS (CURBS/STORM DRAINS) RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  98
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    60.00
  UPSTREAM ELEVATION(FEET) =    244.50
  DOWNSTREAM ELEVATION(FEET) =    241.80
  ELEVATION DIFFERENCE(FEET) =      2.70
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    1.942
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
```

```
  SUBAREA RUNOFF(CFS) =      0.15
  TOTAL AREA(ACRES) =      0.02   TOTAL RUNOFF(CFS) =      0.15

****************************************************************************
  FLOW PROCESS FROM NODE   5033.00 TO NODE   4062.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  6 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  241.80  DOWNSTREAM ELEVATION(FEET) =  230.50
  STREET LENGTH(FEET) =   241.00   CURB HEIGHT(INCHES) =  4.0
  STREET HALFWIDTH(FEET) = 20.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  12.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.015
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0160
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       0.45
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.10
    HALFSTREET FLOOD WIDTH(FEET) =    4.33
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.41
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.25
  STREET FLOW TRAVEL TIME(MIN.) =   1.67   Tc(MIN.) =    3.61
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  STREETS & ROADS (CURBS/STORM DRAINS) RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  98
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    0.08      SUBAREA RUNOFF(CFS) =    0.61
  TOTAL AREA(ACRES) =        0.1        PEAK FLOW RATE(CFS) =       0.76

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.12   HALFSTREET FLOOD WIDTH(FEET) =   5.19
  FLOW VELOCITY(FEET/SEC.) =  2.79   DEPTH*VELOCITY(FT*FT/SEC.) =   0.34
  LONGEST FLOWPATH FROM NODE   5032.00 TO NODE   4062.00 =     301.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   5033.00 TO NODE   4062.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    3.61
  RAINFALL INTENSITY(INCH/HR) =   8.69
  TOTAL STREAM AREA(ACRES) =     0.10
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      0.76

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER       (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        4.99    11.31        5.136          2.95
      2        0.76     3.61        8.695          0.10

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
```



```
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF       Tc      INTENSITY
  NUMBER       (CFS)     (MIN.)   (INCH/HOUR)
      1        2.35     3.61        8.695
      2        5.43    11.31        5.136

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       5.43   Tc(MIN.) =   11.31
  TOTAL AREA(ACRES) =        3.0
  LONGEST FLOWPATH FROM NODE   4060.00 TO NODE   4062.00 =     788.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   4062.00 TO NODE   4064.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   218.00  DOWNSTREAM(FEET) =   215.89
  FLOW LENGTH(FEET) =    60.38   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   6.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   9.33
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =        5.43
  PIPE TRAVEL TIME(MIN.) =   0.11    Tc(MIN.) =   11.42
  LONGEST FLOWPATH FROM NODE   4060.00 TO NODE   4064.00 =     848.38 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   4064.00 TO NODE   4064.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.105
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  88
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3483
  SUBAREA AREA(ACRES) =    2.56   SUBAREA RUNOFF(CFS) =    4.57
  TOTAL AREA(ACRES) =        5.6   TOTAL RUNOFF(CFS) =       9.97
  TC(MIN.) =   11.42

****************************************************************************
  FLOW PROCESS FROM NODE   4064.00 TO NODE   4074.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    225.00  DOWNSTREAM(FEET) =    203.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   250.00   CHANNEL SLOPE =  0.0880
  CHANNEL BASE(FEET) =    1.00   "Z" FACTOR =   1.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =       9.97
  FLOW VELOCITY(FEET/SEC.) =  13.34   FLOW DEPTH(FEET) =   0.50
  TRAVEL TIME(MIN.) =   0.31   Tc(MIN.) =   11.73
  LONGEST FLOWPATH FROM NODE   4060.00 TO NODE   4074.00 =    1098.38 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   4064.00 TO NODE   4074.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================
```

```
****************************************************************************
  FLOW PROCESS FROM NODE   4070.00 TO NODE   4071.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3000
  SOIL CLASSIFICATION IS "C"
  S.C.S. CURVE NUMBER (AMC II) =  85
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    331.57
  DOWNSTREAM ELEVATION(FEET) =    318.00
  ELEVATION DIFFERENCE(FEET) =     13.57
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.684
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.210
  SUBAREA RUNOFF(CFS) =      0.22
  TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.22

****************************************************************************
  FLOW PROCESS FROM NODE   4071.00 TO NODE   4072.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    318.00  DOWNSTREAM(FEET) =    216.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   436.00   CHANNEL SLOPE =  0.2339
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   5.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.804
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3100
  S.C.S. CURVE NUMBER (AMC II) =  85
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       2.01
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   2.72
  AVERAGE FLOW DEPTH(FEET) =   0.07   TRAVEL TIME(MIN.) =   2.67
  Tc(MIN.) =    9.36
  SUBAREA AREA(ACRES) =     1.98       SUBAREA RUNOFF(CFS) =    3.56
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.310
  TOTAL AREA(ACRES) =        2.1         PEAK FLOW RATE(CFS) =       3.74

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.10   FLOW VELOCITY(FEET/SEC.) =   3.42
  LONGEST FLOWPATH FROM NODE   4070.00 TO NODE   4072.00 =     536.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   4071.00 TO NODE   4072.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =    9.36
  RAINFALL INTENSITY(INCH/HR) =   5.80
  TOTAL STREAM AREA(ACRES) =     2.08
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.74

****************************************************************************
  FLOW PROCESS FROM NODE   5034.00 TO NODE   5035.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  STREETS & ROADS (CURBS/STORM DRAINS) RUNOFF COEFFICIENT = .8700
```



```
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  98
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    66.00
  UPSTREAM ELEVATION(FEET) =    231.00
  DOWNSTREAM ELEVATION(FEET) =    228.00
  ELEVATION DIFFERENCE(FEET) =      3.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.030
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.23
  TOTAL AREA(ACRES) =      0.03   TOTAL RUNOFF(CFS) =      0.23

****************************************************************************
  FLOW PROCESS FROM NODE   5035.00 TO NODE   4072.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  6 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  228.00  DOWNSTREAM ELEVATION(FEET) =  214.00
  STREET LENGTH(FEET) =   243.00   CURB HEIGHT(INCHES) =  4.0
  STREET HALFWIDTH(FEET) = 20.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  12.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.015
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0160
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       0.53
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.11
    HALFSTREET FLOOD WIDTH(FEET) =    4.39
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.73
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.29
  STREET FLOW TRAVEL TIME(MIN.) =   1.48   Tc(MIN.) =    3.51
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  STREETS & ROADS (CURBS/STORM DRAINS) RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  98
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    0.08      SUBAREA RUNOFF(CFS) =    0.61
  TOTAL AREA(ACRES) =        0.1         PEAK FLOW RATE(CFS) =       0.83

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.12   HALFSTREET FLOOD WIDTH(FEET) =   5.19
  FLOW VELOCITY(FEET/SEC.) =  3.07   DEPTH*VELOCITY(FT*FT/SEC.) =   0.37
  LONGEST FLOWPATH FROM NODE   5034.00 TO NODE   4072.00 =     309.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   5035.00 TO NODE   4072.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    3.51
  RAINFALL INTENSITY(INCH/HR) =   8.69
  TOTAL STREAM AREA(ACRES) =     0.11
```

```
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      0.83

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        3.74     9.36        5.804          2.08
      2        0.83     3.51        8.695          0.11

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF       Tc      INTENSITY
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)
      1        2.24     3.51        8.695
      2        4.29     9.36        5.804

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       4.29   Tc(MIN.) =    9.36
  TOTAL AREA(ACRES) =        2.2
  LONGEST FLOWPATH FROM NODE   4070.00 TO NODE   4072.00 =     536.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   4072.00 TO NODE   4074.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   218.00  DOWNSTREAM(FEET) =   215.89
  FLOW LENGTH(FEET) =    60.38   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   5.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.74
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       4.29
  PIPE TRAVEL TIME(MIN.) =   0.12    Tc(MIN.) =    9.47
  LONGEST FLOWPATH FROM NODE   4070.00 TO NODE   4074.00 =     596.38 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   4072.00 TO NODE   4074.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY     AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)   (ACRE)
      1        4.29     9.47        5.758         2.19
  LONGEST FLOWPATH FROM NODE   4070.00 TO NODE   4074.00 =     596.38 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY     AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)   (ACRE)
      1        9.97    11.73        5.017         5.61
  LONGEST FLOWPATH FROM NODE   4060.00 TO NODE   4074.00 =    1098.38 FEET.

  ** PEAK FLOW RATE TABLE **
  STREAM    RUNOFF       Tc      INTENSITY
  NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
      1      12.35       9.47        5.758
      2      13.71      11.73        5.017

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
```



```
  PEAK FLOW RATE(CFS) =      13.71   Tc(MIN.) =   11.73
  TOTAL AREA(ACRES) =        7.8

****************************************************************************
  FLOW PROCESS FROM NODE   4074.00 TO NODE   5036.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    204.00  DOWNSTREAM(FEET) =    180.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   562.00   CHANNEL SLOPE =  0.0427
  CHANNEL BASE(FEET) =    3.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =   2.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.649
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3000
  S.C.S. CURVE NUMBER (AMC II) =  98
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      23.64
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.36
  AVERAGE FLOW DEPTH(FEET) =   0.72   TRAVEL TIME(MIN.) =   1.47
  Tc(MIN.) =   13.20
  SUBAREA AREA(ACRES) =    14.21       SUBAREA RUNOFF(CFS) =   19.82
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.316
  TOTAL AREA(ACRES) =       22.0          PEAK FLOW RATE(CFS) =      32.34

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.84   FLOW VELOCITY(FEET/SEC.) =   6.95
  LONGEST FLOWPATH FROM NODE   4060.00 TO NODE   5036.00 =    1660.38 FEET.
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =       22.0  TC(MIN.) =     13.20
  PEAK FLOW RATE(CFS)   =      32.34
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

```
****************************************************************************

            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
            Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT
                         2003,1985,1981 HYDROLOGY MANUAL
          (c) Copyright 1982-2016 Advanced Engineering Software (aes)
              Ver. 23.0 Release Date: 07/01/2016  License ID 1509

                            Analysis prepared by:




 ************************** DESCRIPTION OF STUDY **************************
* OCEAN BREEZE RANCH - W. LILAC                                           *
* SYSTEM 4080 - PROPOSED CONDITIONS                                       *
* SOUTHWEST QUADRANT                                                      *
 ****************************************************************************

  FILE NAME: 4080P100.DAT
  TIME/DATE OF STUDY: 13:44 05/31/2024
----------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
----------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) = 100.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   3.300
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  ================  ======  =====  ====== =====  =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0312 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

****************************************************************************
  FLOW PROCESS FROM NODE   4080.00 TO NODE   4081.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  STREETS & ROADS (CURBS/STORM DRAINS) RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "D"
  S.C.S. CURVE NUMBER (AMC II) =  98
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    72.00
  UPSTREAM ELEVATION(FEET) =    203.00
  DOWNSTREAM ELEVATION(FEET) =    199.00
  ELEVATION DIFFERENCE(FEET) =      4.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    1.984
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
```



```
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.38
  TOTAL AREA(ACRES) =      0.05   TOTAL RUNOFF(CFS) =      0.38

****************************************************************************
  FLOW PROCESS FROM NODE   4081.00 TO NODE   4083.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  199.00  DOWNSTREAM ELEVATION(FEET) =  184.50
  STREET LENGTH(FEET) =   492.00   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 30.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.018
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.018

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.97
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.28
    HALFSTREET FLOOD WIDTH(FEET) =    6.72
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.29
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.93
  STREET FLOW TRAVEL TIME(MIN.) =   2.49   Tc(MIN.) =    4.47
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  STREETS & ROADS (CURBS/STORM DRAINS) RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "C"
  S.C.S. CURVE NUMBER (AMC II) =  98
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.870
  SUBAREA AREA(ACRES) =    0.42      SUBAREA RUNOFF(CFS) =    3.18
  TOTAL AREA(ACRES) =       0.5        PEAK FLOW RATE(CFS) =       3.56

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.33   HALFSTREET FLOOD WIDTH(FEET) =   9.34
  FLOW VELOCITY(FEET/SEC.) =  3.65   DEPTH*VELOCITY(FT*FT/SEC.) =   1.20
  LONGEST FLOWPATH FROM NODE   4080.00 TO NODE   4083.00 =     564.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   4084.00 TO NODE   4083.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  *USER SPECIFIED(SUBAREA):
  RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .3200
  S.C.S. CURVE NUMBER (AMC II) =  98
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.7058
  SUBAREA AREA(ACRES) =    0.20   SUBAREA RUNOFF(CFS) =    0.56
  TOTAL AREA(ACRES) =       0.7   TOTAL RUNOFF(CFS) =       4.11
  TC(MIN.) =    4.47

+-------------------------------------------------------------------------+
| MINIMIAL IMPERV, USE 1 DU/AC                                            |
| COMPOSITE C                                                             |
| C=(0.12*0.27+0.07*0.41)/0.19 = 0.32                                     |
```

```
+-------------------------------------------------------------------------+

*************************************************************************
  FLOW PROCESS FROM NODE   4082.00 TO NODE   4083.00 IS CODE =  81
-------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
=========================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3000
  S.C.S. CURVE NUMBER (AMC II) =  98
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3802
  SUBAREA AREA(ACRES) =    2.72   SUBAREA RUNOFF(CFS) =    7.09
  TOTAL AREA(ACRES) =        3.4   TOTAL RUNOFF(CFS) =     11.21
  TC(MIN.) =    4.47

+-------------------------------------------------------------------------+
| OPEN SPACE                                                              |
| COMPOSITE C FOR TYPE A, C, D SOILS                                      |
| C=(0.08*0.2+2.63*0.3+0.01*0.35)/2.72=0.3                                |
+-------------------------------------------------------------------------+
=========================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =        3.4  TC(MIN.) =      4.47
  PEAK FLOW RATE(CFS)   =      11.21
=========================================================================
=========================================================================
  END OF RATIONAL METHOD ANALYSIS
```

W. LILAC
WITH SULLIVAN

```
 ************************************************************************

           RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
           Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT
                        2003,1985,1981 HYDROLOGY MANUAL
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            Ver. 23.0 Release Date: 07/01/2016  License ID 1509

                        Analysis prepared by:




 ************************** DESCRIPTION OF STUDY **************************
* OCEAN BREEZE RANCH NEAR MIDDLE SCHOOL                                  *
* SYSTEM 5000 - PROPOSED CONDITIONS                                      *
* SOUTHEAST QUADRANT                                                     *
 ************************************************************************

  FILE NAME: 5000P100.DAT
  TIME/DATE OF STUDY: 16:53 11/05/2024
------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) = 100.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   3.300
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  ==================  ======  ===== ====== ===== =======
  1   18.0     12.0    0.020/0.020/0.015   0.50    1.50 0.0417 0.125 0.0165
  2   20.0     13.0    0.020/0.020/0.015   0.50    1.50 0.0417 0.125 0.0165
  3   16.0     11.0    0.020/0.020/0.015   0.50    1.50 0.0417 0.125 0.0165
  4   12.0      7.0    0.020/0.020/0.015   0.50    1.50 0.0100 0.010 0.0160
  5   17.0     12.0    0.020/0.020/0.015   0.33    1.50 0.0100 0.010 0.0160

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth = -0.10 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

****************************************************************************
  FLOW PROCESS FROM NODE   5007.00 TO NODE   5008.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  NEIGHBORHOOD COMMERCIAL RUNOFF COEFFICIENT = .7800
  SOIL CLASSIFICATION IS "C"
  S.C.S. CURVE NUMBER (AMC II) =  93
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    50.00
  UPSTREAM ELEVATION(FEET) =    688.00
```



```
  DOWNSTREAM ELEVATION(FEET) =    686.40
  ELEVATION DIFFERENCE(FEET) =      1.60
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.764
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.54
  TOTAL AREA(ACRES) =      0.08   TOTAL RUNOFF(CFS) =      0.54

****************************************************************************
  FLOW PROCESS FROM NODE   5008.00 TO NODE   5014.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  686.40  DOWNSTREAM ELEVATION(FEET) =  661.88
  STREET LENGTH(FEET) =   328.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 20.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.015
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0165
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       2.42
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.26
    HALFSTREET FLOOD WIDTH(FEET) =    6.27
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.59
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.20
  STREET FLOW TRAVEL TIME(MIN.) =   1.19   Tc(MIN.) =    3.95
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  RESIDENTIAL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .4800
  SOIL CLASSIFICATION IS "C"
  S.C.S. CURVE NUMBER (AMC II) =  81
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.504
  SUBAREA AREA(ACRES) =    0.90      SUBAREA RUNOFF(CFS) =    3.76
  TOTAL AREA(ACRES) =        1.0        PEAK FLOW RATE(CFS) =       4.30

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.30   HALFSTREET FLOOD WIDTH(FEET) =   8.35
  FLOW VELOCITY(FEET/SEC.) =  5.18   DEPTH*VELOCITY(FT*FT/SEC.) =   1.57
  LONGEST FLOWPATH FROM NODE   5007.00 TO NODE   5014.00 =     378.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   5008.00 TO NODE   5014.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =    3.95
  RAINFALL INTENSITY(INCH/HR) =   8.69
  TOTAL STREAM AREA(ACRES) =     0.98
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.30

****************************************************************************
  FLOW PROCESS FROM NODE   5005.00 TO NODE   5014.00 IS CODE =   7
----------------------------------------------------------------------------
```

```
  >>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<
================================================================================
  USER-SPECIFIED VALUES ARE AS FOLLOWS:
  TC(MIN) =  13.70   RAIN INTENSITY(INCH/HOUR) =  4.54
  TOTAL AREA(ACRES) =     4.60   TOTAL RUNOFF(CFS) =      9.10

****************************************************************************
  FLOW PROCESS FROM NODE   5005.00 TO NODE   5014.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
================================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   13.70
  RAINFALL INTENSITY(INCH/HR) =   4.54
  TOTAL STREAM AREA(ACRES) =     4.60
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      9.10

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        4.30     3.95        8.695          0.98
      2        9.10    13.70        4.538          4.60

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF       Tc      INTENSITY
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)
      1        6.92     3.95        8.695
      2       11.34    13.70        4.538

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      11.34   Tc(MIN.) =   13.70
  TOTAL AREA(ACRES) =        5.6
  LONGEST FLOWPATH FROM NODE   5007.00 TO NODE   5014.00 =     378.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   5014.00 TO NODE   5018.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   654.28  DOWNSTREAM(FEET) =   653.60
  FLOW LENGTH(FEET) =    36.25   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  12.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.83
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      11.34
  PIPE TRAVEL TIME(MIN.) =   0.07    Tc(MIN.) =   13.77
  LONGEST FLOWPATH FROM NODE   5007.00 TO NODE   5018.00 =     414.25 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   5014.00 TO NODE   5018.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
================================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   13.77
  RAINFALL INTENSITY(INCH/HR) =   4.52
```



```
  TOTAL STREAM AREA(ACRES) =     5.58
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     11.34

****************************************************************************
  FLOW PROCESS FROM NODE   5011.00 TO NODE   5015.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
================================================================================
  RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .3600
  SOIL CLASSIFICATION IS "C"
  S.C.S. CURVE NUMBER (AMC II) =  76
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    746.00
  DOWNSTREAM ELEVATION(FEET) =    740.00
  ELEVATION DIFFERENCE(FEET) =      6.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    7.331
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.793
  SUBAREA RUNOFF(CFS) =      0.17
  TOTAL AREA(ACRES) =      0.07   TOTAL RUNOFF(CFS) =      0.17

****************************************************************************
  FLOW PROCESS FROM NODE   5015.00 TO NODE   5020.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    740.00  DOWNSTREAM(FEET) =    675.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   468.50   CHANNEL SLOPE =  0.1387
  CHANNEL BASE(FEET) =    4.00   "Z" FACTOR =   4.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.317
  RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .3600
  SOIL CLASSIFICATION IS "C"
  S.C.S. CURVE NUMBER (AMC II) =  76
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       0.95
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   2.30
  AVERAGE FLOW DEPTH(FEET) =   0.09   TRAVEL TIME(MIN.) =   3.39
  Tc(MIN.) =   10.72
  SUBAREA AREA(ACRES) =     0.80       SUBAREA RUNOFF(CFS) =    1.53
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.360
  TOTAL AREA(ACRES) =        0.9         PEAK FLOW RATE(CFS) =       1.67

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.13   FLOW VELOCITY(FEET/SEC.) =   2.91
  LONGEST FLOWPATH FROM NODE   5011.00 TO NODE   5020.00 =     568.50 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   5021.00 TO NODE   5020.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.317
  RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .3600
  SOIL CLASSIFICATION IS "C"
  S.C.S. CURVE NUMBER (AMC II) =  76
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3600
  SUBAREA AREA(ACRES) =    0.40   SUBAREA RUNOFF(CFS) =    0.77
  TOTAL AREA(ACRES) =        1.3   TOTAL RUNOFF(CFS) =       2.43
  TC(MIN.) =   10.72

****************************************************************************
  FLOW PROCESS FROM NODE   5020.00 TO NODE   5014.00 IS CODE =  31
----------------------------------------------------------------------------
```

```
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   665.30  DOWNSTREAM(FEET) =   653.50
  FLOW LENGTH(FEET) =   169.50   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   3.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   9.47
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       2.43
  PIPE TRAVEL TIME(MIN.) =   0.30    Tc(MIN.) =   11.02
  LONGEST FLOWPATH FROM NODE   5011.00 TO NODE   5014.00 =     738.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   5020.00 TO NODE   5014.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   11.02
  RAINFALL INTENSITY(INCH/HR) =   5.22
  TOTAL STREAM AREA(ACRES) =     1.27
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.43

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       11.34    13.77        4.524          5.58
      2        2.43    11.02        5.223          1.27

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)
      1       12.26    11.02       5.223
      2       13.45    13.77       4.524

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      13.45   Tc(MIN.) =   13.77
  TOTAL AREA(ACRES) =        6.8
  LONGEST FLOWPATH FROM NODE   5011.00 TO NODE   5014.00 =     738.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   5018.00 TO NODE   5016.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   653.28  DOWNSTREAM(FEET) =   614.91
  FLOW LENGTH(FEET) =   712.37   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   9.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  13.86
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      13.45
  PIPE TRAVEL TIME(MIN.) =   0.86    Tc(MIN.) =   14.62
  LONGEST FLOWPATH FROM NODE   5011.00 TO NODE   5016.00 =    1450.37 FEET.

****************************************************************************
```



```
  FLOW PROCESS FROM NODE   5018.00 TO NODE   5016.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   14.62
  RAINFALL INTENSITY(INCH/HR) =   4.35
  TOTAL STREAM AREA(ACRES) =     6.85
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     13.45

****************************************************************************
  FLOW PROCESS FROM NODE   5022.00 TO NODE   5023.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3000
  SOIL CLASSIFICATION IS "C"
  S.C.S. CURVE NUMBER (AMC II) =  85
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    79.00
  UPSTREAM ELEVATION(FEET) =    732.00
  DOWNSTREAM ELEVATION(FEET) =    714.00
  ELEVATION DIFFERENCE(FEET) =     18.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    5.941
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.779
  SUBAREA RUNOFF(CFS) =      0.68
  TOTAL AREA(ACRES) =      0.29   TOTAL RUNOFF(CFS) =      0.68

****************************************************************************
  FLOW PROCESS FROM NODE   5023.00 TO NODE   5024.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    714.00  DOWNSTREAM(FEET) =    686.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   169.00   CHANNEL SLOPE =  0.1657
  CHANNEL BASE(FEET) =    4.00   "Z" FACTOR =   4.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.989
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3000
  SOIL CLASSIFICATION IS "C"
  S.C.S. CURVE NUMBER (AMC II) =  85
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.11
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   2.62
  AVERAGE FLOW DEPTH(FEET) =   0.10   TRAVEL TIME(MIN.) =   1.07
  Tc(MIN.) =    7.01
  SUBAREA AREA(ACRES) =     0.41       SUBAREA RUNOFF(CFS) =    0.86
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.300
  TOTAL AREA(ACRES) =        0.7         PEAK FLOW RATE(CFS) =       1.47

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.11   FLOW VELOCITY(FEET/SEC.) =   2.96
  LONGEST FLOWPATH FROM NODE   5022.00 TO NODE   5024.00 =     248.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   5024.00 TO NODE   5004.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    686.00  DOWNSTREAM(FEET) =    635.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   828.00   CHANNEL SLOPE =  0.0616
```

```
  CHANNEL BASE(FEET) =    0.50   "Z" FACTOR =   0.750
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   2.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.262
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3000
  SOIL CLASSIFICATION IS "C"
  S.C.S. CURVE NUMBER (AMC II) =  85
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       5.81
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  10.59
  AVERAGE FLOW DEPTH(FEET) =   0.58   TRAVEL TIME(MIN.) =   1.30
  Tc(MIN.) =    8.32
  SUBAREA AREA(ACRES) =     4.62       SUBAREA RUNOFF(CFS) =    8.68
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.300
  TOTAL AREA(ACRES) =        5.3         PEAK FLOW RATE(CFS) =       9.99

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.77   FLOW VELOCITY(FEET/SEC.) =  11.96
  LONGEST FLOWPATH FROM NODE   5022.00 TO NODE   5004.00 =    1076.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   5004.00 TO NODE   5016.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   620.00  DOWNSTREAM(FEET) =   614.10
  FLOW LENGTH(FEET) =    45.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   6.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  17.81
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       9.99
  PIPE TRAVEL TIME(MIN.) =   0.04    Tc(MIN.) =    8.36
  LONGEST FLOWPATH FROM NODE   5022.00 TO NODE   5016.00 =    1121.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   5004.00 TO NODE   5016.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    8.36
  RAINFALL INTENSITY(INCH/HR) =   6.24
  TOTAL STREAM AREA(ACRES) =     5.32
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      9.99

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       13.45    14.62        4.351          6.85
      2        9.99     8.36        6.241          5.32

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF       Tc      INTENSITY
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)
      1       19.37     8.36        6.241
      2       20.42    14.62        4.351

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
```



```
  PEAK FLOW RATE(CFS) =      20.42   Tc(MIN.) =   14.62
  TOTAL AREA(ACRES) =       12.2
  LONGEST FLOWPATH FROM NODE   5011.00 TO NODE   5016.00 =    1450.37 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   5016.00 TO NODE   5003.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   614.10  DOWNSTREAM(FEET) =   605.93
  FLOW LENGTH(FEET) =   162.40   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  13.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  14.68
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      20.42
  PIPE TRAVEL TIME(MIN.) =   0.18    Tc(MIN.) =   14.81
  LONGEST FLOWPATH FROM NODE   5011.00 TO NODE   5003.00 =    1612.77 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   5016.00 TO NODE   5003.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   14.81
  RAINFALL INTENSITY(INCH/HR) =   4.32
  TOTAL STREAM AREA(ACRES) =    12.17
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     20.42

****************************************************************************
  FLOW PROCESS FROM NODE   5000.00 TO NODE   5001.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3000
  SOIL CLASSIFICATION IS "C"
  S.C.S. CURVE NUMBER (AMC II) =  85
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =    734.00
  DOWNSTREAM ELEVATION(FEET) =    714.00
  ELEVATION DIFFERENCE(FEET) =     20.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.684
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.210
  SUBAREA RUNOFF(CFS) =      1.04
  TOTAL AREA(ACRES) =      0.48   TOTAL RUNOFF(CFS) =      1.04

****************************************************************************
  FLOW PROCESS FROM NODE   5001.00 TO NODE   5002.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    714.00  DOWNSTREAM(FEET) =    621.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1035.00   CHANNEL SLOPE =  0.0899
  CHANNEL BASE(FEET) =    4.00   "Z" FACTOR =   4.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.404
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3000
  SOIL CLASSIFICATION IS "C"
  S.C.S. CURVE NUMBER (AMC II) =  85
```

```
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      10.75
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.58
  AVERAGE FLOW DEPTH(FEET) =   0.41   TRAVEL TIME(MIN.) =   3.77
  Tc(MIN.) =   10.45
  SUBAREA AREA(ACRES) =    11.79       SUBAREA RUNOFF(CFS) =   19.11
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.300
  TOTAL AREA(ACRES) =       12.3         PEAK FLOW RATE(CFS) =      19.89

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.58   FLOW VELOCITY(FEET/SEC.) =   5.49
  LONGEST FLOWPATH FROM NODE   5000.00 TO NODE   5002.00 =    1135.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   5002.00 TO NODE   5003.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   611.00  DOWNSTREAM(FEET) =   605.93
  FLOW LENGTH(FEET) =    39.15   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   9.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  21.25
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      19.89
  PIPE TRAVEL TIME(MIN.) =   0.03    Tc(MIN.) =   10.48
  LONGEST FLOWPATH FROM NODE   5000.00 TO NODE   5003.00 =    1174.15 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   5037.00 TO NODE   5003.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.393
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3000
  SOIL CLASSIFICATION IS "C"
  S.C.S. CURVE NUMBER (AMC II) =  85
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3000
  SUBAREA AREA(ACRES) =    0.45   SUBAREA RUNOFF(CFS) =    0.73
  TOTAL AREA(ACRES) =       12.7   TOTAL RUNOFF(CFS) =      20.58
  TC(MIN.) =   10.48

****************************************************************************
  FLOW PROCESS FROM NODE   5002.00 TO NODE   5003.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   10.48
  RAINFALL INTENSITY(INCH/HR) =   5.39
  TOTAL STREAM AREA(ACRES) =    12.72
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     20.58

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       20.42    14.81        4.316         12.17
      2       20.58    10.48        5.393         12.72

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.
```



```
  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF       Tc      INTENSITY
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)
      1       36.92    10.48        5.393
      2       36.89    14.81        4.316

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      36.92   Tc(MIN.) =   10.48
  TOTAL AREA(ACRES) =       24.9
  LONGEST FLOWPATH FROM NODE   5011.00 TO NODE   5003.00 =    1612.77 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   5003.00 TO NODE   5009.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   605.43  DOWNSTREAM(FEET) =   604.77
  FLOW LENGTH(FEET) =    82.03   MANNING'S N =  0.013
  DEPTH OF FLOW IN  33.0 INCH PIPE IS  22.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.64
  ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      36.92
  PIPE TRAVEL TIME(MIN.) =   0.16    Tc(MIN.) =   10.64
  LONGEST FLOWPATH FROM NODE   5011.00 TO NODE   5009.00 =    1694.80 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   5003.00 TO NODE   5009.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   10.64
  RAINFALL INTENSITY(INCH/HR) =   5.34
  TOTAL STREAM AREA(ACRES) =    24.89
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     36.92

****************************************************************************
  FLOW PROCESS FROM NODE   5017.00 TO NODE   5018.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  STREETS & ROADS (CURBS/STORM DRAINS) RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "C"
  S.C.S. CURVE NUMBER (AMC II) =  98
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    90.00
  UPSTREAM ELEVATION(FEET) =    668.50
  DOWNSTREAM ELEVATION(FEET) =    661.00
  ELEVATION DIFFERENCE(FEET) =      7.50
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    1.937
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.695
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.15
  TOTAL AREA(ACRES) =      0.02   TOTAL RUNOFF(CFS) =      0.15

****************************************************************************
  FLOW PROCESS FROM NODE   5018.00 TO NODE   5010.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
============================================================================
```

```
  UPSTREAM ELEVATION(FEET) =  661.00  DOWNSTREAM ELEVATION(FEET) =  613.00
  STREET LENGTH(FEET) =  1230.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 20.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.015
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0165
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0150

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       2.72
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.29
    HALFSTREET FLOOD WIDTH(FEET) =    7.89
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.60
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.06
  STREET FLOW TRAVEL TIME(MIN.) =   5.69   Tc(MIN.) =    7.63
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.621
  GENERAL COMMERCIAL RUNOFF COEFFICIENT = .8100
  SOIL CLASSIFICATION IS "C"
  S.C.S. CURVE NUMBER (AMC II) =  94
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.811
  SUBAREA AREA(ACRES) =    0.93      SUBAREA RUNOFF(CFS) =    4.99
  TOTAL AREA(ACRES) =        0.9        PEAK FLOW RATE(CFS) =       5.10

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.35   HALFSTREET FLOOD WIDTH(FEET) =  10.43
  FLOW VELOCITY(FEET/SEC.) =  4.18   DEPTH*VELOCITY(FT*FT/SEC.) =   1.44
  LONGEST FLOWPATH FROM NODE   5017.00 TO NODE   5010.00 =    1320.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   5010.00 TO NODE   5019.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   609.59  DOWNSTREAM(FEET) =   609.50
  FLOW LENGTH(FEET) =    17.52   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  11.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.49
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       5.10
  PIPE TRAVEL TIME(MIN.) =   0.07    Tc(MIN.) =    7.69
  LONGEST FLOWPATH FROM NODE   5017.00 TO NODE   5019.00 =    1337.52 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   5019.00 TO NODE   5012.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.585
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3000
  SOIL CLASSIFICATION IS "C"
  S.C.S. CURVE NUMBER (AMC II) =  85
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.7082
  SUBAREA AREA(ACRES) =    0.24   SUBAREA RUNOFF(CFS) =    0.47
  TOTAL AREA(ACRES) =        1.2   TOTAL RUNOFF(CFS) =       5.55
  TC(MIN.) =    7.69

****************************************************************************
```



```
  FLOW PROCESS FROM NODE   5012.00 TO NODE   5009.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   605.12  DOWNSTREAM(FEET) =   604.77
  FLOW LENGTH(FEET) =    34.73   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   9.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.93
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       5.55
  PIPE TRAVEL TIME(MIN.) =   0.10    Tc(MIN.) =    7.79
  LONGEST FLOWPATH FROM NODE   5017.00 TO NODE   5009.00 =    1372.25 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   5012.00 TO NODE   5009.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    7.79
  RAINFALL INTENSITY(INCH/HR) =   6.53
  TOTAL STREAM AREA(ACRES) =     1.19
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      5.55

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       36.92    10.64        5.342         24.89
      2        5.55     7.79        6.532          1.19

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       35.74     7.79       6.532
      2       41.46    10.64       5.342

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      41.46   Tc(MIN.) =   10.64
  TOTAL AREA(ACRES) =       26.1
  LONGEST FLOWPATH FROM NODE   5011.00 TO NODE   5009.00 =    1694.80 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   5009.00 TO NODE   5013.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   604.67  DOWNSTREAM(FEET) =   604.00
  FLOW LENGTH(FEET) =    50.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  30.0 INCH PIPE IS  22.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  10.66
  ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      41.46
  PIPE TRAVEL TIME(MIN.) =   0.08    Tc(MIN.) =   10.72
  LONGEST FLOWPATH FROM NODE   5011.00 TO NODE   5013.00 =    1744.80 FEET.
============================================================================
```

```
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =       26.1  TC(MIN.) =     10.72
  PEAK FLOW RATE(CFS)   =      41.46
================================================================================
================================================================================
  END OF RATIONAL METHOD ANALYSIS
```

```
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.4143
  SUBAREA AREA(ACRES) =    2.44   SUBAREA RUNOFF(CFS) =    4.76
  TOTAL AREA(ACRES) =        3.9   TOTAL RUNOFF(CFS) =       7.58
  TC(MIN.) =   13.22

+-------------------------------------------------------------------------+
| COMPOSITE B & C SOILS                                                   |
| (0.13*0.38+2.31*0.42)/2.44=0.42                                         |
|                                                                         |
+-------------------------------------------------------------------------+

****************************************************************************
  FLOW PROCESS FROM NODE   5029.00 TO NODE   5030.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   708.00  DOWNSTREAM(FEET) =   665.00
  FLOW LENGTH(FEET) =   383.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   5.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  15.59
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       7.58
  PIPE TRAVEL TIME(MIN.) =   0.41    Tc(MIN.) =   13.63
  LONGEST FLOWPATH FROM NODE   5025.00 TO NODE   5030.00 =    1292.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   5030.00 TO NODE   5030.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.553
  STREETS & ROADS (CURBS/STORM DRAINS) RUNOFF COEFFICIENT = .8700
  SOIL CLASSIFICATION IS "C"
  S.C.S. CURVE NUMBER (AMC II) =  98
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.4405
  SUBAREA AREA(ACRES) =    0.24   SUBAREA RUNOFF(CFS) =    0.95
  TOTAL AREA(ACRES) =        4.2   TOTAL RUNOFF(CFS) =       8.38
  TC(MIN.) =   13.63

****************************************************************************
  FLOW PROCESS FROM NODE   5030.00 TO NODE   5031.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   665.00  DOWNSTREAM(FEET) =   658.00
  FLOW LENGTH(FEET) =    55.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   5.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  16.77
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       8.38
  PIPE TRAVEL TIME(MIN.) =   0.05    Tc(MIN.) =   13.69
  LONGEST FLOWPATH FROM NODE   5025.00 TO NODE   5031.00 =    1347.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   5031.00 TO NODE   5005.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
```



```
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.541
  RESIDENTIAL (1. DU/AC OR LESS) RUNOFF COEFFICIENT = .3600
  SOIL CLASSIFICATION IS "C"
  S.C.S. CURVE NUMBER (AMC II) =  76
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.4327
  SUBAREA AREA(ACRES) =    0.45   SUBAREA RUNOFF(CFS) =    0.74
  TOTAL AREA(ACRES) =        4.6   TOTAL RUNOFF(CFS) =       9.10
  TC(MIN.) =   13.69

****************************************************************************
  FLOW PROCESS FROM NODE   5005.00 TO NODE   5014.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   654.00  DOWNSTREAM(FEET) =   653.00
  FLOW LENGTH(FEET) =    38.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   9.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   9.61
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       9.10
  PIPE TRAVEL TIME(MIN.) =   0.07    Tc(MIN.) =   13.75
  LONGEST FLOWPATH FROM NODE   5025.00 TO NODE   5014.00 =    1385.00 FEET.
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =        4.6  TC(MIN.) =     13.75
  PEAK FLOW RATE(CFS)   =       9.10
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

```
**************************************************************************

           RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
           Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT
                        2003,1985,1981 HYDROLOGY MANUAL
        (c) Copyright 1982-2016 Advanced Engineering Software (aes)
            Ver. 23.0 Release Date: 07/01/2016  License ID 1509

                          Analysis prepared by:




 ************************* DESCRIPTION OF STUDY *************************
* OCEAN BREEZE RANCH - PA3                                               *
* SYSTEM 5050 - PROPOSED CONDITIONS                                      *
* SOUTHEAST QUADRANT                                                     *
 **************************************************************************

  FILE NAME: 5050P100.DAT
  TIME/DATE OF STUDY: 08:43 06/03/2024
--------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
--------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) = 100.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   3.300
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  ================  ======  =====  ====  =====  =======
  1   18.0     12.0    0.020/0.020/0.015   0.50    1.50 0.0417 0.125 0.0165
  2   20.0     13.0    0.020/0.020/0.015   0.50    1.50 0.0417 0.125 0.0165
  3   16.0     11.0    0.020/0.020/0.015   0.50    1.50 0.0417 0.125 0.0165
  4   12.0      7.0    0.020/0.020/0.015   0.50    1.50 0.0100 0.010 0.0160
  5   17.0     12.0    0.020/0.020/0.015   0.33    1.50 0.0100 0.010 0.0160

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth = -0.10 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

**************************************************************************
  FLOW PROCESS FROM NODE   5050.00 TO NODE   5051.00 IS CODE =  21
--------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==========================================================================
  RESIDENTIAL (2. DU/AC OR LESS) RUNOFF COEFFICIENT = .4200
  SOIL CLASSIFICATION IS "C"
  S.C.S. CURVE NUMBER (AMC II) =  79
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    50.00
  UPSTREAM ELEVATION(FEET) =    688.00
```



```
  DOWNSTREAM ELEVATION(FEET) =    687.03
  ELEVATION DIFFERENCE(FEET) =      0.97
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.940
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.038
  SUBAREA RUNOFF(CFS) =      0.21
  TOTAL AREA(ACRES) =      0.07   TOTAL RUNOFF(CFS) =      0.21

**************************************************************************
  FLOW PROCESS FROM NODE   5051.00 TO NODE   5052.00 IS CODE =  62
--------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  2 USED)<<<<<
==========================================================================
  UPSTREAM ELEVATION(FEET) =  687.03  DOWNSTREAM ELEVATION(FEET) =  649.30
  STREET LENGTH(FEET) =   556.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 20.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.015
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0165
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0150

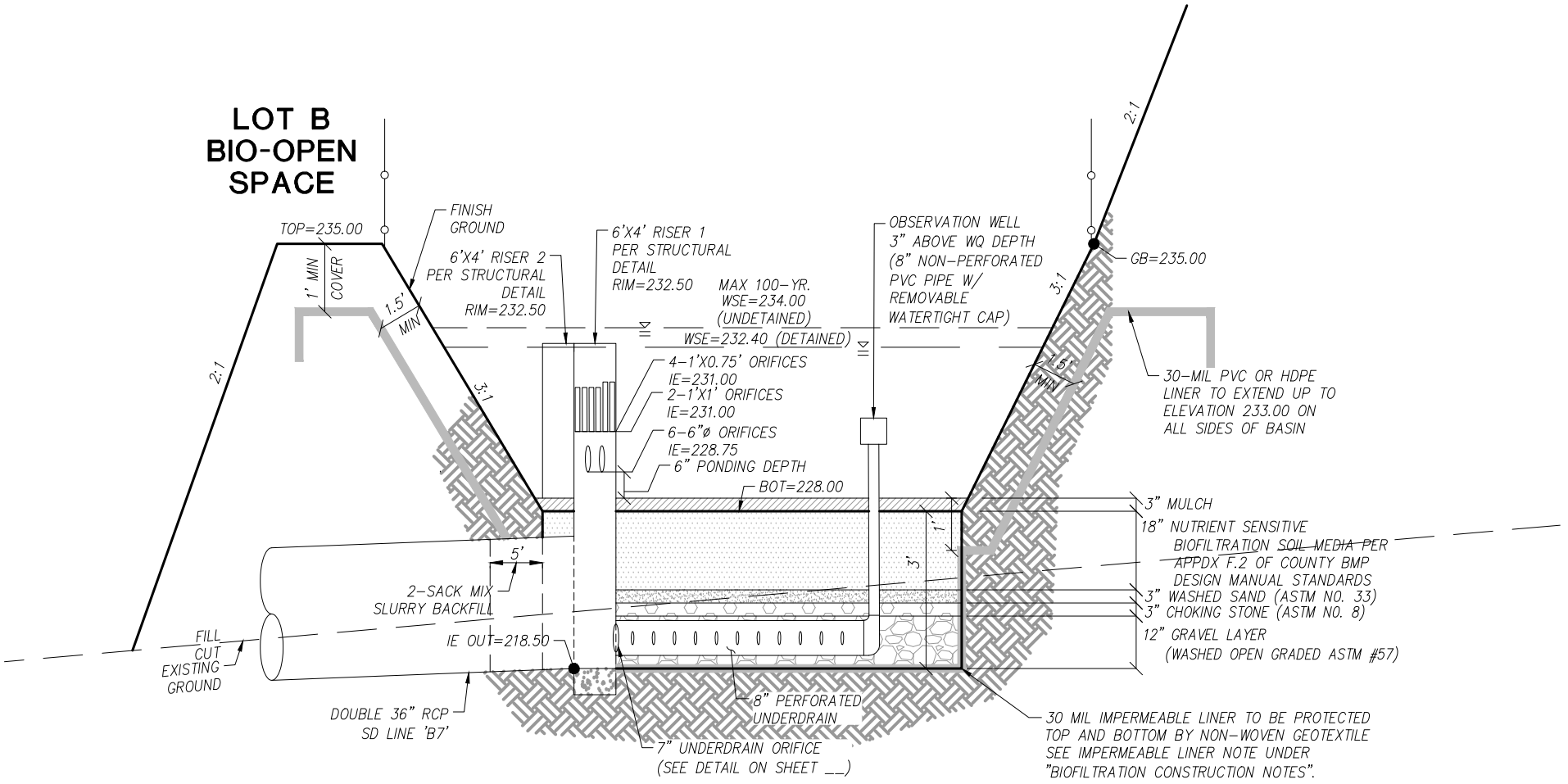
    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.59
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.24
    HALFSTREET FLOOD WIDTH(FEET) =    5.07
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.08
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.97
  STREET FLOW TRAVEL TIME(MIN.) =   2.27   Tc(MIN.) =    9.21
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.863
  RESIDENTIAL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .6000
  SOIL CLASSIFICATION IS "C"
  S.C.S. CURVE NUMBER (AMC II) =  86
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.585
  SUBAREA AREA(ACRES) =    0.79      SUBAREA RUNOFF(CFS) =    2.78
  TOTAL AREA(ACRES) =        0.9        PEAK FLOW RATE(CFS) =       2.95

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.28   HALFSTREET FLOOD WIDTH(FEET) =   7.13
  FLOW VELOCITY(FEET/SEC.) =  4.60   DEPTH*VELOCITY(FT*FT/SEC.) =   1.28
  LONGEST FLOWPATH FROM NODE   5050.00 TO NODE   5052.00 =     606.00 FEET.
==========================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =        0.9  TC(MIN.) =      9.21
  PEAK FLOW RATE(CFS)   =       2.95
==========================================================================
==========================================================================
  END OF RATIONAL METHOD ANALYSIS
```

APPENDIX 4

Detention Calculations

1A



SECTION 1A-1A: BMP 1A
LINED BIOFILTRATION (PRIVATE)

NOT TO SCALE

N

SCALE:	1"=60'
JOB #:	4192.10
CREATED:	5/18/20

PREPARED BY:

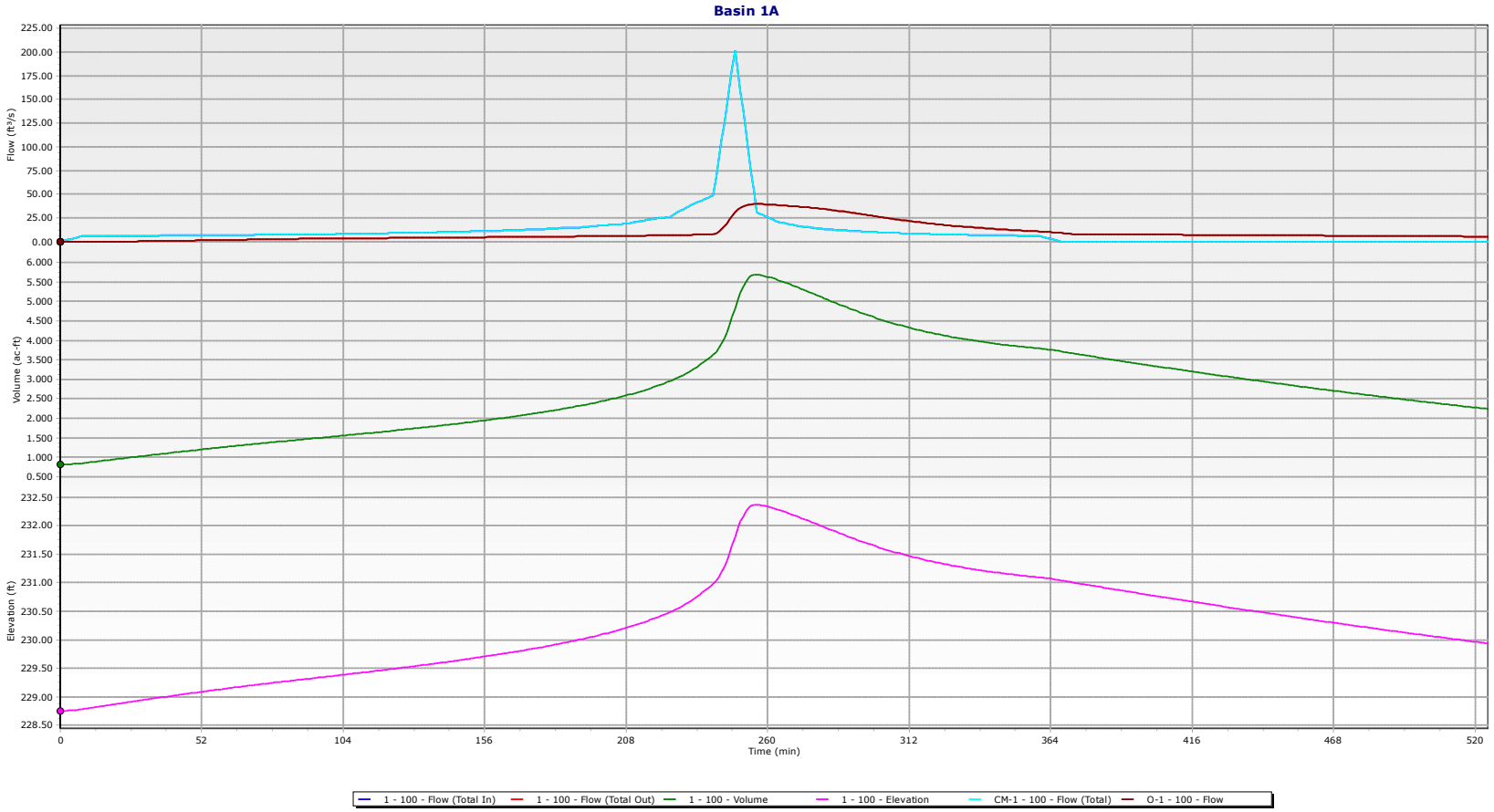
PROJECT DESIGN CONSULTANTS
Planning | Landscape Architecture | Engineering | Survey
701 B Street, Suite 800
San Diego, CA 92101
619.235.6471 Tel
619.234.0349 Fax

COUNTY OF SAN DIEGO

OCEAN BREEZE RANCH

BASIN CROSS SECTIONS
EXHIBIT (1 OF 14)

\\Ca-sand-gfe-vm\fastdata\TALONFAST_CORE\TALONFAST-SRV\acquisitions\CA-SAND-PD\Projects\4192.10\Engr\Reports\Hydromod-FE\EXH\4192.10
Hydromod Basin XS.dwg, 11/6/2024 2:39:33 PM


Basin 1A
Flow (ft³/s)
225.00
200.00
175.00
150.00
125.00
100.00
75.00
50.00
25.00
0.00
Volume (ac-ft)
6.000
5.500
5.000
4.500
4.000
3.500
3.000
2.500
2.000
1.500
1.000
0.500
Elevation (ft)
232.50
232.00
231.50
231.00
230.50
230.00
229.50
229.00
228.50
0
52
104
156
208
260
312
364
416
468
520
Time (min)
1 - 100 - Flow (Total In)
1 - 100 - Flow (Total Out)
1 - 100 - Volume
1 - 100 - Elevation
CM-1 - 100 - Flow (Total)
O-1 - 100 - Flow

System1000

Project Summary	
Title	Basin 1A
Engineer	PDC
Company	PDC
Date	10/24/2024

Notes

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1	Time vs. Volume	4
1		
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1		
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1 (IN)		
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System1000

Subsection: Master Network Summary

Catchments Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (min)	Peak Flow (ft³/s)
CM-1	100	0	8.337	248	201.60

Node Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (min)	Peak Flow (ft³/s)
O-1	100	0	6.915	256	39.76

Pond Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (min)	Peak Flow (ft³/s)	Maximum Water Surface Elevation (ft)	Maximum Pond Storage (ac-ft)
1 (IN)	100	0	8.337	248	201.60	(N/A)	(N/A)
1 (OUT)	100	0	6.915	256	39.76	232.38	5.689

System1000

Subsection: Read Hydrograph
Label: CM-1
Scenario: 100

Return Event: 100 years
Storm Event:

Peak Discharge	201.60 ft³/s
Time to Peak	248 min
Hydrograph Volume	8.337 ac-ft

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 8 min
Time on left represents time for first value in each row.

Time (min)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
0	0.00	6.00	6.10	6.30	6.40
40	6.60	6.70	7.00	7.10	7.40
80	7.50	7.80	8.00	8.40	8.60
120	9.10	9.30	9.90	10.20	11.00
160	11.40	12.40	13.00	14.40	15.30
200	17.50	19.00	23.20	26.40	38.80
240	48.90	201.60	31.10	20.80	16.30
280	13.60	11.90	10.60	9.60	8.80
320	8.20	7.70	7.20	6.80	6.50
360	6.20	0.00	(N/A)	(N/A)	(N/A)

System1000

Subsection: Time vs. Volume
Label: 1
Scenario: 100

Return Event: 100 years
Storm Event:

Time vs. Volume (ac-ft)

Output Time increment = 1 min
Time on left represents time for first value in each row.

Time (min)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)
0	0.816	0.817	0.818	0.821	0.824
5	0.829	0.835	0.841	0.849	0.857
10	0.866	0.874	0.882	0.890	0.898
15	0.907	0.915	0.923	0.931	0.940
20	0.948	0.956	0.964	0.973	0.981
25	0.989	0.997	1.006	1.014	1.022
30	1.030	1.038	1.046	1.054	1.062
35	1.070	1.078	1.086	1.094	1.102
40	1.110	1.118	1.126	1.134	1.141
45	1.149	1.157	1.164	1.172	1.179
50	1.187	1.194	1.202	1.210	1.217
55	1.225	1.232	1.239	1.247	1.254
60	1.261	1.269	1.276	1.283	1.290
65	1.297	1.304	1.311	1.318	1.325
70	1.332	1.339	1.346	1.353	1.360
75	1.367	1.373	1.380	1.387	1.393
80	1.400	1.407	1.413	1.420	1.426
85	1.433	1.439	1.446	1.452	1.459
90	1.465	1.472	1.478	1.485	1.491
95	1.498	1.504	1.511	1.517	1.524
100	1.530	1.537	1.544	1.550	1.557
105	1.564	1.571	1.577	1.584	1.591
110	1.597	1.604	1.611	1.618	1.624
115	1.631	1.638	1.645	1.652	1.659
120	1.666	1.674	1.681	1.688	1.695
125	1.702	1.709	1.717	1.724	1.731
130	1.738	1.746	1.753	1.761	1.768
135	1.776	1.783	1.791	1.799	1.807
140	1.815	1.823	1.830	1.838	1.846
145	1.854	1.862	1.870	1.879	1.887
150	1.895	1.904	1.913	1.921	1.930
155	1.939	1.948	1.957	1.966	1.975
160	1.984	1.993	2.002	2.011	2.021
165	2.031	2.040	2.050	2.060	2.071
170	2.081	2.091	2.101	2.112	2.122
175	2.133	2.143	2.154	2.165	2.176
180	2.188	2.199	2.211	2.223	2.235
185	2.248	2.260	2.273	2.285	2.298
190	2.311	2.324	2.337	2.351	2.364
195	2.379	2.393	2.408	2.423	2.438

System1000

Subsection: Time vs. Volume
Label: 1
Scenario: 100

Return Event: 100 years
Storm Event:

Time vs. Volume (ac-ft)

Output Time increment = 1 min
Time on left represents time for first value in each row.

Time (min)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)
200	2.454	2.470	2.486	2.503	2.519
205	2.536	2.553	2.570	2.588	2.606
210	2.624	2.644	2.664	2.684	2.706
215	2.728	2.750	2.773	2.797	2.821
220	2.846	2.871	2.897	2.923	2.949
225	2.977	3.007	3.039	3.073	3.110
230	3.148	3.188	3.230	3.274	3.320
235	3.368	3.416	3.467	3.520	3.573
240	3.629	3.698	3.791	3.908	4.047
245	4.208	4.391	4.594	4.819	5.037
250	5.223	5.377	5.500	5.592	5.654
255	5.686	5.689	5.676	5.662	5.646
260	5.628	5.609	5.589	5.566	5.543
265	5.518	5.493	5.467	5.441	5.414
270	5.387	5.359	5.331	5.303	5.275
275	5.246	5.217	5.188	5.160	5.131
280	5.102	5.073	5.044	5.015	4.987
285	4.959	4.931	4.903	4.876	4.848
290	4.821	4.795	4.768	4.742	4.716
295	4.691	4.666	4.642	4.618	4.594
300	4.571	4.549	4.526	4.505	4.483
305	4.462	4.442	4.422	4.402	4.383
310	4.364	4.346	4.327	4.310	4.292
315	4.275	4.259	4.242	4.227	4.211
320	4.196	4.181	4.166	4.152	4.138
325	4.124	4.111	4.098	4.085	4.072
330	4.060	4.048	4.036	4.025	4.013
335	4.002	3.992	3.981	3.971	3.961
340	3.951	3.941	3.931	3.922	3.913
345	3.904	3.895	3.887	3.878	3.870
350	3.862	3.854	3.847	3.839	3.832
355	3.825	3.818	3.811	3.804	3.798
360	3.791	3.784	3.777	3.768	3.759
365	3.749	3.738	3.726	3.714	3.701
370	3.689	3.678	3.666	3.655	3.644
375	3.633	3.622	3.611	3.600	3.589
380	3.578	3.567	3.556	3.546	3.535
385	3.524	3.513	3.503	3.492	3.481
390	3.470	3.460	3.449	3.439	3.428
395	3.417	3.407	3.396	3.386	3.375
400	3.365	3.354	3.344	3.334	3.323

System1000

Subsection: Time vs. Volume
Label: 1
Scenario: 100

Return Event: 100 years
Storm Event:

Time vs. Volume (ac-ft)

Output Time increment = 1 min
Time on left represents time for first value in each row.

Time (min)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)
405	3.313	3.303	3.292	3.282	3.272
410	3.262	3.251	3.241	3.231	3.221
415	3.211	3.201	3.191	3.181	3.170
420	3.160	3.151	3.141	3.131	3.121
425	3.111	3.101	3.091	3.081	3.072
430	3.062	3.052	3.042	3.033	3.023
435	3.013	3.004	2.994	2.984	2.975
440	2.965	2.956	2.946	2.937	2.927
445	2.918	2.908	2.899	2.890	2.880
450	2.871	2.862	2.853	2.843	2.834
455	2.825	2.816	2.806	2.797	2.788
460	2.779	2.770	2.761	2.752	2.743
465	2.734	2.725	2.716	2.707	2.698
470	2.690	2.681	2.672	2.663	2.654
475	2.646	2.637	2.628	2.619	2.611
480	2.602	2.594	2.585	2.576	2.568
485	2.559	2.551	2.542	2.534	2.526
490	2.517	2.509	2.500	2.492	2.484
495	2.476	2.467	2.459	2.451	2.443
500	2.435	2.426	2.418	2.410	2.402
505	2.394	2.386	2.378	2.370	2.362
510	2.354	2.346	2.338	2.331	2.323
515	2.315	2.307	2.299	2.292	2.284
520	2.276	2.269	2.261	2.253	2.246
525	2.238	(N/A)	(N/A)	(N/A)	(N/A)

System1000

Subsection: Elevation-Area Volume Curve
Return Event: 100 years
Label: 1
Storm Event:
Scenario: 100

Elevation (ft)	Planimeter (ft²)	Area (ft²)	A1+A2+sqr (A1*A2) (ft²)	Volume (ac-ft)	Volume (Total) (ac-ft)
228.00	0.0	45,538.000	0.000	0.000	0.000
229.00	0.0	50,566.000	144,090.191	1.103	1.103
230.00	0.0	55,645.000	159,255.746	1.219	2.321
231.00	0.0	60,781.000	174,582.330	1.336	3.657
232.00	0.0	65,980.000	190,088.169	1.455	5.112
233.00	0.0	71,231.000	205,766.243	1.575	6.686
234.00	0.0	76,959.000	222,229.628	1.701	8.387
234.50	0.0	78,712.000	233,501.565	0.893	9.280
235.00	0.0	80,471.000	238,769.641	0.914	10.194

Pond Volume Equations

*** Incremental volume computed by the Conic Method for Reservoir Volumes.**

Volume = (1/3) * (EL2 - El1) * (Area1 + Area2 + sqr(Area1 * Area2))

where:	EL1, EL2	Lower and upper elevations of the increment
	Area1, Area2	Areas computed for EL1, EL2, respectively
	Volume	Incremental volume between EL1 and EL2

System1000

Subsection: Outlet Input Data
Label: Outlet#1-with Culvert no underdrain
Scenario: 100

Return Event: 100 years
Storm Event:

Requested Pond Water Surface Elevations	
Minimum (Headwater)	228.00 ft
Increment (Headwater)	0.10 ft
Maximum (Headwater)	235.00 ft

Outlet Connectivity

Structure Type	Outlet ID	Direction	Outfall	E1 (ft)	E2 (ft)
Inlet Box	Riser - 2	Forward	Culvert - 2	232.50	235.00
Culvert-Circular	Culvert - 2	Forward	TW	219.30	235.00
Orifice-Area	Orifice - HF -Smaller	Forward	Culvert - 1	231.00	235.00
Orifice-Area	Orifice - HF A	Forward	Culvert - 1	231.00	235.00
Inlet Box	Riser - 1	Forward	Culvert - 1	232.50	235.00
Orifice-Circular	Orifice - LF A	Forward	Culvert - 1	228.75	235.00
Culvert-Circular	Culvert - 1	Forward	TW	219.30	235.00
Tailwater Settings	Tailwater			(N/A)	(N/A)

System1000

Subsection: Outlet Input Data
Label: Outlet#1-with Culvert no underdrain
Scenario: 100

Return Event: 100 years
Storm Event:

Structure ID: Orifice - HF A Structure Type: Orifice-Area	
Number of Openings	2
Elevation	231.00 ft
Orifice Area	1.0 ft²
Top Elevation	232.00 ft
Datum Elevation	231.00 ft
Orifice Coefficient	0.600

Structure ID: Orifice - LF A Structure Type: Orifice-Circular	
Number of Openings	6
Elevation	228.75 ft
Orifice Diameter	6.0 in
Orifice Coefficient	0.600

Structure ID: Riser - 1 Structure Type: Inlet Box	
Number of Openings	1
Elevation	232.50 ft
Orifice Area	24.0 ft²
Orifice Coefficient	0.600
Weir Length	20.00 ft
Weir Coefficient	3.00 (ft^0.5)/s
K Reverse	1.000
Manning's n	0.000
Kev, Charged Riser	0.000
Weir Submergence	False
Orifice H to crest	False

Structure ID: Riser - 2 Structure Type: Inlet Box	
Number of Openings	1
Elevation	232.50 ft
Orifice Area	24.0 ft²
Orifice Coefficient	0.600
Weir Length	20.00 ft
Weir Coefficient	3.00 (ft^0.5)/s
K Reverse	1.000
Manning's n	0.000
Kev, Charged Riser	0.000
Weir Submergence	False

System1000

Subsection: Outlet Input Data
Label: Outlet#1-with Culvert no underdrain
Scenario: 100

Return Event: 100 years
Storm Event:

Structure ID: Riser - 2 Structure Type: Inlet Box	
Orifice H to crest	False

System1000

Subsection: Outlet Input Data
Label: Outlet#1-with Culvert no underdrain
Scenario: 100

Return Event: 100 years
Storm Event:

Structure ID: Culvert - 1 Structure Type: Culvert-Circular	
Number of Barrels	1
Diameter	36.0 in
Length	61.45 ft
Length (Computed Barrel)	61.46 ft
Slope (Computed)	0.021 ft/ft

Outlet Control Data	
Manning's n	0.013
Ke	0.200
Kb	0.007
Kr	0.200
Convergence Tolerance	0.00 ft

Inlet Control Data	
Equation Form	Form 1
K	0.0045
M	2.0000
C	0.0317
Y	0.6900
T1 ratio (HW/D)	0.000
T2 ratio (HW/D)	1.187
Slope Correction Factor	-0.500

Use unsubmerged inlet control 0 equation below T1 elevation.
Use submerged inlet control 0 equation above T2 elevation

In transition zone between unsubmerged and submerged inlet control,
interpolate between flows at T1 & T2...

T1 Elevation	219.30 ft	T1 Flow	42.85 ft³/s
T2 Elevation	222.86 ft	T2 Flow	48.97 ft³/s

System1000

Subsection: Outlet Input Data
Label: Outlet#1-with Culvert no underdrain
Scenario: 100

Return Event: 100 years
Storm Event:

Structure ID: Culvert - 2 Structure Type: Culvert-Circular	
Number of Barrels	1
Diameter	36.0 in
Length	61.45 ft
Length (Computed Barrel)	61.46 ft
Slope (Computed)	0.021 ft/ft

Outlet Control Data	
Manning's n	0.013
Ke	0.200
Kb	0.007
Kr	0.200
Convergence Tolerance	0.00 ft

Inlet Control Data	
Equation Form	Form 1
K	0.0045
M	2.0000
C	0.0317
Y	0.6900
T1 ratio (HW/D)	0.000
T2 ratio (HW/D)	1.187
Slope Correction Factor	-0.500

Use unsubmerged inlet control 0 equation below T1 elevation.
Use submerged inlet control 0 equation above T2 elevation

In transition zone between unsubmerged and submerged inlet control,
interpolate between flows at T1 & T2...

T1 Elevation	219.30 ft	T1 Flow	42.85 ft³/s
T2 Elevation	222.86 ft	T2 Flow	48.97 ft³/s

System1000

Subsection: Outlet Input Data
Label: Outlet#1-with Culvert no underdrain
Scenario: 100

Return Event: 100 years
Storm Event:

Structure ID: Orifice - HF-Smaller Structure Type: Orifice-Area	
Number of Openings	4
Elevation	231.00 ft
Orifice Area	0.8 ft²
Top Elevation	231.75 ft
Datum Elevation	231.00 ft
Orifice Coefficient	0.600

Structure ID: TW Structure Type: TW Setup, DS Channel	
Tailwater Type	Free Outfall

Convergence Tolerances	
Maximum Iterations	30
Tailwater Tolerance (Minimum)	0.01 ft
Tailwater Tolerance (Maximum)	0.50 ft
Headwater Tolerance (Minimum)	0.01 ft
Headwater Tolerance (Maximum)	0.50 ft
Flow Tolerance (Minimum)	0.001 ft³/s
Flow Tolerance (Maximum)	10.000 ft³/s

System1000

Subsection: Composite Rating Curve
Label: Outlet#1-with Culvert no underdrain
Scenario: 100

Return Event: 100 years
Storm Event:

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft^3/s)	Tailwater Elevation (ft)	Convergence Error (ft)
228.00	0.00	(N/A)	0.00
228.10	0.00	(N/A)	0.00
228.20	0.00	(N/A)	0.00
228.30	0.00	(N/A)	0.00
228.40	0.00	(N/A)	0.00
228.50	0.00	(N/A)	0.00
228.60	0.00	(N/A)	0.00
228.70	0.00	(N/A)	0.00
228.75	0.00	(N/A)	0.00
228.80	0.04	(N/A)	0.00
228.90	0.31	(N/A)	0.00
229.00	0.81	(N/A)	0.00
229.10	1.50	(N/A)	0.00
229.20	2.30	(N/A)	0.00
229.30	3.11	(N/A)	0.00
229.40	3.59	(N/A)	0.00
229.50	4.01	(N/A)	0.00
229.60	4.39	(N/A)	0.00
229.70	4.74	(N/A)	0.00
229.80	5.07	(N/A)	0.00
229.90	5.38	(N/A)	0.00
230.00	5.67	(N/A)	0.00
230.10	5.95	(N/A)	0.00
230.20	6.21	(N/A)	0.00
230.30	6.47	(N/A)	0.00
230.40	6.70	(N/A)	0.00
230.50	6.94	(N/A)	0.00
230.60	7.17	(N/A)	0.00
230.70	7.39	(N/A)	0.00
230.80	7.61	(N/A)	0.00
230.90	7.82	(N/A)	0.00
231.00	8.01	(N/A)	0.00
231.10	10.96	(N/A)	0.00
231.20	13.89	(N/A)	0.00
231.30	16.82	(N/A)	0.00
231.40	19.75	(N/A)	0.00
231.50	22.67	(N/A)	0.00
231.60	25.59	(N/A)	0.00
231.70	28.51	(N/A)	0.00
231.80	30.97	(N/A)	0.00
231.90	32.94	(N/A)	0.00
232.00	34.84	(N/A)	0.00

System1000

Subsection: Composite Rating Curve
Label: Outlet#1-with Culvert no underdrain
Scenario: 100

Return Event: 100 years
Storm Event:

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft³/s)	Tailwater Elevation (ft)	Convergence Error (ft)
232.10	36.23	(N/A)	0.00
232.20	37.55	(N/A)	0.00
232.30	38.84	(N/A)	0.00
232.40	40.06	(N/A)	0.00
232.50	41.27	(N/A)	0.00
232.60	46.21	(N/A)	0.00
232.70	54.27	(N/A)	0.00
232.80	64.35	(N/A)	0.00
232.90	76.06	(N/A)	0.00
233.00	89.16	(N/A)	0.00
233.10	103.52	(N/A)	0.00
233.20	119.02	(N/A)	0.00
233.30	135.57	(N/A)	0.00
233.40	153.12	(N/A)	0.00
233.50	171.33	(N/A)	0.00
233.60	188.88	(N/A)	0.00
233.70	204.58	(N/A)	0.00
233.80	218.72	(N/A)	0.00
233.90	232.96	(N/A)	0.00
234.00	246.94	(N/A)	0.00
234.10	261.28	(N/A)	0.00
234.20	274.92	(N/A)	0.00
234.30	285.86	(N/A)	0.00
234.40	286.96	(N/A)	0.00
234.50	288.06	(N/A)	0.00
234.60	289.15	(N/A)	0.00
234.70	290.25	(N/A)	0.00
234.80	291.32	(N/A)	0.00
234.90	292.42	(N/A)	0.00
235.00	293.49	(N/A)	0.00

Contributing Structures

(no Q: Riser - 2,Culvert - 2,Orifice - HF-Smaller,Orifice - HF A,Riser - 1,Orifice - LF A,Culvert - 1)

(no Q: Riser - 2,Culvert - 2,Orifice - HF-Smaller,Orifice - HF A,Riser - 1,Orifice - LF A,Culvert - 1)

System1000

Subsection: Composite Rating Curve
Label: Outlet#1-with Culvert no underdrain
Scenario: 100

Return Event: 100 years
Storm Event:

Composite Outflow Summary

Contributing Structures
(no Q: Riser - 2,Culvert - 2,Orifice - HF-Smaller,Orifice - HF A,Riser - 1,Orifice - LF A,Culvert - 1)
(no Q: Riser - 2,Culvert - 2,Orifice - HF-Smaller,Orifice - HF A,Riser - 1,Orifice - LF A,Culvert - 1)
(no Q: Riser - 2,Culvert - 2,Orifice - HF-Smaller,Orifice - HF A,Riser - 1,Orifice - LF A,Culvert - 1)
(no Q: Riser - 2,Culvert - 2,Orifice - HF-Smaller,Orifice - HF A,Riser - 1,Orifice - LF A,Culvert - 1)
(no Q: Riser - 2,Culvert - 2,Orifice - HF-Smaller,Orifice - HF A,Riser - 1,Orifice - LF A,Culvert - 1)
(no Q: Riser - 2,Culvert - 2,Orifice - HF-Smaller,Orifice - HF A,Riser - 1,Orifice - LF A,Culvert - 1)
(no Q: Riser - 2,Culvert - 2,Orifice - HF-Smaller,Orifice - HF A,Riser - 1,Orifice - LF A,Culvert - 1)
Orifice - LF A,Culvert - 1 (no Q: Riser - 2,Culvert - 2,Orifice - HF-Smaller,Orifice - HF A,Riser - 1)
Orifice - LF A,Culvert - 1 (no Q: Riser - 2,Culvert - 2,Orifice - HF-Smaller,Orifice - HF A,Riser - 1)

System1000

Subsection: Composite Rating Curve
Label: Outlet#1-with Culvert no underdrain
Scenario: 100

Return Event: 100 years
Storm Event:

Composite Outflow Summary

Contributing Structures
Orifice - LF A,Culvert - 1 (no Q: Riser - 2,Culvert - 2,Orifice - HF-Smaller,Orifice - HF A,Riser - 1)
Orifice - LF A,Culvert - 1 (no Q: Riser - 2,Culvert - 2,Orifice - HF-Smaller,Orifice - HF A,Riser - 1)
Orifice - LF A,Culvert - 1 (no Q: Riser - 2,Culvert - 2,Orifice - HF-Smaller,Orifice - HF A,Riser - 1)
Orifice - LF A,Culvert - 1 (no Q: Riser - 2,Culvert - 2,Orifice - HF-Smaller,Orifice - HF A,Riser - 1)
Orifice - LF A,Culvert - 1 (no Q: Riser - 2,Culvert - 2,Orifice - HF-Smaller,Orifice - HF A,Riser - 1)
Orifice - LF A,Culvert - 1 (no Q: Riser - 2,Culvert - 2,Orifice - HF-Smaller,Orifice - HF A,Riser - 1)
Orifice - LF A,Culvert - 1 (no Q: Riser - 2,Culvert - 2,Orifice - HF-Smaller,Orifice - HF A,Riser - 1)
Orifice - LF A,Culvert - 1 (no Q: Riser - 2,Culvert - 2,Orifice - HF-Smaller,Orifice - HF A,Riser - 1)
Orifice - LF A,Culvert - 1 (no Q: Riser - 2,Culvert - 2,Orifice - HF-Smaller,Orifice - HF A,Riser - 1)

System1000

Subsection: Composite Rating Curve
Label: Outlet#1-with Culvert no underdrain
Scenario: 100

Return Event: 100 years
Storm Event:

Composite Outflow Summary

Contributing Structures
Orifice - LF A,Culvert - 1 (no Q: Riser - 2,Culvert - 2,Orifice - HF-Smaller,Orifice - HF A,Riser - 1)
Orifice - LF A,Culvert - 1 (no Q: Riser - 2,Culvert - 2,Orifice - HF-Smaller,Orifice - HF A,Riser - 1)
Orifice - LF A,Culvert - 1 (no Q: Riser - 2,Culvert - 2,Orifice - HF-Smaller,Orifice - HF A,Riser - 1)
Orifice - LF A,Culvert - 1 (no Q: Riser - 2,Culvert - 2,Orifice - HF-Smaller,Orifice - HF A,Riser - 1)
Orifice - LF A,Culvert - 1 (no Q: Riser - 2,Culvert - 2,Orifice - HF-Smaller,Orifice - HF A,Riser - 1)
Orifice - LF A,Culvert - 1 (no Q: Riser - 2,Culvert - 2,Orifice - HF-Smaller,Orifice - HF A,Riser - 1)
Orifice - LF A,Culvert - 1 (no Q: Riser - 2,Culvert - 2,Orifice - HF-Smaller,Orifice - HF A,Riser - 1)
Orifice - LF A,Culvert - 1 (no Q: Riser - 2,Culvert - 2,Orifice - HF-Smaller,Orifice - HF A,Riser - 1)
Orifice - LF A,Culvert - 1 (no Q: Riser - 2,Culvert - 2,Orifice - HF-Smaller,Orifice - HF A,Riser - 1)

System1000

Subsection: Composite Rating Curve
Label: Outlet#1-with Culvert no underdrain
Scenario: 100

Return Event: 100 years
Storm Event:

Composite Outflow Summary

Contributing Structures
Orifice - LF A,Culvert - 1 (no Q: Riser - 2,Culvert - 2,Orifice - HF-Smaller,Orifice - HF A,Riser - 1)
Orifice - LF A,Culvert - 1 (no Q: Riser - 2,Culvert - 2,Orifice - HF-Smaller,Orifice - HF A,Riser - 1)
Orifice - LF A,Culvert - 1 (no Q: Riser - 2,Culvert - 2,Orifice - HF-Smaller,Orifice - HF A,Riser - 1)
Orifice - HF-Smaller,Orifice - HF A,Orifice - LF A,Culvert - 1 (no Q: Riser - 2,Culvert - 2,Riser - 1)
Orifice - HF-Smaller,Orifice - HF A,Orifice - LF A,Culvert - 1 (no Q: Riser - 2,Culvert - 2,Riser - 1)
Orifice - HF-Smaller,Orifice - HF A,Orifice - LF A,Culvert - 1 (no Q: Riser - 2,Culvert - 2,Riser - 1)
Orifice - HF-Smaller,Orifice - HF A,Orifice - LF A,Culvert - 1 (no Q: Riser - 2,Culvert - 2,Riser - 1)
Orifice - HF-Smaller,Orifice - HF A,Orifice - LF A,Culvert - 1 (no Q: Riser - 2,Culvert - 2,Riser - 1)
Orifice - HF-Smaller,Orifice - HF A,Orifice - LF A,Culvert - 1 (no Q: Riser - 2,Culvert - 2,Riser - 1)

System1000

Subsection: Composite Rating Curve
Label: Outlet#1-with Culvert no underdrain
Scenario: 100

Return Event: 100 years
Storm Event:

Composite Outflow Summary

Contributing Structures
Orifice - HF-Smaller,Orifice - HF A,Orifice - LF A,Culvert - 1 (no Q: Riser - 2,Culvert - 2,Riser - 1)
Orifice - HF-Smaller,Orifice - HF A,Orifice - LF A,Culvert - 1 (no Q: Riser - 2,Culvert - 2,Riser - 1)
Orifice - HF-Smaller,Orifice - HF A,Orifice - LF A,Culvert - 1 (no Q: Riser - 2,Culvert - 2,Riser - 1)
Orifice - HF-Smaller,Orifice - HF A,Orifice - LF A,Culvert - 1 (no Q: Riser - 2,Culvert - 2,Riser - 1)
Orifice - HF-Smaller,Orifice - HF A,Orifice - LF A,Culvert - 1 (no Q: Riser - 2,Culvert - 2,Riser - 1)
Orifice - HF-Smaller,Orifice - HF A,Orifice - LF A,Culvert - 1 (no Q: Riser - 2,Culvert - 2,Riser - 1)
Orifice - HF-Smaller,Orifice - HF A,Orifice - LF A,Culvert - 1 (no Q: Riser - 2,Culvert - 2,Riser - 1)
Orifice - HF-Smaller,Orifice - HF A,Orifice - LF A,Culvert - 1 (no Q: Riser - 2,Culvert - 2,Riser - 1)
Orifice - HF-Smaller,Orifice - HF A,Orifice - LF A,Culvert - 1 (no Q: Riser - 2,Culvert - 2,Riser - 1)

System1000

Subsection: Composite Rating Curve
Label: Outlet#1-with Culvert no underdrain
Scenario: 100

Return Event: 100 years
Storm Event:

Composite Outflow Summary

Contributing Structures
Riser - 2,Culvert - 2,Orifice - HF-Smaller,Orifice - HF A,Riser - 1,Orifice - LF A,Culvert - 1
Riser - 2,Culvert - 2,Orifice - HF-Smaller,Orifice - HF A,Riser - 1,Orifice - LF A,Culvert - 1
Riser - 2,Culvert - 2,Orifice - HF-Smaller,Orifice - HF A,Riser - 1,Orifice - LF A,Culvert - 1
Riser - 2,Culvert - 2,Orifice - HF-Smaller,Orifice - HF A,Riser - 1,Orifice - LF A,Culvert - 1
Riser - 2,Culvert - 2,Orifice - HF-Smaller,Orifice - HF A,Riser - 1,Orifice - LF A,Culvert - 1
Riser - 2,Culvert - 2,Orifice - HF-Smaller,Orifice - HF A,Riser - 1,Orifice - LF A,Culvert - 1
Riser - 2,Culvert - 2,Orifice - HF-Smaller,Orifice - HF A,Riser - 1,Orifice - LF A,Culvert - 1
Riser - 2,Culvert - 2,Orifice - HF-Smaller,Orifice - HF A,Riser - 1,Orifice - LF A,Culvert - 1
Riser - 2,Culvert - 2,Orifice - HF-Smaller,Orifice - HF A,Riser - 1,Orifice - LF A,Culvert - 1

System1000

Subsection: Composite Rating Curve
Label: Outlet#1-with Culvert no underdrain
Scenario: 100

Return Event: 100 years
Storm Event:

Composite Outflow Summary

Contributing Structures
Riser - 2,Culvert - 2,Orifice - HF-Smaller,Orifice - HF A,Riser - 1,Orifice - LF A,Culvert - 1
Riser - 2,Culvert - 2,Orifice - HF-Smaller,Orifice - HF A,Riser - 1,Orifice - LF A,Culvert - 1
Riser - 2,Culvert - 2,Orifice - HF-Smaller,Orifice - HF A,Riser - 1,Orifice - LF A,Culvert - 1
Riser - 2,Culvert - 2,Orifice - HF-Smaller,Orifice - HF A,Riser - 1,Orifice - LF A,Culvert - 1
Riser - 2,Culvert - 2,Orifice - HF-Smaller,Orifice - HF A,Riser - 1,Orifice - LF A,Culvert - 1
Riser - 2,Culvert - 2,Orifice - HF-Smaller,Orifice - HF A,Riser - 1,Orifice - LF A,Culvert - 1
Riser - 2,Culvert - 2,Orifice - HF-Smaller,Orifice - HF A,Riser - 1,Orifice - LF A,Culvert - 1
Riser - 2,Culvert - 2,Orifice - HF-Smaller,Orifice - HF A,Riser - 1,Orifice - LF A,Culvert - 1
Riser - 2,Culvert - 2,Riser - 1,Culvert - 1 (no Q: Orifice - HF-Smaller,Orifice - HF A,Orifice - LF A)

System1000

Subsection: Composite Rating Curve
Label: Outlet#1-with Culvert no underdrain
Scenario: 100

Return Event: 100 years
Storm Event:

Composite Outflow Summary

Contributing Structures
Riser - 2,Culvert - 2,Riser - 1,Culvert - 1 (no Q: Orifice - HF-Smaller,Orifice - HF A,Orifice - LF A)
Riser - 2,Culvert - 2,Riser - 1,Culvert - 1 (no Q: Orifice - HF-Smaller,Orifice - HF A,Orifice - LF A)
Riser - 2,Culvert - 2,Riser - 1,Culvert - 1 (no Q: Orifice - HF-Smaller,Orifice - HF A,Orifice - LF A)
Riser - 2,Culvert - 2,Riser - 1,Culvert - 1 (no Q: Orifice - HF-Smaller,Orifice - HF A,Orifice - LF A)
Riser - 2,Culvert - 2,Riser - 1,Culvert - 1 (no Q: Orifice - HF-Smaller,Orifice - HF A,Orifice - LF A)
Riser - 2,Culvert - 2,Riser - 1,Culvert - 1 (no Q: Orifice - HF-Smaller,Orifice - HF A,Orifice - LF A)
Riser - 2,Culvert - 2,Riser - 1,Culvert - 1 (no Q: Orifice - HF-Smaller,Orifice - HF A,Orifice - LF A)

System1000

Subsection: Elevation-Volume-Flow Table (Pond) | Return Event: 100 years
Label: 1 | Storm Event:
Scenario: 100

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions	
Elevation (Water Surface, Initial)	228.75 ft
Volume (Initial)	0.816 ac-ft
Flow (Initial Outlet)	0.00 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.00 ft³/s
Time Increment	1 min

Elevation (ft)	Outflow (ft³/s)	Storage (ac-ft)	Area (ft²)	Infiltration (ft³/s)	Flow (Total) (ft³/s)	2S/t + O (ft³/s)
228.00	0.00	0.000	45,538.000	0.00	0.00	0.00
228.10	0.00	0.105	46,028.954	0.00	0.00	152.61
228.20	0.00	0.211	46,522.541	0.00	0.00	306.86
228.30	0.00	0.319	47,018.760	0.00	0.00	462.76
228.40	0.00	0.427	47,517.612	0.00	0.00	620.32
228.50	0.00	0.537	48,019.095	0.00	0.00	779.55
228.60	0.00	0.648	48,523.212	0.00	0.00	940.45
228.70	0.00	0.760	49,029.960	0.00	0.00	1,103.04
228.75	0.00	0.816	49,284.322	0.00	0.00	1,184.97
228.80	0.04	0.873	49,539.341	0.00	0.04	1,267.36
228.90	0.31	0.987	50,051.354	0.00	0.31	1,433.62
229.00	0.81	1.103	50,566.000	0.00	0.81	1,601.81
229.10	1.50	1.219	51,062.964	0.00	1.50	1,771.88
229.20	2.30	1.337	51,562.359	0.00	2.30	1,943.72
229.30	3.11	1.456	52,064.183	0.00	3.11	2,117.24
229.40	3.59	1.576	52,568.438	0.00	3.59	2,292.11
229.50	4.01	1.697	53,075.123	0.00	4.01	2,468.60
229.60	4.39	1.820	53,584.238	0.00	4.39	2,646.74
229.70	4.74	1.943	54,095.783	0.00	4.74	2,826.57
229.80	5.07	2.068	54,609.759	0.00	5.07	3,008.07
229.90	5.38	2.194	55,126.164	0.00	5.38	3,191.27
230.00	5.67	2.321	55,645.000	0.00	5.67	3,376.18
230.10	5.95	2.450	56,148.399	0.00	5.95	3,562.78
230.20	6.21	2.579	56,654.066	0.00	6.21	3,751.05
230.30	6.47	2.710	57,161.999	0.00	6.47	3,940.99
230.40	6.70	2.842	57,672.199	0.00	6.70	4,132.62
230.50	6.94	2.975	58,184.665	0.00	6.94	4,325.96
230.60	7.17	3.109	58,699.399	0.00	7.17	4,520.98
230.70	7.39	3.244	59,216.399	0.00	7.39	4,717.74

System1000

Subsection: Elevation-Volume-Flow Table (Pond) Return Event: 100 years
Label: 1 Storm Event:
Scenario: 100

Elevation (ft)	Outflow (ft³/s)	Storage (ac-ft)	Area (ft²)	Infiltration (ft³/s)	Flow (Total) (ft³/s)	2S/t + O (ft³/s)
230.80	7.61	3.381	59,735.666	0.00	7.61	4,916.20
230.90	7.82	3.518	60,257.199	0.00	7.82	5,116.40
231.00	8.01	3.657	60,781.000	0.00	8.01	5,318.32
231.10	10.96	3.797	61,291.300	0.00	10.96	5,524.73
231.20	13.89	3.939	61,803.734	0.00	13.89	5,732.82
231.30	16.82	4.081	62,318.301	0.00	16.82	5,942.62
231.40	19.75	4.225	62,835.001	0.00	19.75	6,154.13
231.50	22.67	4.370	63,353.835	0.00	22.67	6,367.37
231.60	25.59	4.516	63,874.801	0.00	25.59	6,582.33
231.70	28.51	4.663	64,397.901	0.00	28.51	6,799.04
231.80	30.97	4.811	64,923.134	0.00	30.97	7,017.03
231.90	32.94	4.961	65,450.500	0.00	32.94	7,236.29
232.00	34.84	5.112	65,980.000	0.00	34.84	7,457.24
232.10	36.23	5.264	66,496.054	0.00	36.23	7,679.42
232.20	37.55	5.417	67,014.118	0.00	37.55	7,903.26
232.30	38.84	5.572	67,534.192	0.00	38.84	8,128.80
232.40	40.06	5.727	68,056.277	0.00	40.06	8,356.01
232.50	41.27	5.884	68,580.372	0.00	41.27	8,584.94
232.60	46.21	6.042	69,106.477	0.00	46.21	8,819.36
232.70	54.27	6.201	69,634.592	0.00	54.27	9,058.65
232.80	64.35	6.362	70,164.718	0.00	64.35	9,301.73
232.90	76.06	6.524	70,696.854	0.00	76.06	9,548.21
233.00	89.16	6.686	71,231.000	0.00	89.16	9,797.85
233.10	103.52	6.851	71,793.833	0.00	103.52	10,050.59
233.20	119.02	7.016	72,358.881	0.00	119.02	10,306.35
233.30	135.57	7.183	72,926.144	0.00	135.57	10,565.04
233.40	153.12	7.351	73,495.621	0.00	153.12	10,826.62
233.50	171.33	7.520	74,067.314	0.00	171.33	11,090.77
233.60	188.88	7.691	74,641.221	0.00	188.88	11,356.17
233.70	204.58	7.863	75,217.344	0.00	204.58	11,621.63
233.80	218.72	8.036	75,795.681	0.00	218.72	11,887.46
233.90	232.96	8.211	76,376.233	0.00	232.96	12,155.32
234.00	246.94	8.387	76,959.000	0.00	246.94	12,424.85
234.10	261.28	8.564	77,308.021	0.00	261.28	12,696.30
234.20	274.92	8.742	77,657.831	0.00	274.92	12,968.22
234.30	285.86	8.921	78,008.431	0.00	285.86	13,238.61
234.40	286.96	9.100	78,359.821	0.00	286.96	13,500.32
234.50	288.06	9.280	78,712.000	0.00	288.06	13,763.20
234.60	289.15	9.462	79,062.245	0.00	289.15	14,027.26
234.70	290.25	9.643	79,413.267	0.00	290.25	14,292.48
234.80	291.32	9.826	79,765.067	0.00	291.32	14,558.85
234.90	292.42	10.010	80,117.645	0.00	292.42	14,826.42
235.00	293.49	10.194	80,471.000	0.00	293.49	15,095.14

System1000

Subsection: Level Pool Pond Routing Summary
Label: 1 (IN)
Scenario: 100

Return Event: 100 years
Storm Event:

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions	
Elevation (Water Surface, Initial)	228.75 ft
Volume (Initial)	0.816 ac-ft
Flow (Initial Outlet)	0.00 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.00 ft³/s
Time Increment	1 min

Inflow/Outflow Hydrograph Summary			
Flow (Peak In)	201.60 ft³/s	Time to Peak (Flow, In)	248 min
Flow (Peak Outlet)	39.76 ft³/s	Time to Peak (Flow, Outlet)	256 min

Elevation (Water Surface, Peak)	232.38 ft
Volume (Peak)	5.689 ac-ft

Mass Balance (ac-ft)	
Volume (Initial)	0.816 ac-ft
Volume (Total Inflow)	8.337 ac-ft
Volume (Total Infiltration)	0.000 ac-ft
Volume (Total Outlet Outflow)	6.915 ac-ft
Volume (Retained)	2.231 ac-ft
Volume (Unrouted)	-0.008 ac-ft
Error (Mass Balance)	0.1 %

System1000

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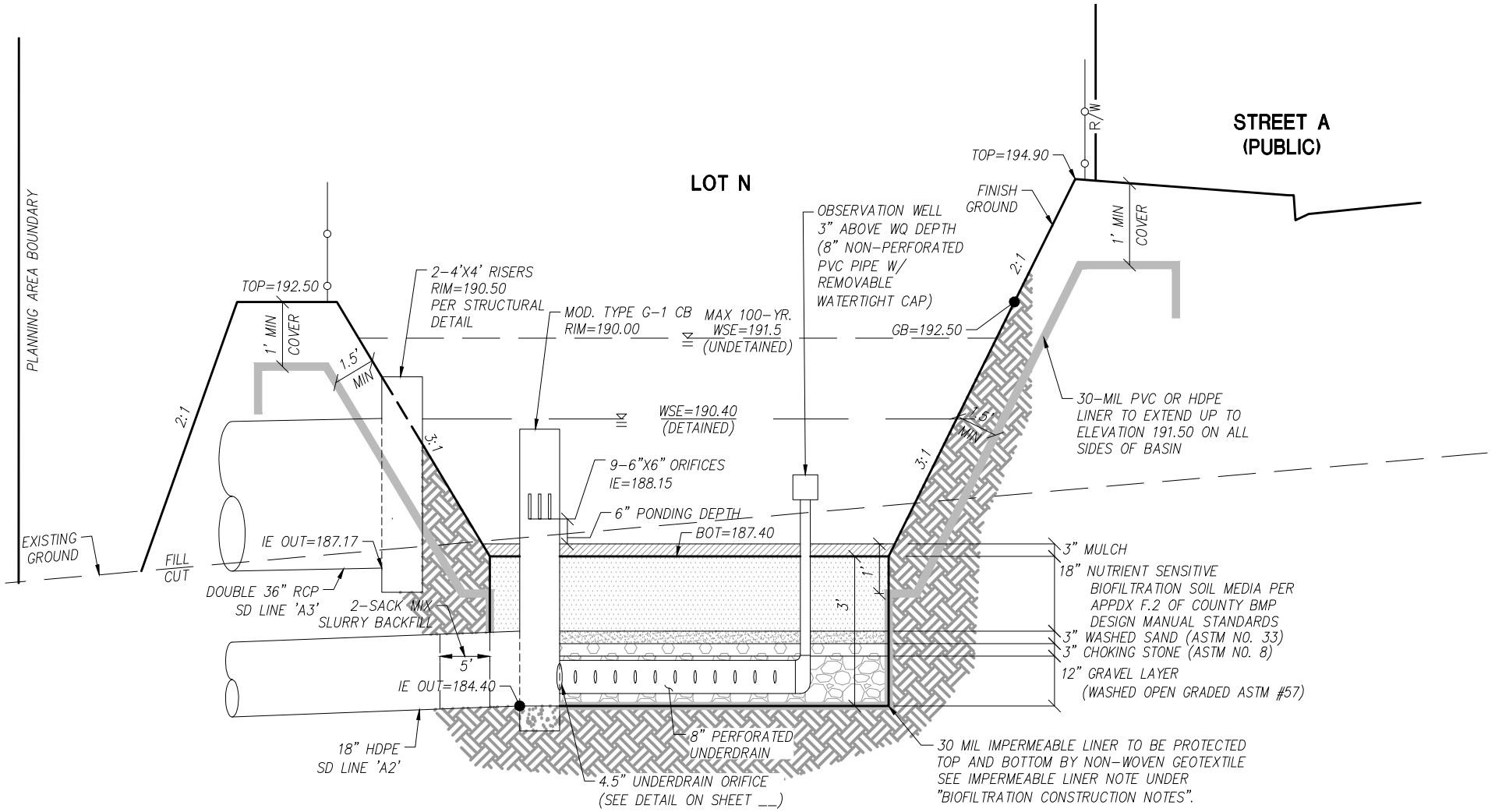
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RATIONAL METHOD HYDROGRAPH PROGRAM
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RUN DATE 5/18/2024
HYDROGRAPH FILE NAME BASIN 1A
TIME OF CONCENTRATION 8 MIN.
6 HOUR RAINFALL 3.3 INCHES
BASIN AREA 49.2 ACRES
RUNOFF COEFFICIENT 0.62
PEAK DISCHARGE 201.6 CFS

TIME	(MIN)	=	0	DISCHARGE	(CFS)	=	0
TIME	(MIN)	=	8	DISCHARGE	(CFS)	=	6
TIME	(MIN)	=	16	DISCHARGE	(CFS)	=	6.1
TIME	(MIN)	=	24	DISCHARGE	(CFS)	=	6.3
TIME	(MIN)	=	32	DISCHARGE	(CFS)	=	6.4
TIME	(MIN)	=	40	DISCHARGE	(CFS)	=	6.6
TIME	(MIN)	=	48	DISCHARGE	(CFS)	=	6.7
TIME	(MIN)	=	56	DISCHARGE	(CFS)	=	7
TIME	(MIN)	=	64	DISCHARGE	(CFS)	=	7.1
TIME	(MIN)	=	72	DISCHARGE	(CFS)	=	7.4
TIME	(MIN)	=	80	DISCHARGE	(CFS)	=	7.5
TIME	(MIN)	=	88	DISCHARGE	(CFS)	=	7.8
TIME	(MIN)	=	96	DISCHARGE	(CFS)	=	8
TIME	(MIN)	=	104	DISCHARGE	(CFS)	=	8.4
TIME	(MIN)	=	112	DISCHARGE	(CFS)	=	8.6
TIME	(MIN)	=	120	DISCHARGE	(CFS)	=	9.1
TIME	(MIN)	=	128	DISCHARGE	(CFS)	=	9.3
TIME	(MIN)	=	136	DISCHARGE	(CFS)	=	9.9
TIME	(MIN)	=	144	DISCHARGE	(CFS)	=	10.2
TIME	(MIN)	=	152	DISCHARGE	(CFS)	=	11
TIME	(MIN)	=	160	DISCHARGE	(CFS)	=	11.4
TIME	(MIN)	=	168	DISCHARGE	(CFS)	=	12.4
TIME	(MIN)	=	176	DISCHARGE	(CFS)	=	13
TIME	(MIN)	=	184	DISCHARGE	(CFS)	=	14.4
TIME	(MIN)	=	192	DISCHARGE	(CFS)	=	15.3
TIME	(MIN)	=	200	DISCHARGE	(CFS)	=	17.5
TIME	(MIN)	=	208	DISCHARGE	(CFS)	=	19
TIME	(MIN)	=	216	DISCHARGE	(CFS)	=	23.2
TIME	(MIN)	=	224	DISCHARGE	(CFS)	=	26.4
TIME	(MIN)	=	232	DISCHARGE	(CFS)	=	38.8
TIME	(MIN)	=	240	DISCHARGE	(CFS)	=	48.9
TIME	(MIN)	=	248	DISCHARGE	(CFS)	=	201.6
TIME	(MIN)	=	256	DISCHARGE	(CFS)	=	31.1
TIME	(MIN)	=	264	DISCHARGE	(CFS)	=	20.8
TIME	(MIN)	=	272	DISCHARGE	(CFS)	=	16.3
TIME	(MIN)	=	280	DISCHARGE	(CFS)	=	13.6
TIME	(MIN)	=	288	DISCHARGE	(CFS)	=	11.9
TIME	(MIN)	=	296	DISCHARGE	(CFS)	=	10.6
TIME	(MIN)	=	304	DISCHARGE	(CFS)	=	9.6
TIME	(MIN)	=	312	DISCHARGE	(CFS)	=	8.8
TIME	(MIN)	=	320	DISCHARGE	(CFS)	=	8.2
TIME	(MIN)	=	328	DISCHARGE	(CFS)	=	7.7
TIME	(MIN)	=	336	DISCHARGE	(CFS)	=	7.2
TIME	(MIN)	=	344	DISCHARGE	(CFS)	=	6.8
TIME	(MIN)	=	352	DISCHARGE	(CFS)	=	6.5
TIME	(MIN)	=	360	DISCHARGE	(CFS)	=	6.2
TIME	(MIN)	=	368	DISCHARGE	(CFS)	=	0

2A



SECTION 2A-2A: BMP 2A
LINED BIOFILTRATION (PRIVATE)

NOT TO SCALE

N

SCALE:	1"=60'
JOB #:	4192.10
CREATED:	2/28/24

PREPARED BY:

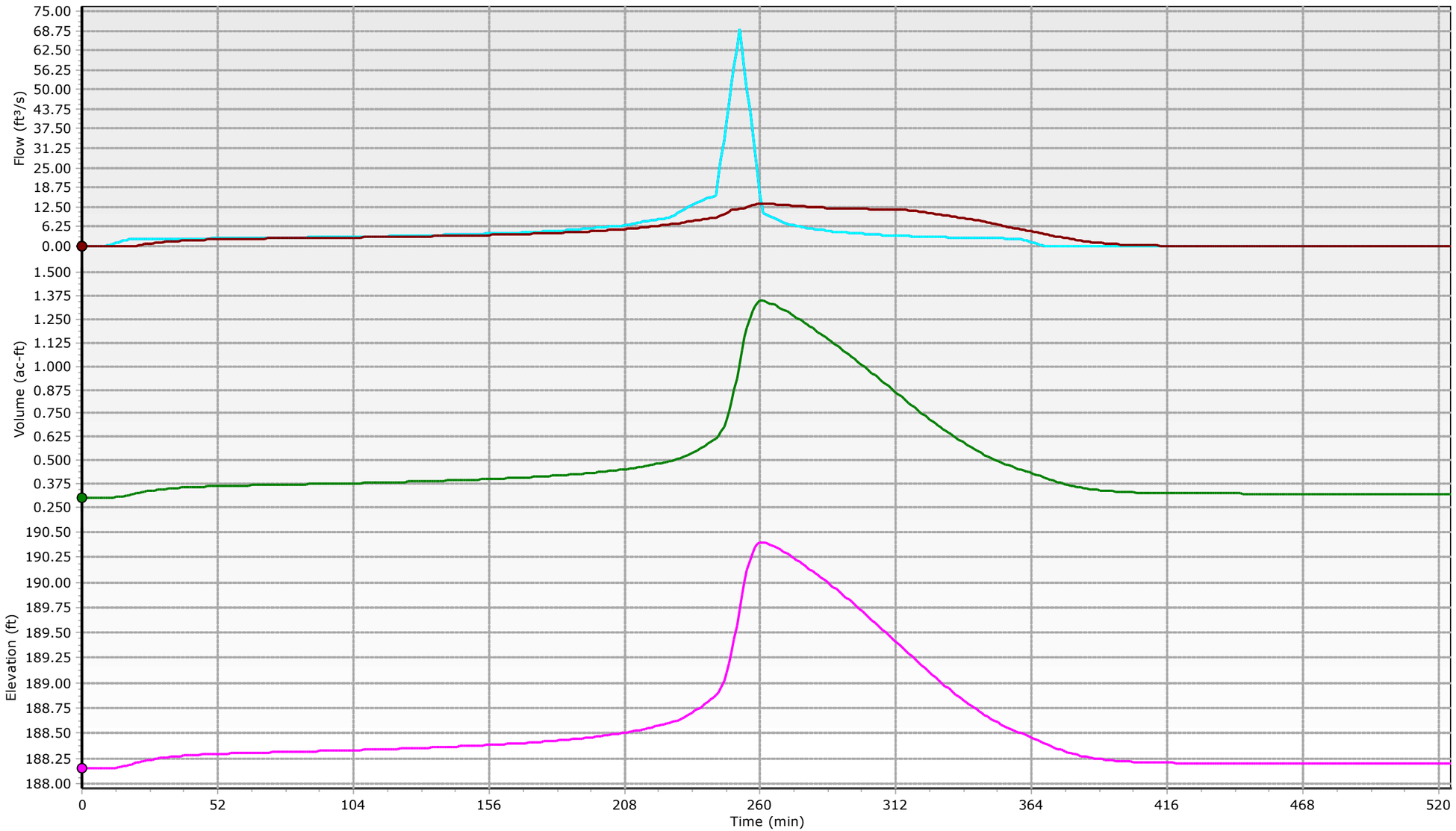
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COUNTY OF SAN DIEGO

OCEAN BREEZE RANCH

BASIN CROSS SECTIONS
BASIN 2A

Basin 2A



1 - 100 - Flow (Total In) | 1 - 100 - Flow (Total Out) | 1 - 100 - Volume | 1 - 100 - Elevation | CM-1 - 100 - Flow (Total) | O-1 - 100 - Flow

RATIONAL METHOD HYDROGRAPH PROGRAM
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RUN DATE 5/16/2024
HYDROGRAPH FILE NAME BASIN 2A
TIME OF CONCENTRATION 9 MIN.
6 HOUR RAINFALL 3.3 INCHES
BASIN AREA 19.4 ACRES
RUNOFF COEFFICIENT 0.579
PEAK DISCHARGE 69.23 CFS

TIME	(MIN)	=	0	DISCHARGE	(CFS)	=	0
TIME	(MIN)	=	9	DISCHARGE	(CFS)	=	0
TIME	(MIN)	=	18	DISCHARGE	(CFS)	=	2.3
TIME	(MIN)	=	27	DISCHARGE	(CFS)	=	2.3
TIME	(MIN)	=	36	DISCHARGE	(CFS)	=	2.4
TIME	(MIN)	=	45	DISCHARGE	(CFS)	=	2.4
TIME	(MIN)	=	54	DISCHARGE	(CFS)	=	2.5
TIME	(MIN)	=	63	DISCHARGE	(CFS)	=	2.6
TIME	(MIN)	=	72	DISCHARGE	(CFS)	=	2.7
TIME	(MIN)	=	81	DISCHARGE	(CFS)	=	2.7
TIME	(MIN)	=	90	DISCHARGE	(CFS)	=	2.9
TIME	(MIN)	=	99	DISCHARGE	(CFS)	=	2.9
TIME	(MIN)	=	108	DISCHARGE	(CFS)	=	3.1
TIME	(MIN)	=	117	DISCHARGE	(CFS)	=	3.2
TIME	(MIN)	=	126	DISCHARGE	(CFS)	=	3.4
TIME	(MIN)	=	135	DISCHARGE	(CFS)	=	3.5
TIME	(MIN)	=	144	DISCHARGE	(CFS)	=	3.7
TIME	(MIN)	=	153	DISCHARGE	(CFS)	=	3.9
TIME	(MIN)	=	162	DISCHARGE	(CFS)	=	4.2
TIME	(MIN)	=	171	DISCHARGE	(CFS)	=	4.4
TIME	(MIN)	=	180	DISCHARGE	(CFS)	=	4.9
TIME	(MIN)	=	189	DISCHARGE	(CFS)	=	5.2
TIME	(MIN)	=	198	DISCHARGE	(CFS)	=	6
TIME	(MIN)	=	207	DISCHARGE	(CFS)	=	6.5
TIME	(MIN)	=	216	DISCHARGE	(CFS)	=	7.9
TIME	(MIN)	=	225	DISCHARGE	(CFS)	=	9
TIME	(MIN)	=	234	DISCHARGE	(CFS)	=	13.2
TIME	(MIN)	=	243	DISCHARGE	(CFS)	=	16.3
TIME	(MIN)	=	252	DISCHARGE	(CFS)	=	69.23
TIME	(MIN)	=	261	DISCHARGE	(CFS)	=	10.6
TIME	(MIN)	=	270	DISCHARGE	(CFS)	=	7.1
TIME	(MIN)	=	279	DISCHARGE	(CFS)	=	5.6
TIME	(MIN)	=	288	DISCHARGE	(CFS)	=	4.7
TIME	(MIN)	=	297	DISCHARGE	(CFS)	=	4.1
TIME	(MIN)	=	306	DISCHARGE	(CFS)	=	3.6
TIME	(MIN)	=	315	DISCHARGE	(CFS)	=	3.3
TIME	(MIN)	=	324	DISCHARGE	(CFS)	=	3
TIME	(MIN)	=	333	DISCHARGE	(CFS)	=	2.8
TIME	(MIN)	=	342	DISCHARGE	(CFS)	=	2.6
TIME	(MIN)	=	351	DISCHARGE	(CFS)	=	2.5
TIME	(MIN)	=	360	DISCHARGE	(CFS)	=	2.3
TIME	(MIN)	=	369	DISCHARGE	(CFS)	=	0

Basin 2A

Project Summary	
Title	Basin 2A
Engineer	PDC
Company	PDC
Date	10/31/2024

Notes

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Basin 2A

Subsection: Master Network Summary

Catchments Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (min)	Peak Flow (ft^3/s)
CM-1	100	0	3.044	252	69.23

Node Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (min)	Peak Flow (ft^3/s)
O-1	100	0	3.023	261	13.54

Pond Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (min)	Peak Flow (ft^3/s)	Maximum Water Surface Elevation (ft)	Maximum Pond Storage (ac-ft)
1 (IN)	100	0	3.044	252	69.23	(N/A)	(N/A)
1 (OUT)	100	0	3.023	261	13.54	190.40	1.348

Basin 2A

Subsection: Read Hydrograph
Label: CM-1
Scenario: 100

Return Event: 100 years
Storm Event:

Peak Discharge	69.23 ft³/s
Time to Peak	252 min
Hydrograph Volume	3.044 ac-ft

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 9 min
Time on left represents time for first value in each row.

Time (min)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
0	0.00	0.00	2.30	2.30	2.40
45	2.40	2.50	2.60	2.70	2.70
90	2.90	2.90	3.10	3.20	3.40
135	3.50	3.70	3.90	4.20	4.40
180	4.90	5.20	6.00	6.50	7.90
225	9.00	13.20	16.30	69.23	10.60
270	7.10	5.60	4.70	4.10	3.60
315	3.30	3.00	2.80	2.60	2.50
360	2.30	0.00	(N/A)	(N/A)	(N/A)

Basin 2A

Subsection: Time vs. Volume
Label: 1
Scenario: 100

Return Event: 100 years
Storm Event:

Time vs. Volume (ac-ft)

Output Time increment = 1 min
Time on left represents time for first value in each row.

Time (min)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)
0	0.301	0.301	0.301	0.301	0.301
5	0.301	0.301	0.301	0.301	0.301
10	0.301	0.302	0.303	0.304	0.305
15	0.307	0.310	0.312	0.315	0.318
20	0.322	0.325	0.328	0.330	0.333
25	0.335	0.337	0.339	0.341	0.342
30	0.344	0.346	0.347	0.348	0.350
35	0.351	0.352	0.353	0.354	0.355
40	0.355	0.356	0.357	0.358	0.358
45	0.359	0.359	0.360	0.360	0.361
50	0.361	0.362	0.362	0.362	0.363
55	0.363	0.363	0.364	0.364	0.364
60	0.365	0.365	0.365	0.366	0.366
65	0.366	0.367	0.367	0.367	0.368
70	0.368	0.368	0.369	0.369	0.369
75	0.370	0.370	0.370	0.370	0.371
80	0.371	0.371	0.371	0.371	0.372
85	0.372	0.372	0.373	0.373	0.373
90	0.374	0.374	0.374	0.375	0.375
95	0.375	0.375	0.376	0.376	0.376
100	0.376	0.377	0.377	0.377	0.377
105	0.378	0.378	0.378	0.379	0.379
110	0.380	0.380	0.380	0.381	0.381
115	0.381	0.382	0.382	0.382	0.383
120	0.383	0.384	0.384	0.384	0.385
125	0.385	0.386	0.386	0.387	0.387
130	0.387	0.388	0.388	0.389	0.389
135	0.389	0.390	0.390	0.391	0.391
140	0.392	0.392	0.392	0.393	0.393
145	0.394	0.394	0.395	0.395	0.396
150	0.396	0.397	0.397	0.398	0.398
155	0.399	0.400	0.400	0.401	0.401
160	0.402	0.403	0.403	0.404	0.405
165	0.405	0.406	0.407	0.407	0.408
170	0.409	0.409	0.410	0.411	0.411
175	0.412	0.413	0.414	0.415	0.416
180	0.417	0.418	0.419	0.420	0.421
185	0.422	0.423	0.423	0.424	0.425
190	0.426	0.427	0.429	0.430	0.431
195	0.432	0.434	0.435	0.437	0.438

Basin 2A

Subsection: Time vs. Volume
Label: 1
Scenario: 100

Return Event: 100 years
Storm Event:

Time vs. Volume (ac-ft)

Output Time increment = 1 min
Time on left represents time for first value in each row.

Time (min)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)
200	0.440	0.441	0.443	0.444	0.446
205	0.447	0.449	0.450	0.452	0.454
210	0.456	0.458	0.460	0.462	0.464
215	0.467	0.469	0.472	0.474	0.477
220	0.480	0.482	0.485	0.488	0.491
225	0.494	0.497	0.500	0.505	0.509
230	0.514	0.520	0.526	0.532	0.539
235	0.546	0.554	0.562	0.570	0.578
240	0.587	0.596	0.605	0.615	0.629
245	0.650	0.679	0.716	0.760	0.811
250	0.870	0.937	1.012	1.087	1.152
255	1.208	1.254	1.291	1.319	1.338
260	1.347	1.348	1.343	1.339	1.333
265	1.328	1.321	1.315	1.308	1.300
270	1.292	1.283	1.275	1.266	1.257
275	1.249	1.239	1.230	1.221	1.211
280	1.202	1.192	1.183	1.173	1.163
285	1.153	1.143	1.133	1.123	1.113
290	1.102	1.092	1.081	1.071	1.060
295	1.050	1.039	1.028	1.017	1.006
300	0.995	0.984	0.973	0.962	0.951
305	0.940	0.929	0.917	0.906	0.895
310	0.883	0.872	0.861	0.849	0.838
315	0.827	0.815	0.804	0.793	0.781
320	0.770	0.759	0.748	0.738	0.727
325	0.716	0.706	0.696	0.686	0.676
330	0.666	0.656	0.647	0.638	0.628
335	0.619	0.610	0.602	0.593	0.584
340	0.576	0.568	0.560	0.552	0.544
345	0.537	0.529	0.522	0.515	0.508
350	0.502	0.496	0.490	0.484	0.478
355	0.473	0.468	0.463	0.458	0.454
360	0.450	0.445	0.441	0.436	0.432
365	0.427	0.422	0.417	0.412	0.407
370	0.401	0.396	0.392	0.387	0.383
375	0.379	0.375	0.372	0.368	0.365
380	0.362	0.359	0.356	0.354	0.351
385	0.349	0.347	0.345	0.344	0.342
390	0.341	0.339	0.338	0.337	0.336
395	0.335	0.334	0.333	0.332	0.331
400	0.331	0.330	0.330	0.329	0.328

Basin 2A

Subsection: Time vs. Volume
Label: 1
Scenario: 100

Return Event: 100 years
Storm Event:

Time vs. Volume (ac-ft)

Output Time increment = 1 min
Time on left represents time for first value in each row.

Time (min)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)
405	0.328	0.328	0.327	0.327	0.326
410	0.326	0.326	0.326	0.325	0.325
415	0.325	0.325	0.324	0.324	0.324
420	0.324	0.324	0.324	0.323	0.323
425	0.323	0.323	0.323	0.323	0.323
430	0.323	0.323	0.323	0.323	0.323
435	0.323	0.322	0.322	0.322	0.322
440	0.322	0.322	0.322	0.322	0.322
445	0.322	0.322	0.322	0.322	0.322
450	0.322	0.322	0.322	0.322	0.322
455	0.322	0.322	0.322	0.322	0.322
460	0.322	0.322	0.322	0.322	0.322
465	0.322	0.322	0.322	0.322	0.322
470	0.322	0.322	0.322	0.322	0.322
475	0.322	0.322	0.322	0.322	0.322
480	0.322	0.322	0.322	0.322	0.322
485	0.322	0.322	0.322	0.322	0.322
490	0.322	0.322	0.322	0.322	0.322
495	0.322	0.322	0.322	0.322	0.322
500	0.322	0.322	0.322	0.322	0.322
505	0.322	0.322	0.322	0.322	0.322
510	0.322	0.322	0.322	0.322	0.322
515	0.322	0.322	0.322	0.322	0.322
520	0.322	0.322	0.322	0.322	0.322
525	0.322	(N/A)	(N/A)	(N/A)	(N/A)

Basin 2A

Subsection: Elevation-Area Volume Curve
Return Event: 100 years
Label: 1
Storm Event:
Scenario: 100

Elevation (ft)	Planimeter (ft²)	Area (ft²)	A1+A2+sqr (A1*A2) (ft²)	Volume (ac-ft)	Volume (Total) (ac-ft)
187.40	0.000	16,805.000	0.000	0.000	0.000
188.00	0.000	17,893.000	52,038.469	0.239	0.239
189.00	0.000	19,753.000	56,446.011	0.432	0.671
190.00	0.000	21,682.000	62,130.037	0.475	1.146
191.00	0.000	23,697.000	68,046.121	0.521	1.667
192.00	0.000	25,682.000	74,048.543	0.567	2.234
192.50	0.000	27,294.000	79,451.734	0.304	2.538

Basin 2A

Subsection: Volume Equations
Label: 1
Scenario: 100

Return Event: 100 years
Storm Event:

Pond Volume Equations
* Incremental volume computed by the Conic Method for Reservoir Volumes.

Volume = (1/3) * (EL2 - El1) * (Area1 + Area2 + sqr(Area1 * Area2))

where:	EL1, EL2	Lower and upper elevations of the increment
	Area1, Area2	Areas computed for EL1, EL2, respectively
	Volume	Incremental volume between EL1 and EL2

Basin 2A

Subsection: Outlet Input Data
Label: Outlet
Scenario: 100

Return Event: 100 years
Storm Event:

Requested Pond Water Surface Elevations	
Minimum (Headwater)	187.40 ft
Increment (Headwater)	0.10 ft
Maximum (Headwater)	192.50 ft

Outlet Connectivity

Structure Type	Outlet ID	Direction	Outfall	E1 (ft)	E2 (ft)
Inlet Box	Riser - Mod G-1	Forward	Culvert - 18in	190.00	192.50
Orifice-Area	Orifice - LF	Forward	Culvert - 18in	188.15	192.50
Culvert-Circular	Culvert - 18in	Forward	TW	184.40	192.50
Inlet Box	Riser - 1	Forward	Culvert - 2	190.50	192.50
Inlet Box	Riser - 2	Forward	Culvert - 2	190.50	192.50
Culvert-Circular	Culvert - 2	Forward	TW	187.17	192.50
Tailwater Settings	Tailwater			(N/A)	(N/A)

Basin 2A

Subsection: Outlet Input Data
Label: Outlet
Scenario: 100

Return Event: 100 years
Storm Event:

Structure ID: Orifice - LF Structure Type: Orifice-Area	
Number of Openings	9
Elevation	188.15 ft
Orifice Area	0.250 ft²
Top Elevation	188.65 ft
Datum Elevation	188.15 ft
Orifice Coefficient	0.600

Structure ID: Riser - 1 Structure Type: Inlet Box	
Number of Openings	1
Elevation	190.50 ft
Orifice Area	16.000 ft²
Orifice Coefficient	0.600
Weir Length	16.00 ft
Weir Coefficient	3.00 (ft^0.5)/s
K Reverse	1.000
Manning's n	0.000
Kev, Charged Riser	0.000
Weir Submergence	False
Orifice H to crest	False

Basin 2A

Subsection: Outlet Input Data
Label: Outlet
Scenario: 100

Return Event: 100 years
Storm Event:

Structure ID: Culvert - 18in Structure Type: Culvert-Circular	
Number of Barrels	1
Diameter	18.0 in
Length	329.93 ft
Length (Computed Barrel)	329.94 ft
Slope (Computed)	0.007 ft/ft

Outlet Control Data	
Manning's n	0.013
Ke	0.200
Kb	0.018
Kr	0.200
Convergence Tolerance	0.00 ft

Inlet Control Data	
Equation Form	Form 1
K	0.0045
M	2.0000
C	0.0317
Y	0.6900
T1 ratio (HW/D)	1.092
T2 ratio (HW/D)	1.194
Slope Correction Factor	-0.500

Use unsubmerged inlet control 0 equation below T1 elevation.
Use submerged inlet control 0 equation above T2 elevation

In transition zone between unsubmerged and submerged inlet control,
interpolate between flows at T1 & T2...

T1 Elevation	186.04 ft	T1 Flow	7.58 ft³/s
T2 Elevation	186.19 ft	T2 Flow	8.66 ft³/s

Basin 2A

Subsection: Outlet Input Data
Label: Outlet
Scenario: 100

Return Event: 100 years
Storm Event:

Structure ID: Riser - Mod G-1 Structure Type: Inlet Box	
Number of Openings	1
Elevation	190.00 ft
Orifice Area	4.700 ft²
Orifice Coefficient	0.600
Weir Length	9.20 ft
Weir Coefficient	3.00 (ft^0.5)/s
K Reverse	1.000
Manning's n	0.000
Kev, Charged Riser	0.000
Weir Submergence	False
Orifice H to crest	False

Basin 2A

Subsection: Outlet Input Data
Label: Outlet
Scenario: 100

Return Event: 100 years
Storm Event:

Structure ID: Culvert - 2 Structure Type: Culvert-Circular	
Number of Barrels	2
Diameter	36.0 in
Length	22.94 ft
Length (Computed Barrel)	22.94 ft
Slope (Computed)	0.005 ft/ft

Outlet Control Data	
Manning's n	0.013
Ke	0.200
Kb	0.007
Kr	0.000
Convergence Tolerance	0.00 ft

Inlet Control Data	
Equation Form	Form 1
K	0.0045
M	2.0000
C	0.0317
Y	0.6900
T1 ratio (HW/D)	1.093
T2 ratio (HW/D)	1.195
Slope Correction Factor	-0.500

Use unsubmerged inlet control 0 equation below T1 elevation.
Use submerged inlet control 0 equation above T2 elevation

In transition zone between unsubmerged and submerged inlet control,
interpolate between flows at T1 & T2...

T1 Elevation	190.45 ft	T1 Flow	42.85 ft³/s
T2 Elevation	190.75 ft	T2 Flow	48.97 ft³/s

Basin 2A

Subsection: Outlet Input Data
Label: Outlet
Scenario: 100

Return Event: 100 years
Storm Event:

Structure ID: Riser - 2 Structure Type: Inlet Box	
Number of Openings	1
Elevation	190.50 ft
Orifice Area	16.000 ft²
Orifice Coefficient	0.600
Weir Length	16.00 ft
Weir Coefficient	3.00 (ft^0.5)/s
K Reverse	1.000
Manning's n	0.000
Kev, Charged Riser	0.000
Weir Submergence	False
Orifice H to crest	False

Basin 2A

Subsection: Composite Rating Curve
Label: Outlet
Scenario: 100

Return Event: 100 years
Storm Event:

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft^3/s)	Tailwater Elevation (ft)	Convergence Error (ft)
187.40	0.00	183.24	0.00
187.50	0.00	183.24	0.00
187.60	0.00	183.24	0.00
187.70	0.00	183.24	0.00
187.80	0.00	183.24	0.00
187.90	0.00	183.24	0.00
188.00	0.00	183.24	0.00
188.10	0.00	183.24	0.00
188.15	0.00	183.24	0.00
188.20	0.00	183.24	0.00
188.30	2.30	183.24	0.00
188.40	3.83	183.24	0.00
188.50	5.36	183.24	0.00
188.60	6.89	183.24	0.00
188.70	8.03	183.24	0.00
188.80	8.74	183.24	0.00
188.90	9.38	183.24	0.00
189.00	9.98	183.24	0.00
189.10	10.55	183.24	0.00
189.20	11.11	183.24	0.00
189.30	11.53	183.24	0.00
189.40	11.63	183.24	0.00
189.50	11.72	183.24	0.00
189.60	11.81	183.24	0.00
189.70	11.91	183.24	0.00
189.80	12.00	183.24	0.00
189.90	12.09	183.24	0.00
190.00	12.18	183.24	0.00
190.10	12.42	183.24	0.00
190.20	12.79	183.24	0.00
190.30	13.17	183.24	0.00
190.40	13.55	183.24	0.00
190.50	13.88	183.24	0.00
190.60	17.13	183.24	0.00
190.70	22.79	183.24	0.00
190.80	30.08	183.24	0.00
190.90	38.69	183.24	0.00
191.00	48.44	183.24	0.00
191.10	59.21	183.24	0.00
191.20	70.90	183.24	0.00
191.30	83.47	183.24	0.00
191.40	96.83	183.24	0.00

Basin 2A

Subsection: Composite Rating Curve
Label: Outlet
Scenario: 100

Return Event: 100 years
Storm Event:

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft³/s)	Tailwater Elevation (ft)	Convergence Error (ft)
191.50	110.97	183.24	0.00
191.60	125.81	183.24	0.00
191.70	139.89	183.24	0.00
191.80	142.46	183.24	0.00
191.90	145.03	183.24	0.00
192.00	147.51	183.24	0.00
192.10	149.98	183.24	0.00
192.20	152.36	183.24	0.00
192.30	154.73	183.24	0.00
192.40	157.07	183.24	0.00
192.50	159.39	183.24	0.00

Contributing Structures
(no Q: Riser - Mod G-1,Orifice - LF,Culvert - 18in,Riser - 1,Riser - 2,Culvert - 2)
(no Q: Riser - Mod G-1,Orifice - LF,Culvert - 18in,Riser - 1,Riser - 2,Culvert - 2)
(no Q: Riser - Mod G-1,Orifice - LF,Culvert - 18in,Riser - 1,Riser - 2,Culvert - 2)
(no Q: Riser - Mod G-1,Orifice - LF,Culvert - 18in,Riser - 1,Riser - 2,Culvert - 2)
(no Q: Riser - Mod G-1,Orifice - LF,Culvert - 18in,Riser - 1,Riser - 2,Culvert - 2)
(no Q: Riser - Mod G-1,Orifice - LF,Culvert - 18in,Riser - 1,Riser - 2,Culvert - 2)
(no Q: Riser - Mod G-1,Orifice - LF,Culvert - 18in,Riser - 1,Riser - 2,Culvert - 2)
(no Q: Riser - Mod G-1,Orifice - LF,Culvert - 18in,Riser - 1,Riser - 2,Culvert - 2)

Basin 2A

Subsection: Composite Rating Curve
Label: Outlet
Scenario: 100

Return Event: 100 years
Storm Event:

Composite Outflow Summary

Contributing Structures
(no Q: Riser - Mod G-1,Orifice - LF,Culvert - 18in,Riser - 1,Riser - 2,Culvert - 2)
Orifice - LF,Culvert - 18in (no Q: Riser - Mod G-1,Riser - 1,Riser - 2,Culvert - 2)
Orifice - LF,Culvert - 18in (no Q: Riser - Mod G-1,Riser - 1,Riser - 2,Culvert - 2)
Orifice - LF,Culvert - 18in (no Q: Riser - Mod G-1,Riser - 1,Riser - 2,Culvert - 2)
Orifice - LF,Culvert - 18in (no Q: Riser - Mod G-1,Riser - 1,Riser - 2,Culvert - 2)
Orifice - LF,Culvert - 18in (no Q: Riser - Mod G-1,Riser - 1,Riser - 2,Culvert - 2)
Orifice - LF,Culvert - 18in (no Q: Riser - Mod G-1,Riser - 1,Riser - 2,Culvert - 2)
Orifice - LF,Culvert - 18in (no Q: Riser - Mod G-1,Riser - 1,Riser - 2,Culvert - 2)
Orifice - LF,Culvert - 18in (no Q: Riser - Mod G-1,Riser - 1,Riser - 2,Culvert - 2)
Orifice - LF,Culvert - 18in (no Q: Riser - Mod G-1,Riser - 1,Riser - 2,Culvert - 2)
Orifice - LF,Culvert - 18in (no Q: Riser - Mod G-1,Riser - 1,Riser - 2,Culvert - 2)
Orifice - LF,Culvert - 18in (no Q: Riser - Mod G-1,Riser - 1,Riser - 2,Culvert - 2)

Basin 2A

Subsection: Composite Rating Curve
Label: Outlet
Scenario: 100

Return Event: 100 years
Storm Event:

Composite Outflow Summary

Contributing Structures
Orifice - LF,Culvert - 18in (no Q: Riser - Mod G-1,Riser - 1,Riser - 2,Culvert - 2)
Orifice - LF,Culvert - 18in (no Q: Riser - Mod G-1,Riser - 1,Riser - 2,Culvert - 2)
Orifice - LF,Culvert - 18in (no Q: Riser - Mod G-1,Riser - 1,Riser - 2,Culvert - 2)
Orifice - LF,Culvert - 18in (no Q: Riser - Mod G-1,Riser - 1,Riser - 2,Culvert - 2)
Orifice - LF,Culvert - 18in (no Q: Riser - Mod G-1,Riser - 1,Riser - 2,Culvert - 2)
Orifice - LF,Culvert - 18in (no Q: Riser - Mod G-1,Riser - 1,Riser - 2,Culvert - 2)
Orifice - LF,Culvert - 18in (no Q: Riser - Mod G-1,Riser - 1,Riser - 2,Culvert - 2)
Orifice - LF,Culvert - 18in (no Q: Riser - Mod G-1,Riser - 1,Riser - 2,Culvert - 2)
Riser - Mod G-1,Orifice - LF,Culvert - 18in (no Q: Riser - 1,Riser - 2,Culvert - 2)
Riser - Mod G-1,Orifice - LF,Culvert - 18in (no Q: Riser - 1,Riser - 2,Culvert - 2)
Riser - Mod G-1,Orifice - LF,Culvert - 18in (no Q: Riser - 1,Riser - 2,Culvert - 2)
Riser - Mod G-1,Orifice - LF,Culvert - 18in (no Q: Riser - 1,Riser - 2,Culvert - 2)

Basin 2A

Subsection: Composite Rating Curve
Label: Outlet
Scenario: 100

Return Event: 100 years
Storm Event:

Composite Outflow Summary

Contributing Structures
Riser - Mod G-1,Orifice - LF,Culvert - 18in (no Q: Riser - 1,Riser - 2,Culvert - 2)
Riser - Mod G-1,Orifice - LF,Culvert - 18in,Riser - 1,Riser - 2,Culvert - 2
Riser - Mod G-1,Culvert - 18in,Riser - 1,Riser - 2,Culvert - 2 (no Q: Orifice - LF)
Riser - Mod G-1,Culvert - 18in,Riser - 1,Riser - 2,Culvert - 2 (no Q: Orifice - LF)
Riser - Mod G-1,Culvert - 18in,Riser - 1,Riser - 2,Culvert - 2 (no Q: Orifice - LF)
Riser - Mod G-1,Culvert - 18in,Riser - 1,Riser - 2,Culvert - 2 (no Q: Orifice - LF)
Riser - Mod G-1,Culvert - 18in,Riser - 1,Riser - 2,Culvert - 2 (no Q: Orifice - LF)
Riser - Mod G-1,Culvert - 18in,Riser - 1,Riser - 2,Culvert - 2 (no Q: Orifice - LF)
Riser - Mod G-1,Culvert - 18in,Riser - 1,Riser - 2,Culvert - 2 (no Q: Orifice - LF)
Riser - Mod G-1,Culvert - 18in,Riser - 1,Riser - 2,Culvert - 2 (no Q: Orifice - LF)
Riser - Mod G-1,Culvert - 18in,Riser - 1,Riser - 2,Culvert - 2 (no Q: Orifice - LF)
Riser - Mod G-1,Culvert - 18in,Riser - 1,Riser - 2,Culvert - 2 (no Q: Orifice - LF)

Basin 2A

Subsection: Composite Rating Curve
Label: Outlet
Scenario: 100

Return Event: 100 years
Storm Event:

Composite Outflow Summary

Contributing Structures
Riser - Mod G-1,Culvert - 18in,Riser - 1,Riser - 2,Culvert - 2 (no Q: Orifice - LF)
Riser - Mod G-1,Culvert - 18in,Riser - 1,Riser - 2,Culvert - 2 (no Q: Orifice - LF)
Riser - Mod G-1,Culvert - 18in,Riser - 1,Riser - 2,Culvert - 2 (no Q: Orifice - LF)
Riser - Mod G-1,Culvert - 18in,Riser - 1,Riser - 2,Culvert - 2 (no Q: Orifice - LF)
Riser - Mod G-1,Culvert - 18in,Riser - 1,Riser - 2,Culvert - 2 (no Q: Orifice - LF)
Riser - Mod G-1,Culvert - 18in,Riser - 1,Riser - 2,Culvert - 2 (no Q: Orifice - LF)
Riser - Mod G-1,Culvert - 18in,Riser - 1,Riser - 2,Culvert - 2 (no Q: Orifice - LF)
Riser - Mod G-1,Culvert - 18in,Riser - 1,Riser - 2,Culvert - 2 (no Q: Orifice - LF)
Riser - Mod G-1,Culvert - 18in,Riser - 1,Riser - 2,Culvert - 2 (no Q: Orifice - LF)

Basin 2A

Subsection: Elevation-Volume-Flow Table (Pond)
Label: 1
Scenario: 100

Return Event: 100 years
Storm Event:

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions	
Elevation (Water Surface, Initial)	188.15 ft
Volume (Initial)	0.301 ac-ft
Flow (Initial Outlet)	0.00 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.00 ft³/s
Time Increment	1 min

Elevation (ft)	Outflow (ft³/s)	Storage (ac-ft)	Area (ft²)	Infiltration (ft³/s)	Flow (Total) (ft³/s)	2S/t + O (ft³/s)
187.40	0.00	0.000	16,805.000	0.00	0.00	0.00
187.50	0.00	0.039	16,983.964	0.00	0.00	56.31
187.60	0.00	0.078	17,163.875	0.00	0.00	113.23
187.70	0.00	0.118	17,344.734	0.00	0.00	170.74
187.80	0.00	0.158	17,526.542	0.00	0.00	228.86
187.90	0.00	0.198	17,709.297	0.00	0.00	287.59
188.00	0.00	0.239	17,893.000	0.00	0.00	346.92
188.10	0.00	0.280	18,074.862	0.00	0.00	406.87
188.15	0.00	0.301	18,166.138	0.00	0.00	437.07
188.20	0.00	0.322	18,257.644	0.00	0.00	467.42
188.30	2.30	0.364	18,441.345	0.00	2.30	530.89
188.40	3.83	0.407	18,625.965	0.00	3.83	594.20
188.50	5.36	0.450	18,811.506	0.00	5.36	658.12
188.60	6.89	0.493	18,997.965	0.00	6.89	722.67
188.70	8.03	0.537	19,185.345	0.00	8.03	787.44
188.80	8.74	0.581	19,373.644	0.00	8.74	852.42
188.90	9.38	0.626	19,562.862	0.00	9.38	917.96
189.00	9.98	0.671	19,753.000	0.00	9.98	984.08
189.10	10.55	0.716	19,941.857	0.00	10.55	1,050.81
189.20	11.11	0.762	20,131.612	0.00	11.11	1,118.15
189.30	11.53	0.809	20,322.265	0.00	11.53	1,186.00
189.40	11.63	0.856	20,513.818	0.00	11.63	1,254.16
189.50	11.72	0.903	20,706.268	0.00	11.72	1,322.95
189.60	11.81	0.951	20,899.618	0.00	11.81	1,392.39
189.70	11.91	0.999	21,093.865	0.00	11.91	1,462.47
189.80	12.00	1.048	21,289.012	0.00	12.00	1,533.20
189.90	12.09	1.097	21,485.057	0.00	12.09	1,604.58
190.00	12.18	1.146	21,682.000	0.00	12.18	1,676.61
190.10	12.42	1.196	21,879.472	0.00	12.42	1,749.46

Basin 2A

Subsection: Elevation-Volume-Flow Table (Pond) Return Event: 100 years
Label: 1 Storm Event:
Scenario: 100

Elevation (ft)	Outflow (ft³/s)	Storage (ac-ft)	Area (ft²)	Infiltration (ft³/s)	Flow (Total) (ft³/s)	2S/t + O (ft³/s)
190.20	12.79	1.247	22,077.839	0.00	12.79	1,823.09
190.30	13.17	1.298	22,277.101	0.00	13.17	1,897.40
190.40	13.55	1.349	22,477.258	0.00	13.55	1,972.36
190.50	13.88	1.401	22,678.310	0.00	13.88	2,047.95
190.60	17.13	1.453	22,880.258	0.00	17.13	2,127.14
190.70	22.79	1.506	23,083.101	0.00	22.79	2,209.40
190.80	30.08	1.559	23,286.839	0.00	30.08	2,293.97
190.90	38.69	1.613	23,491.472	0.00	38.69	2,380.55
191.00	48.44	1.667	23,697.000	0.00	48.44	2,468.94
191.10	59.21	1.722	23,891.908	0.00	59.21	2,559.03
191.20	70.90	1.777	24,087.614	0.00	70.90	2,650.68
191.30	83.47	1.832	24,284.118	0.00	83.47	2,743.88
191.40	96.83	1.888	24,481.421	0.00	96.83	2,838.51
191.50	110.97	1.945	24,679.522	0.00	110.97	2,934.58
191.60	125.81	2.002	24,878.421	0.00	125.81	3,032.02
191.70	139.89	2.059	25,078.118	0.00	139.89	3,129.36
191.80	142.46	2.117	25,278.614	0.00	142.46	3,215.86
191.90	145.03	2.175	25,479.908	0.00	145.03	3,303.03
192.00	147.51	2.234	25,682.000	0.00	147.51	3,390.77
192.10	149.98	2.293	26,000.475	0.00	149.98	3,479.38
192.20	152.36	2.353	26,320.912	0.00	152.36	3,568.96
192.30	154.73	2.414	26,643.312	0.00	154.73	3,659.61
192.40	157.07	2.475	26,967.675	0.00	157.07	3,751.29
192.50	159.39	2.538	27,294.000	0.00	159.39	3,844.05

Basin 2A

Subsection: Level Pool Pond Routing Summary
Label: 1 (IN)
Scenario: 100

Return Event: 100 years
Storm Event:

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions	
Elevation (Water Surface, Initial)	188.15 ft
Volume (Initial)	0.301 ac-ft
Flow (Initial Outlet)	0.00 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.00 ft³/s
Time Increment	1 min

Inflow/Outflow Hydrograph Summary			
Flow (Peak In)	69.23 ft³/s	Time to Peak (Flow, In)	252 min
Flow (Peak Outlet)	13.54 ft³/s	Time to Peak (Flow, Outlet)	261 min

Elevation (Water Surface, Peak)	190.40 ft
Volume (Peak)	1.348 ac-ft

Mass Balance (ac-ft)	
Volume (Initial)	0.301 ac-ft
Volume (Total Inflow)	3.044 ac-ft
Volume (Total Infiltration)	0.000 ac-ft
Volume (Total Outlet Outflow)	3.023 ac-ft
Volume (Retained)	0.322 ac-ft
Volume (Unrouted)	0.000 ac-ft
Error (Mass Balance)	0.0 %

Basin 2A

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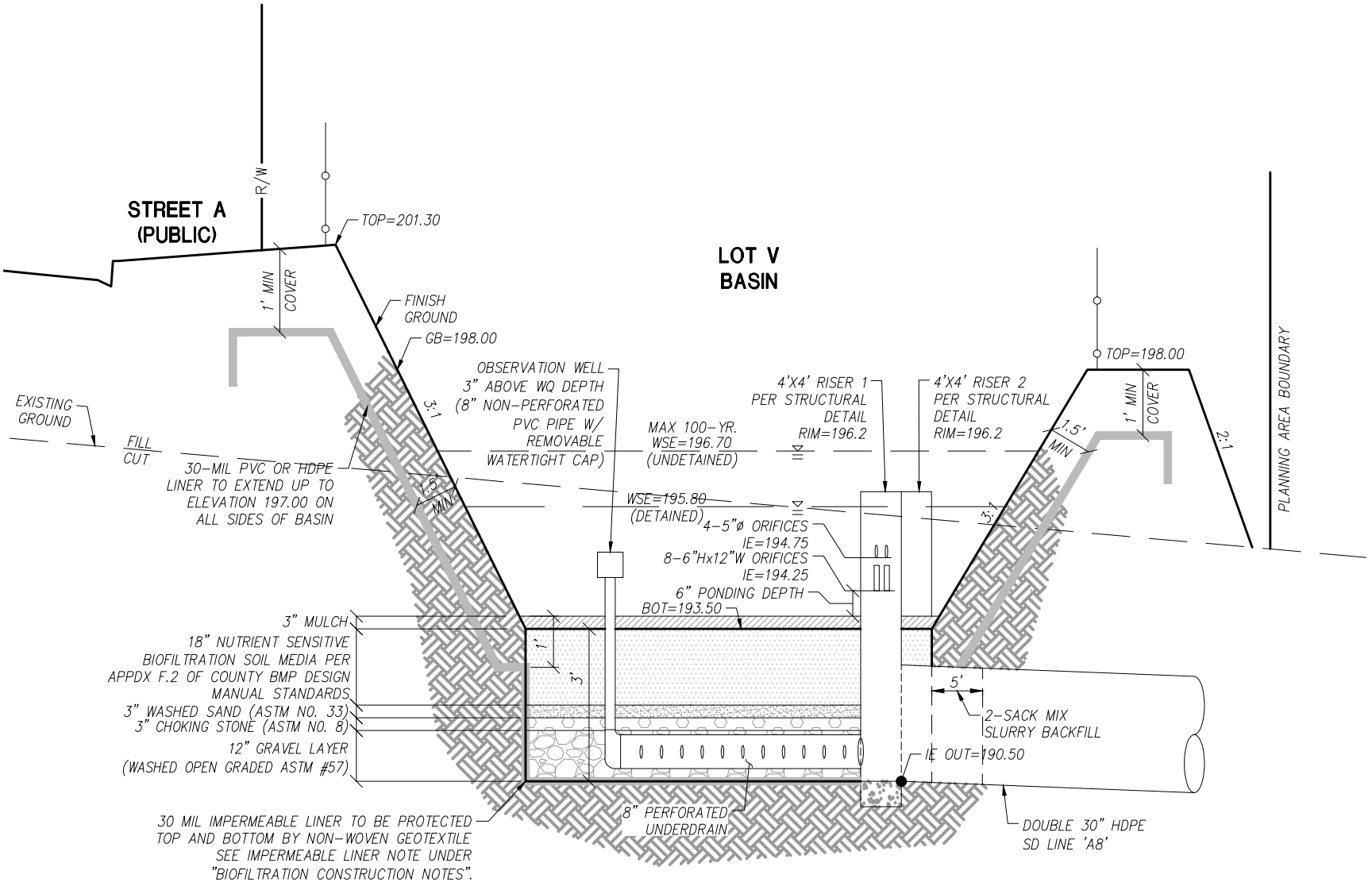
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2B



SECTION 2B-2B: BMP 2B
LINED BIOFILTRATION (PRIVATE)

NOT TO SCALE

N

SCALE:	1"=60'
JOB #:	4192.10
CREATED:	2/28/24

PREPARED BY:

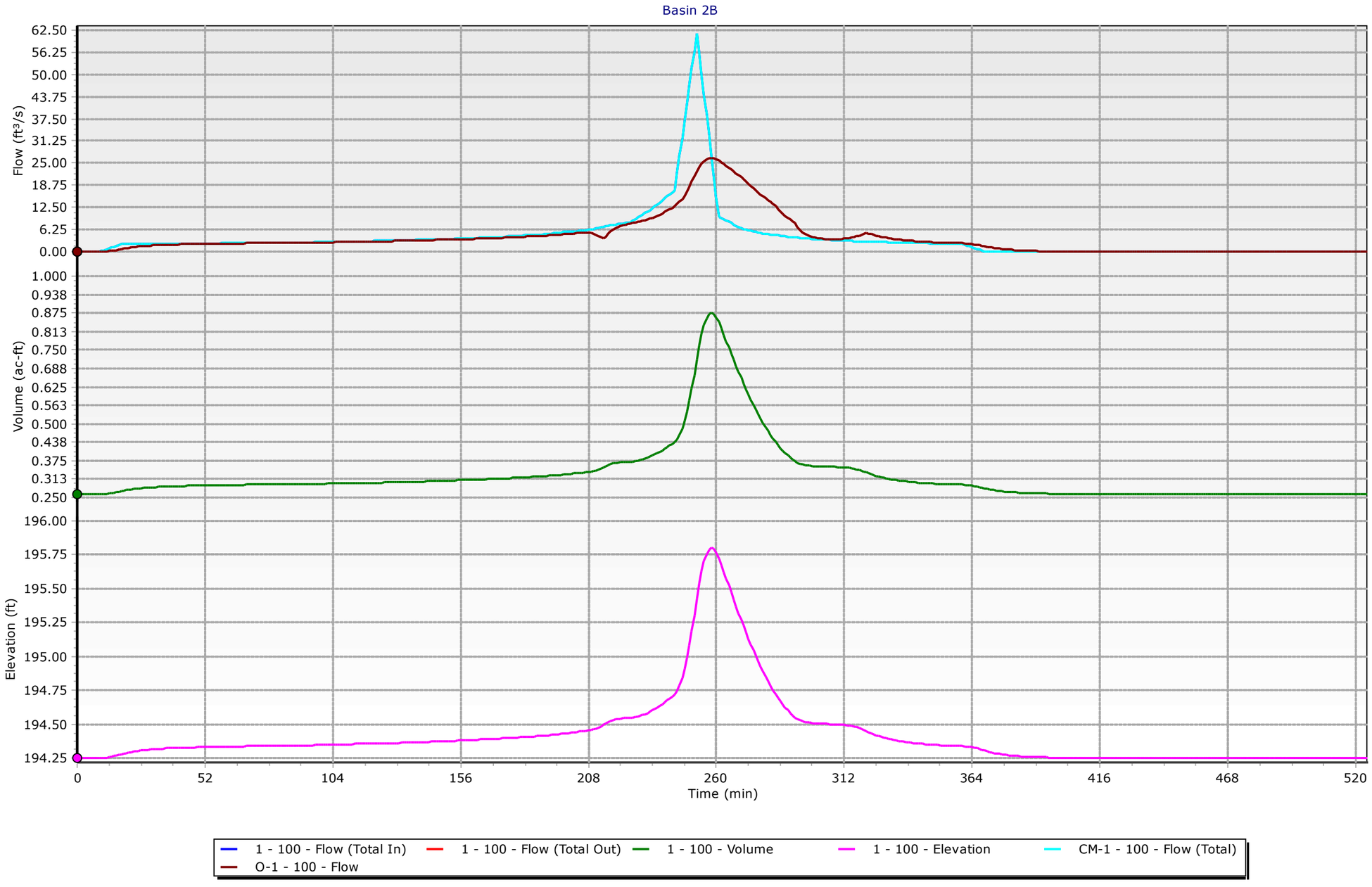
PROJECT DESIGN CONSULTANTS
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COUNTY OF SAN DIEGO

OCEAN BREEZE RANCH

BASIN CROSS SECTIONS
BASIN 2B


Basin 2B
Flow (ft³/s)
62.50
56.25
50.00
43.75
37.50
31.25
25.00
18.75
12.50
6.25
0.00
Volume (ac-ft)
1.000
0.938
0.875
0.813
0.750
0.688
0.625
0.563
0.500
0.438
0.375
0.313
0.250
Elevation (ft)
196.00
195.75
195.50
195.25
195.00
194.75
194.50
194.25
0
52
104
156
208
260
312
364
416
468
520
Time (min)
1 - 100 - Flow (Total In)
1 - 100 - Flow (Total Out)
1 - 100 - Volume
1 - 100 - Elevation
CM-1 - 100 - Flow (Total)
O-1 - 100 - Flow

RATIONAL METHOD HYDROGRAPH PROGRAM
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RUN DATE 5/18/2024
HYDROGRAPH FILE NAME BASIN 2B
TIME OF CONCENTRATION 9 MIN.
6 HOUR RAINFALL 3.3 INCHES
BASIN AREA 18.5 ACRES
RUNOFF COEFFICIENT 0.56
PEAK DISCHARGE 61.6 CFS

TIME	(MIN)	=	0	DISCHARGE	(CFS)	=	0
TIME	(MIN)	=	9	DISCHARGE	(CFS)	=	0
TIME	(MIN)	=	18	DISCHARGE	(CFS)	=	2.1
TIME	(MIN)	=	27	DISCHARGE	(CFS)	=	2.1
TIME	(MIN)	=	36	DISCHARGE	(CFS)	=	2.2
TIME	(MIN)	=	45	DISCHARGE	(CFS)	=	2.2
TIME	(MIN)	=	54	DISCHARGE	(CFS)	=	2.3
TIME	(MIN)	=	63	DISCHARGE	(CFS)	=	2.4
TIME	(MIN)	=	72	DISCHARGE	(CFS)	=	2.5
TIME	(MIN)	=	81	DISCHARGE	(CFS)	=	2.5
TIME	(MIN)	=	90	DISCHARGE	(CFS)	=	2.6
TIME	(MIN)	=	99	DISCHARGE	(CFS)	=	2.7
TIME	(MIN)	=	108	DISCHARGE	(CFS)	=	2.9
TIME	(MIN)	=	117	DISCHARGE	(CFS)	=	2.9
TIME	(MIN)	=	126	DISCHARGE	(CFS)	=	3.1
TIME	(MIN)	=	135	DISCHARGE	(CFS)	=	3.2
TIME	(MIN)	=	144	DISCHARGE	(CFS)	=	3.5
TIME	(MIN)	=	153	DISCHARGE	(CFS)	=	3.6
TIME	(MIN)	=	162	DISCHARGE	(CFS)	=	3.9
TIME	(MIN)	=	171	DISCHARGE	(CFS)	=	4.1
TIME	(MIN)	=	180	DISCHARGE	(CFS)	=	4.5
TIME	(MIN)	=	189	DISCHARGE	(CFS)	=	4.8
TIME	(MIN)	=	198	DISCHARGE	(CFS)	=	5.5
TIME	(MIN)	=	207	DISCHARGE	(CFS)	=	6
TIME	(MIN)	=	216	DISCHARGE	(CFS)	=	7.3
TIME	(MIN)	=	225	DISCHARGE	(CFS)	=	8.3
TIME	(MIN)	=	234	DISCHARGE	(CFS)	=	12.2
TIME	(MIN)	=	243	DISCHARGE	(CFS)	=	17.3
TIME	(MIN)	=	252	DISCHARGE	(CFS)	=	61.6
TIME	(MIN)	=	261	DISCHARGE	(CFS)	=	9.8
TIME	(MIN)	=	270	DISCHARGE	(CFS)	=	6.6
TIME	(MIN)	=	279	DISCHARGE	(CFS)	=	5.1
TIME	(MIN)	=	288	DISCHARGE	(CFS)	=	4.3
TIME	(MIN)	=	297	DISCHARGE	(CFS)	=	3.7
TIME	(MIN)	=	306	DISCHARGE	(CFS)	=	3.3
TIME	(MIN)	=	315	DISCHARGE	(CFS)	=	3
TIME	(MIN)	=	324	DISCHARGE	(CFS)	=	2.8
TIME	(MIN)	=	333	DISCHARGE	(CFS)	=	2.6
TIME	(MIN)	=	342	DISCHARGE	(CFS)	=	2.4
TIME	(MIN)	=	351	DISCHARGE	(CFS)	=	2.3
TIME	(MIN)	=	360	DISCHARGE	(CFS)	=	2.2
TIME	(MIN)	=	369	DISCHARGE	(CFS)	=	0

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Basin 2B

Project Summary	
Title	Basin 2B
Engineer	PDC
Company	PDC
Date	6/6/2024

Notes

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1 (IN)		
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Basin 2B

Subsection: Master Network Summary

Catchments Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (min)	Peak Flow (ft³/s)
CM-1	100	0	2.807	252	61.60

Node Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (min)	Peak Flow (ft³/s)
O-1	100	0	2.807	258	26.36

Pond Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (min)	Peak Flow (ft³/s)	Maximum Water Surface Elevation (ft)	Maximum Pond Storage (ac-ft)
1 (IN)	100	0	2.807	252	61.60	(N/A)	(N/A)
1 (OUT)	100	0	2.807	258	26.36	195.80	0.876

Basin 2B

Subsection: Read Hydrograph
Label: CM-1
Scenario: 100

Return Event: 0 years
Storm Event:

Peak Discharge	61.60 ft³/s
Time to Peak	252 min
Hydrograph Volume	2.807 ac-ft

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 9 min
Time on left represents time for first value in each row.

Time (min)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
0	0.00	0.00	2.10	2.10	2.20
45	2.20	2.30	2.40	2.50	2.50
90	2.60	2.70	2.90	2.90	3.10
135	3.20	3.50	3.60	3.90	4.10
180	4.50	4.80	5.50	6.00	7.30
225	8.30	12.20	17.30	61.60	9.80
270	6.60	5.10	4.30	3.70	3.30
315	3.00	2.80	2.60	2.40	2.30
360	2.20	0.00	(N/A)	(N/A)	(N/A)

Basin 2B

Subsection: Time vs. Volume
Label: 1
Scenario: 100

Return Event: 0 years
Storm Event:

Time vs. Volume (ac-ft)

Output Time increment = 1 min
Time on left represents time for first value in each row.

Time (min)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)
0	0.262	0.262	0.262	0.262	0.262
5	0.262	0.262	0.262	0.262	0.262
10	0.262	0.262	0.263	0.264	0.265
15	0.266	0.268	0.270	0.271	0.273
20	0.275	0.276	0.278	0.279	0.280
25	0.281	0.282	0.283	0.283	0.284
30	0.285	0.285	0.286	0.286	0.287
35	0.287	0.287	0.288	0.288	0.288
40	0.289	0.289	0.289	0.289	0.290
45	0.290	0.290	0.290	0.290	0.290
50	0.290	0.291	0.291	0.291	0.291
55	0.291	0.291	0.292	0.292	0.292
60	0.292	0.292	0.292	0.292	0.293
65	0.293	0.293	0.293	0.293	0.293
70	0.294	0.294	0.294	0.294	0.294
75	0.294	0.294	0.294	0.294	0.295
80	0.295	0.295	0.295	0.295	0.295
85	0.295	0.295	0.295	0.295	0.295
90	0.296	0.296	0.296	0.296	0.296
95	0.296	0.296	0.296	0.297	0.297
100	0.297	0.297	0.297	0.297	0.298
105	0.298	0.298	0.298	0.298	0.299
110	0.299	0.299	0.299	0.299	0.299
115	0.300	0.300	0.300	0.300	0.300
120	0.300	0.300	0.300	0.301	0.301
125	0.301	0.301	0.301	0.302	0.302
130	0.302	0.302	0.302	0.303	0.303
135	0.303	0.303	0.303	0.304	0.304
140	0.304	0.304	0.305	0.305	0.305
145	0.306	0.306	0.306	0.307	0.307
150	0.307	0.307	0.308	0.308	0.308
155	0.308	0.309	0.309	0.309	0.310
160	0.310	0.310	0.311	0.311	0.311
165	0.312	0.312	0.312	0.313	0.313
170	0.313	0.314	0.314	0.315	0.315
175	0.315	0.316	0.316	0.317	0.317
180	0.318	0.318	0.319	0.319	0.320
185	0.320	0.321	0.321	0.321	0.322
190	0.322	0.323	0.324	0.324	0.325
195	0.326	0.326	0.327	0.328	0.329

Basin 2B

Subsection: Time vs. Volume
Label: 1
Scenario: 100

Return Event: 0 years
Storm Event:

Time vs. Volume (ac-ft)

Output Time increment = 1 min
Time on left represents time for first value in each row.

Time (min)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)
200	0.330	0.330	0.331	0.332	0.333
205	0.334	0.334	0.335	0.336	0.337
210	0.339	0.341	0.344	0.348	0.352
215	0.356	0.360	0.363	0.365	0.367
220	0.368	0.369	0.370	0.370	0.371
225	0.372	0.372	0.373	0.375	0.377
230	0.379	0.382	0.385	0.388	0.392
235	0.396	0.400	0.404	0.409	0.415
240	0.420	0.426	0.432	0.438	0.447
245	0.462	0.483	0.509	0.541	0.578
250	0.619	0.666	0.717	0.766	0.805
255	0.836	0.857	0.871	0.876	0.873
260	0.862	0.844	0.822	0.800	0.779
265	0.758	0.737	0.716	0.696	0.676
270	0.656	0.636	0.617	0.599	0.581
275	0.565	0.548	0.533	0.517	0.503
280	0.489	0.475	0.462	0.450	0.438
285	0.427	0.417	0.408	0.400	0.392
290	0.385	0.378	0.373	0.368	0.364
295	0.362	0.360	0.358	0.357	0.357
300	0.356	0.356	0.355	0.355	0.355
305	0.354	0.354	0.354	0.354	0.353
310	0.353	0.352	0.352	0.351	0.350
315	0.349	0.347	0.346	0.344	0.341
320	0.338	0.335	0.332	0.329	0.326
325	0.323	0.321	0.319	0.317	0.315
330	0.313	0.312	0.310	0.309	0.308
335	0.307	0.306	0.305	0.304	0.303
340	0.302	0.301	0.301	0.300	0.299
345	0.299	0.298	0.298	0.297	0.297
350	0.297	0.296	0.296	0.295	0.295
355	0.295	0.295	0.294	0.294	0.294
360	0.294	0.293	0.292	0.292	0.290
365	0.289	0.288	0.286	0.284	0.282
370	0.280	0.278	0.277	0.275	0.274
375	0.273	0.272	0.271	0.270	0.269
380	0.268	0.268	0.267	0.266	0.266
385	0.266	0.265	0.265	0.265	0.264
390	0.264	0.264	0.264	0.263	0.263
395	0.263	0.263	0.263	0.263	0.263
400	0.263	0.262	0.262	0.262	0.262

Basin 2B

Subsection: Time vs. Volume
Label: 1
Scenario: 100

Return Event: 0 years
Storm Event:

Time vs. Volume (ac-ft)

Output Time increment = 1 min
Time on left represents time for first value in each row.

Time (min)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)
405	0.262	0.262	0.262	0.262	0.262
410	0.262	0.262	0.262	0.262	0.262
415	0.262	0.262	0.262	0.262	0.262
420	0.262	0.262	0.262	0.262	0.262
425	0.262	0.262	0.262	0.262	0.262
430	0.262	0.262	0.262	0.262	0.262
435	0.262	0.262	0.262	0.262	0.262
440	0.262	0.262	0.262	0.262	0.262
445	0.262	0.262	0.262	0.262	0.262
450	0.262	0.262	0.262	0.262	0.262
455	0.262	0.262	0.262	0.262	0.262
460	0.262	0.262	0.262	0.262	0.262
465	0.262	0.262	0.262	0.262	0.262
470	0.262	0.262	0.262	0.262	0.262
475	0.262	0.262	0.262	0.262	0.262
480	0.262	0.262	0.262	0.262	0.262
485	0.262	0.262	0.262	0.262	0.262
490	0.262	0.262	0.262	0.262	0.262
495	0.262	0.262	0.262	0.262	0.262
500	0.262	0.262	0.262	0.262	0.262
505	0.262	0.262	0.262	0.262	0.262
510	0.262	0.262	0.262	0.262	0.262
515	0.262	0.262	0.262	0.262	0.262
520	0.262	0.262	0.262	0.262	0.262
525	0.262	(N/A)	(N/A)	(N/A)	(N/A)

Basin 2B

Subsection: Elevation-Area Volume Curve
Label: 1
Scenario: 100

Return Event: 0 years
Storm Event:

Elevation (ft)	Planimeter (ft²)	Area (ft²)	A1+A2+sqr (A1*A2) (ft²)	Volume (ac-ft)	Volume (Total) (ac-ft)
193.50	0.0	14,551.000	0.000	0.000	0.000
194.00	0.0	15,416.000	44,944.257	0.172	0.172
195.00	0.0	17,212.000	48,917.266	0.374	0.546
196.00	0.0	19,085.000	54,421.321	0.416	0.963
197.00	0.0	21,033.000	60,153.339	0.460	1.423
198.00	0.0	23,070.000	66,130.967	0.506	1.929

Basin 2B

Subsection: Volume Equations
Label: 1
Scenario: 100

Return Event: 0 years
Storm Event:

Pond Volume Equations
* Incremental volume computed by the Conic Method for Reservoir Volumes.

Volume = (1/3) * (EL2 - El1) * (Area1 + Area2 + sqr(Area1 * Area2))

where:	EL1, EL2	Lower and upper elevations of the increment
	Area1, Area2	Areas computed for EL1, EL2, respectively
	Volume	Incremental volume between EL1 and EL2

Basin 2B

Subsection: Outlet Input Data
Label: Outlet#1
Scenario: 100

Return Event: 0 years
Storm Event:

Requested Pond Water Surface Elevations	
Minimum (Headwater)	193.50 ft
Increment (Headwater)	0.05 ft
Maximum (Headwater)	198.00 ft

Outlet Connectivity

Structure Type	Outlet ID	Direction	Outfall	E1 (ft)	E2 (ft)
Orifice-Circular	Orifice - HF	Forward	Culvert - 1	194.75	198.00
Inlet Box	Riser - 1	Forward	Culvert - 1	196.20	198.00
Orifice-Area	Orifice - LF -1	Forward	Culvert - 1	194.25	198.00
Culvert-Circular	Culvert - 1	Forward	TW	190.50	198.00
Orifice-Circular	Orifice - HF -2	Forward	Culvert - 2	194.75	198.00
Inlet Box	Riser - 2	Forward	Culvert - 2	196.20	198.00
Orifice-Area	Orifice - LF -2	Forward	Culvert - 2	194.25	198.00
Culvert-Circular	Culvert - 2	Forward	TW	190.50	198.00
Tailwater Settings	Tailwater			(N/A)	(N/A)

Basin 2B

Subsection: Outlet Input Data
Label: Outlet#1
Scenario: 100

Return Event: 0 years
Storm Event:

Structure ID: Orifice - LF-1 Structure Type: Orifice-Area	
Number of Openings	4
Elevation	194.25 ft
Orifice Area	0.5 ft²
Top Elevation	194.75 ft
Datum Elevation	194.25 ft
Orifice Coefficient	0.600

Structure ID: Riser - 1 Structure Type: Inlet Box	
Number of Openings	1
Elevation	196.20 ft
Orifice Area	16.0 ft²
Orifice Coefficient	0.600
Weir Length	16.00 ft
Weir Coefficient	3.00 (ft^0.5)/s
K Reverse	1.000
Manning's n	0.000
Kev, Charged Riser	0.000
Weir Submergence	False
Orifice H to crest	False

Structure ID: Orifice - HF Structure Type: Orifice-Circular	
Number of Openings	2
Elevation	194.75 ft
Orifice Diameter	5.0 in
Orifice Coefficient	0.600

Structure ID: Riser - 2 Structure Type: Inlet Box	
Number of Openings	1
Elevation	196.20 ft
Orifice Area	16.0 ft²
Orifice Coefficient	0.600
Weir Length	16.00 ft
Weir Coefficient	3.00 (ft^0.5)/s
K Reverse	1.000
Manning's n	0.000
Kev, Charged Riser	0.000
Weir Submergence	False

Basin 2B

Subsection: Outlet Input Data
Label: Outlet#1
Scenario: 100

Return Event: 0 years
Storm Event:

Structure ID: Riser - 2 Structure Type: Inlet Box	
Orifice H to crest	False

Basin 2B

Subsection: Outlet Input Data
Label: Outlet#1
Scenario: 100

Return Event: 0 years
Storm Event:

Structure ID: Culvert - 2 Structure Type: Culvert-Circular	
Number of Barrels	1
Diameter	30.0 in
Length	91.06 ft
Length (Computed Barrel)	91.06 ft
Slope (Computed)	0.005 ft/ft

Outlet Control Data	
Manning's n	0.013
Ke	0.200
Kb	0.009
Kr	0.000
Convergence Tolerance	0.00 ft

Inlet Control Data	
Equation Form	Form 1
K	0.0045
M	2.0000
C	0.0317
Y	0.6900
T1 ratio (HW/D)	1.093
T2 ratio (HW/D)	1.195
Slope Correction Factor	-0.500

Use unsubmerged inlet control 0 equation below T1 elevation.
Use submerged inlet control 0 equation above T2 elevation

In transition zone between unsubmerged and submerged inlet control,
interpolate between flows at T1 & T2...

T1 Elevation	193.23 ft	T1 Flow	27.16 ft³/s
T2 Elevation	193.49 ft	T2 Flow	31.05 ft³/s

Basin 2B

Subsection: Outlet Input Data
Label: Outlet#1
Scenario: 100

Return Event: 0 years
Storm Event:

Structure ID: Orifice - HF -2 Structure Type: Orifice-Circular	
Number of Openings	2
Elevation	194.75 ft
Orifice Diameter	5.0 in
Orifice Coefficient	0.600

Basin 2B

Subsection: Outlet Input Data
Label: Outlet#1
Scenario: 100

Return Event: 0 years
Storm Event:

Structure ID: Culvert - 1 Structure Type: Culvert-Circular	
Number of Barrels	1
Diameter	30.0 in
Length	91.06 ft
Length (Computed Barrel)	91.06 ft
Slope (Computed)	0.005 ft/ft

Outlet Control Data	
Manning's n	0.013
Ke	0.200
Kb	0.009
Kr	0.000
Convergence Tolerance	0.00 ft

Inlet Control Data	
Equation Form	Form 1
K	0.0045
M	2.0000
C	0.0317
Y	0.6900
T1 ratio (HW/D)	1.093
T2 ratio (HW/D)	1.195
Slope Correction Factor	-0.500

Use unsubmerged inlet control 0 equation below T1 elevation.
Use submerged inlet control 0 equation above T2 elevation

In transition zone between unsubmerged and submerged inlet control,
interpolate between flows at T1 & T2...

T1 Elevation	193.23 ft	T1 Flow	27.16 ft³/s
T2 Elevation	193.49 ft	T2 Flow	31.05 ft³/s

Basin 2B

Subsection: Outlet Input Data
Label: Outlet#1
Scenario: 100

Return Event: 0 years
Storm Event:

Structure ID: Orifice - LF-2 Structure Type: Orifice-Area	
Number of Openings	4
Elevation	194.25 ft
Orifice Area	0.5 ft²
Top Elevation	194.75 ft
Datum Elevation	194.25 ft
Orifice Coefficient	0.600

Basin 2B

Subsection: Composite Rating Curve
Label: Outlet#1
Scenario: 100

Return Event: 0 years
Storm Event:

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft^3/s)	Tailwater Elevation (ft)	Convergence Error (ft)
193.50	0.00	190.73	0.00
193.55	0.00	190.73	0.00
193.60	0.00	190.73	0.00
193.65	0.00	190.73	0.00
193.70	0.00	190.73	0.00
193.75	0.00	190.73	0.00
193.80	0.00	190.73	0.00
193.85	0.00	190.73	0.00
193.90	0.00	190.73	0.00
193.95	0.00	190.73	0.00
194.00	0.00	190.73	0.00
194.05	0.00	190.73	0.00
194.10	0.00	190.73	0.00
194.15	0.00	190.73	0.00
194.20	0.00	190.73	0.00
194.25	0.00	190.73	0.00
194.30	1.36	190.73	0.00
194.35	2.72	190.73	0.00
194.40	4.08	190.73	0.00
194.45	5.44	190.73	0.00
194.50	3.40	190.73	0.00
194.55	8.18	190.73	0.00
194.60	9.53	190.73	0.00
194.65	10.89	190.73	0.00
194.70	12.26	190.73	0.00
194.75	13.61	190.73	0.00
194.80	14.30	190.73	0.00
194.85	14.99	190.73	0.00
194.90	15.71	190.73	0.00
194.95	16.41	190.73	0.00
195.00	17.15	190.73	0.00
195.05	17.89	190.73	0.00
195.10	18.64	190.73	0.00
195.15	19.34	190.73	0.00
195.20	20.04	190.73	0.00
195.25	20.66	190.73	0.00
195.30	21.28	190.73	0.00
195.35	21.85	190.73	0.00
195.40	22.38	190.73	0.00
195.45	22.92	190.73	0.00
195.50	23.45	190.73	0.00
195.55	23.99	190.73	0.00

Basin 2B

Subsection: Composite Rating Curve
Label: Outlet#1
Scenario: 100

Return Event: 0 years
Storm Event:

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft^3/s)	Tailwater Elevation (ft)	Convergence Error (ft)
195.60	24.48	190.73	0.00
195.65	24.97	190.73	0.00
195.70	25.42	190.73	0.00
195.75	25.92	190.73	0.00
195.80	26.36	190.73	0.00
195.85	26.81	190.73	0.00
195.90	27.27	190.73	0.00
195.95	27.72	190.73	0.00
196.00	28.15	190.73	0.00
196.05	28.58	190.73	0.00
196.10	29.00	190.73	0.00
196.15	29.40	190.73	0.00
196.20	29.81	190.73	0.00
196.25	31.28	190.73	0.00
196.30	33.64	190.73	0.00
196.35	36.58	190.73	0.00
196.40	39.96	190.73	0.00
196.45	43.76	190.73	0.00
196.50	47.92	190.73	0.00
196.55	52.38	190.73	0.00
196.60	57.15	190.73	0.00
196.65	62.24	190.73	0.00
196.70	67.54	190.73	0.00
196.75	73.12	190.73	0.00
196.80	78.28	190.73	0.00
196.85	82.64	190.73	0.00
196.90	87.10	190.73	0.00
196.95	91.49	190.73	0.00
197.00	95.78	190.73	0.00
197.05	100.18	190.73	0.00
197.10	104.37	190.73	0.00
197.15	108.52	190.73	0.00
197.20	112.34	190.73	0.00
197.25	115.94	190.73	0.00
197.30	119.02	190.73	0.00
197.35	121.21	190.73	0.00
197.40	122.04	190.73	0.00
197.45	122.64	190.73	0.00
197.50	123.25	190.73	0.00
197.55	123.87	190.73	0.00
197.60	124.35	190.73	0.00
197.65	124.96	190.73	0.00

Basin 2B

Subsection: Composite Rating Curve
Label: Outlet#1
Scenario: 100

Return Event: 0 years
Storm Event:

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft³/s)	Tailwater Elevation (ft)	Convergence Error (ft)
197.70	125.57	190.73	0.00
197.75	126.16	190.73	0.00
197.80	126.77	190.73	0.00
197.85	127.36	190.73	0.00
197.90	127.96	190.73	0.00
197.95	128.55	190.73	0.00
198.00	129.15	190.73	0.00

Contributing Structures
(no Q: Orifice - HF,Riser - 1,Orifice - LF-1,Culvert - 1,Orifice - HF -2,Riser - 2,Orifice - LF-2,Culvert - 2)
(no Q: Orifice - HF,Riser - 1,Orifice - LF-1,Culvert - 1,Orifice - HF -2,Riser - 2,Orifice - LF-2,Culvert - 2)
(no Q: Orifice - HF,Riser - 1,Orifice - LF-1,Culvert - 1,Orifice - HF -2,Riser - 2,Orifice - LF-2,Culvert - 2)
(no Q: Orifice - HF,Riser - 1,Orifice - LF-1,Culvert - 1,Orifice - HF -2,Riser - 2,Orifice - LF-2,Culvert - 2)
(no Q: Orifice - HF,Riser - 1,Orifice - LF-1,Culvert - 1,Orifice - HF -2,Riser - 2,Orifice - LF-2,Culvert - 2)
(no Q: Orifice - HF,Riser - 1,Orifice - LF-1,Culvert - 1,Orifice - HF -2,Riser - 2,Orifice - LF-2,Culvert - 2)
(no Q: Orifice - HF,Riser - 1,Orifice - LF-1,Culvert - 1,Orifice - HF -2,Riser - 2,Orifice - LF-2,Culvert - 2)

Basin 2B

Subsection: Composite Rating Curve
Label: Outlet#1
Scenario: 100

Return Event: 0 years
Storm Event:

Composite Outflow Summary

Contributing Structures
(no Q: Orifice - HF,Riser - 1,Orifice - LF-1,Culvert - 1,Orifice - HF -2,Riser - 2,Orifice - LF-2,Culvert - 2)
(no Q: Orifice - HF,Riser - 1,Orifice - LF-1,Culvert - 1,Orifice - HF -2,Riser - 2,Orifice - LF-2,Culvert - 2)
(no Q: Orifice - HF,Riser - 1,Orifice - LF-1,Culvert - 1,Orifice - HF -2,Riser - 2,Orifice - LF-2,Culvert - 2)
(no Q: Orifice - HF,Riser - 1,Orifice - LF-1,Culvert - 1,Orifice - HF -2,Riser - 2,Orifice - LF-2,Culvert - 2)
(no Q: Orifice - HF,Riser - 1,Orifice - LF-1,Culvert - 1,Orifice - HF -2,Riser - 2,Orifice - LF-2,Culvert - 2)
(no Q: Orifice - HF,Riser - 1,Orifice - LF-1,Culvert - 1,Orifice - HF -2,Riser - 2,Orifice - LF-2,Culvert - 2)
(no Q: Orifice - HF,Riser - 1,Orifice - LF-1,Culvert - 1,Orifice - HF -2,Riser - 2,Orifice - LF-2,Culvert - 2)
(no Q: Orifice - HF,Riser - 1,Orifice - LF-1,Culvert - 1,Orifice - HF -2,Riser - 2,Orifice - LF-2,Culvert - 2)
Orifice - LF-1,Culvert - 1,Orifice - LF-2,Culvert - 2 (no Q: Orifice - HF,Riser - 1,Orifice - HF -2,Riser - 2)

Basin 2B

Subsection: Composite Rating Curve
Label: Outlet#1
Scenario: 100

Return Event: 0 years
Storm Event:

Composite Outflow Summary

Contributing Structures
Orifice - LF-1,Culvert - 1,Orifice - LF-2,Culvert - 2 (no Q: Orifice - HF,Riser - 1,Orifice - HF -2,Riser - 2)
Orifice - LF-1,Culvert - 1,Orifice - LF-2,Culvert - 2 (no Q: Orifice - HF,Riser - 1,Orifice - HF -2,Riser - 2)
Orifice - LF-1,Culvert - 1,Orifice - LF-2,Culvert - 2 (no Q: Orifice - HF,Riser - 1,Orifice - HF -2,Riser - 2)
Orifice - LF-1,Culvert - 1 (no Q: Orifice - HF,Riser - 1,Orifice - HF -2,Riser - 2,Orifice - LF-2,Culvert - 2)
Orifice - LF-1,Culvert - 1,Orifice - LF-2,Culvert - 2 (no Q: Orifice - HF,Riser - 1,Orifice - HF -2,Riser - 2)
Orifice - LF-1,Culvert - 1,Orifice - LF-2,Culvert - 2 (no Q: Orifice - HF,Riser - 1,Orifice - HF -2,Riser - 2)
Orifice - LF-1,Culvert - 1,Orifice - LF-2,Culvert - 2 (no Q: Orifice - HF,Riser - 1,Orifice - HF -2,Riser - 2)
Orifice - LF-1,Culvert - 1,Orifice - LF-2,Culvert - 2 (no Q: Orifice - HF,Riser - 1,Orifice - HF -2,Riser - 2)
Orifice - LF-1,Culvert - 1,Orifice - LF-2,Culvert - 2 (no Q: Orifice - HF,Riser - 1,Orifice - HF -2,Riser - 2)
Orifice - HF,Orifice - LF-1,Culvert - 1,Orifice - HF -2,Orifice - LF-2,Culvert - 2 (no Q: Riser - 1,Riser - 2)
Orifice - HF,Orifice - LF-1,Culvert - 1,Orifice - HF -2,Orifice - LF-2,Culvert - 2 (no Q: Riser - 1,Riser - 2)
Orifice - HF,Orifice - LF-1,Culvert - 1,Orifice - HF -2,Orifice - LF-2,Culvert - 2 (no Q: Riser - 1,Riser - 2)

Basin 2B

Subsection: Composite Rating Curve
Label: Outlet#1
Scenario: 100

Return Event: 0 years
Storm Event:

Composite Outflow Summary

Contributing Structures
Orifice - HF,Orifice - LF-1,Culvert - 1,Orifice - HF - 2,Orifice - LF-2,Culvert - 2 (no Q: Riser - 1,Riser - 2)
Orifice - HF,Orifice - LF-1,Culvert - 1,Orifice - HF - 2,Orifice - LF-2,Culvert - 2 (no Q: Riser - 1,Riser - 2)
Orifice - HF,Orifice - LF-1,Culvert - 1,Orifice - HF - 2,Orifice - LF-2,Culvert - 2 (no Q: Riser - 1,Riser - 2)
Orifice - HF,Orifice - LF-1,Culvert - 1,Orifice - HF - 2,Orifice - LF-2,Culvert - 2 (no Q: Riser - 1,Riser - 2)
Orifice - HF,Orifice - LF-1,Culvert - 1,Orifice - HF - 2,Orifice - LF-2,Culvert - 2 (no Q: Riser - 1,Riser - 2)
Orifice - HF,Orifice - LF-1,Culvert - 1,Orifice - HF - 2,Orifice - LF-2,Culvert - 2 (no Q: Riser - 1,Riser - 2)
Orifice - HF,Orifice - LF-1,Culvert - 1,Orifice - HF - 2,Orifice - LF-2,Culvert - 2 (no Q: Riser - 1,Riser - 2)
Orifice - HF,Orifice - LF-1,Culvert - 1,Orifice - HF - 2,Orifice - LF-2,Culvert - 2 (no Q: Riser - 1,Riser - 2)
Orifice - HF,Orifice - LF-1,Culvert - 1,Orifice - HF - 2,Orifice - LF-2,Culvert - 2 (no Q: Riser - 1,Riser - 2)
Orifice - HF,Orifice - LF-1,Culvert - 1,Orifice - HF - 2,Orifice - LF-2,Culvert - 2 (no Q: Riser - 1,Riser - 2)
Orifice - HF,Orifice - LF-1,Culvert - 1,Orifice - HF - 2,Orifice - LF-2,Culvert - 2 (no Q: Riser - 1,Riser - 2)
Orifice - HF,Orifice - LF-1,Culvert - 1,Orifice - HF - 2,Orifice - LF-2,Culvert - 2 (no Q: Riser - 1,Riser - 2)
Orifice - HF,Orifice - LF-1,Culvert - 1,Orifice - HF - 2,Orifice - LF-2,Culvert - 2 (no Q: Riser - 1,Riser - 2)

Basin 2B

Subsection: Composite Rating Curve
Label: Outlet#1
Scenario: 100

Return Event: 0 years
Storm Event:

Composite Outflow Summary

Contributing Structures
Orifice - HF,Orifice - LF-1,Culvert - 1,Orifice - HF - 2,Orifice - LF-2,Culvert - 2 (no Q: Riser - 1,Riser - 2)
Orifice - HF,Orifice - LF-1,Culvert - 1,Orifice - HF - 2,Orifice - LF-2,Culvert - 2 (no Q: Riser - 1,Riser - 2)
Orifice - HF,Orifice - LF-1,Culvert - 1,Orifice - HF - 2,Orifice - LF-2,Culvert - 2 (no Q: Riser - 1,Riser - 2)
Orifice - HF,Orifice - LF-1,Culvert - 1,Orifice - HF - 2,Orifice - LF-2,Culvert - 2 (no Q: Riser - 1,Riser - 2)
Orifice - HF,Orifice - LF-1,Culvert - 1,Orifice - HF - 2,Orifice - LF-2,Culvert - 2 (no Q: Riser - 1,Riser - 2)
Orifice - HF,Orifice - LF-1,Culvert - 1,Orifice - HF - 2,Orifice - LF-2,Culvert - 2 (no Q: Riser - 1,Riser - 2)
Orifice - HF,Orifice - LF-1,Culvert - 1,Orifice - HF - 2,Orifice - LF-2,Culvert - 2 (no Q: Riser - 1,Riser - 2)
Orifice - HF,Orifice - LF-1,Culvert - 1,Orifice - HF - 2,Orifice - LF-2,Culvert - 2 (no Q: Riser - 1,Riser - 2)
Orifice - HF,Orifice - LF-1,Culvert - 1,Orifice - HF - 2,Orifice - LF-2,Culvert - 2 (no Q: Riser - 1,Riser - 2)
Orifice - HF,Orifice - LF-1,Culvert - 1,Orifice - HF - 2,Orifice - LF-2,Culvert - 2 (no Q: Riser - 1,Riser - 2)
Orifice - HF,Orifice - LF-1,Culvert - 1,Orifice - HF - 2,Orifice - LF-2,Culvert - 2 (no Q: Riser - 1,Riser - 2)
Orifice - HF,Orifice - LF-1,Culvert - 1,Orifice - HF - 2,Orifice - LF-2,Culvert - 2 (no Q: Riser - 1,Riser - 2)
Orifice - HF,Orifice - LF-1,Culvert - 1,Orifice - HF - 2,Orifice - LF-2,Culvert - 2 (no Q: Riser - 1,Riser - 2)
Orifice - HF,Orifice - LF-1,Culvert - 1,Orifice - HF - 2,Orifice - LF-2,Culvert - 2 (no Q: Riser - 1,Riser - 2)

Basin 2B

Subsection: Composite Rating Curve
Label: Outlet#1
Scenario: 100

Return Event: 0 years
Storm Event:

Composite Outflow Summary

Contributing Structures
Orifice - HF,Orifice - LF-1,Culvert - 1,Orifice - HF - 2,Orifice - LF-2,Culvert - 2 (no Q: Riser - 1,Riser - 2)
Orifice - HF,Orifice - LF-1,Culvert - 1,Orifice - HF - 2,Orifice - LF-2,Culvert - 2 (no Q: Riser - 1,Riser - 2)
Orifice - HF,Riser - 1,Orifice - LF-1,Culvert - 1,Orifice - HF -2,Riser - 2,Orifice - LF-2,Culvert - 2
Orifice - HF,Riser - 1,Orifice - LF-1,Culvert - 1,Orifice - HF -2,Riser - 2,Orifice - LF-2,Culvert - 2
Orifice - HF,Riser - 1,Orifice - LF-1,Culvert - 1,Orifice - HF -2,Riser - 2,Orifice - LF-2,Culvert - 2
Orifice - HF,Riser - 1,Orifice - LF-1,Culvert - 1,Orifice - HF -2,Riser - 2,Orifice - LF-2,Culvert - 2
Orifice - HF,Riser - 1,Orifice - LF-1,Culvert - 1,Orifice - HF -2,Riser - 2,Orifice - LF-2,Culvert - 2
Orifice - HF,Riser - 1,Orifice - LF-1,Culvert - 1,Orifice - HF -2,Riser - 2,Orifice - LF-2,Culvert - 2
Orifice - HF,Riser - 1,Orifice - LF-1,Culvert - 1,Orifice - HF -2,Riser - 2,Orifice - LF-2,Culvert - 2
Orifice - HF,Riser - 1,Orifice - LF-1,Culvert - 1,Orifice - HF -2,Riser - 2,Orifice - LF-2,Culvert - 2
Orifice - HF,Riser - 1,Orifice - LF-1,Culvert - 1,Orifice - HF -2,Riser - 2,Orifice - LF-2,Culvert - 2
Orifice - HF,Riser - 1,Orifice - LF-1,Culvert - 1,Orifice - HF -2,Riser - 2,Orifice - LF-2,Culvert - 2

Basin 2B

Subsection: Composite Rating Curve
Label: Outlet#1
Scenario: 100

Return Event: 0 years
Storm Event:

Composite Outflow Summary

Contributing Structures
Orifice - HF,Riser - 1,Orifice - LF-1,Culvert - 1,Orifice - HF -2,Riser - 2,Orifice - LF-2,Culvert - 2
Orifice - HF,Riser - 1,Orifice - LF-1,Culvert - 1,Orifice - HF -2,Riser - 2,Orifice - LF-2,Culvert - 2
Orifice - HF,Riser - 1,Orifice - LF-1,Culvert - 1,Orifice - HF -2,Riser - 2,Orifice - LF-2,Culvert - 2
Orifice - HF,Riser - 1,Orifice - LF-1,Culvert - 1,Orifice - HF -2,Riser - 2,Orifice - LF-2,Culvert - 2
Orifice - HF,Riser - 1,Orifice - LF-1,Culvert - 1,Orifice - HF -2,Riser - 2,Orifice - LF-2,Culvert - 2
Orifice - HF,Riser - 1,Orifice - LF-1,Culvert - 1,Orifice - HF -2,Riser - 2,Orifice - LF-2,Culvert - 2
Orifice - HF,Riser - 1,Orifice - LF-1,Culvert - 1,Orifice - HF -2,Riser - 2,Orifice - LF-2,Culvert - 2
Orifice - HF,Riser - 1,Orifice - LF-1,Culvert - 1,Orifice - HF -2,Riser - 2,Orifice - LF-2,Culvert - 2
Orifice - HF,Riser - 1,Orifice - LF-1,Culvert - 1,Orifice - HF -2,Riser - 2,Orifice - LF-2,Culvert - 2
Orifice - HF,Riser - 1,Orifice - LF-1,Culvert - 1,Orifice - HF -2,Riser - 2,Orifice - LF-2,Culvert - 2
Orifice - HF,Riser - 1,Orifice - LF-1,Culvert - 1,Orifice - HF -2,Riser - 2,Orifice - LF-2,Culvert - 2
Orifice - HF,Riser - 1,Orifice - LF-1,Culvert - 1,Orifice - HF -2,Riser - 2,Orifice - LF-2,Culvert - 2
Orifice - HF,Riser - 1,Orifice - LF-1,Culvert - 1,Orifice - HF -2,Riser - 2,Orifice - LF-2,Culvert - 2
Orifice - HF,Riser - 1,Orifice - LF-1,Culvert - 1,Orifice - HF -2,Riser - 2,Orifice - LF-2,Culvert - 2

Basin 2B

Subsection: Composite Rating Curve
Label: Outlet#1
Scenario: 100

Return Event: 0 years
Storm Event:

Composite Outflow Summary

Contributing Structures
Orifice - HF,Riser - 1,Orifice - LF-1,Culvert - 1,Orifice - HF -2,Riser - 2,Orifice - LF-2,Culvert - 2
Riser - 1,Culvert - 1,Riser - 2,Culvert - 2 (no Q: Orifice - HF,Orifice - LF-1,Orifice - HF -2,Orifice - LF-2)
Riser - 1,Culvert - 1,Riser - 2,Culvert - 2 (no Q: Orifice - HF,Orifice - LF-1,Orifice - HF -2,Orifice - LF-2)
Riser - 1,Culvert - 1,Riser - 2,Culvert - 2 (no Q: Orifice - HF,Orifice - LF-1,Orifice - HF -2,Orifice - LF-2)
Riser - 1,Culvert - 1,Riser - 2,Culvert - 2 (no Q: Orifice - HF,Orifice - LF-1,Orifice - HF -2,Orifice - LF-2)
Riser - 1,Culvert - 1,Riser - 2,Culvert - 2 (no Q: Orifice - HF,Orifice - LF-1,Orifice - HF -2,Orifice - LF-2)
Riser - 1,Culvert - 1,Riser - 2,Culvert - 2 (no Q: Orifice - HF,Orifice - LF-1,Orifice - HF -2,Orifice - LF-2)
Riser - 1,Culvert - 1,Riser - 2,Culvert - 2 (no Q: Orifice - HF,Orifice - LF-1,Orifice - HF -2,Orifice - LF-2)
Riser - 1,Culvert - 1,Riser - 2,Culvert - 2 (no Q: Orifice - HF,Orifice - LF-1,Orifice - HF -2,Orifice - LF-2)
Riser - 1,Culvert - 1,Riser - 2,Culvert - 2 (no Q: Orifice - HF,Orifice - LF-1,Orifice - HF -2,Orifice - LF-2)

Basin 2B

Subsection: Composite Rating Curve
Label: Outlet#1
Scenario: 100

Return Event: 0 years
Storm Event:

Composite Outflow Summary

Contributing Structures
Riser - 1,Culvert - 1,Riser - 2,Culvert - 2 (no Q: Orifice - HF,Orifice - LF-1,Orifice - HF -2,Orifice - LF-2)
Riser - 1,Culvert - 1,Riser - 2,Culvert - 2 (no Q: Orifice - HF,Orifice - LF-1,Orifice - HF -2,Orifice - LF-2)
Riser - 1,Culvert - 1,Riser - 2,Culvert - 2 (no Q: Orifice - HF,Orifice - LF-1,Orifice - HF -2,Orifice - LF-2)
Riser - 1,Culvert - 1,Riser - 2,Culvert - 2 (no Q: Orifice - HF,Orifice - LF-1,Orifice - HF -2,Orifice - LF-2)

Basin 2B

Subsection: Elevation-Volume-Flow Table (Pond)
Label: 1
Scenario: 100

Return Event: 0 years
Storm Event:

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions	
Elevation (Water Surface, Initial)	194.25 ft
Volume (Initial)	0.262 ac-ft
Flow (Initial Outlet)	0.00 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.00 ft³/s
Time Increment	1 min

Elevation (ft)	Outflow (ft³/s)	Storage (ac-ft)	Area (ft²)	Infiltration (ft³/s)	Flow (Total) (ft³/s)	2S/t + O (ft³/s)
193.50	0.00	0.000	14,551.000	0.00	0.00	0.00
193.55	0.00	0.017	14,636.376	0.00	0.00	24.32
193.60	0.00	0.034	14,722.002	0.00	0.00	48.79
193.65	0.00	0.051	14,807.878	0.00	0.00	73.40
193.70	0.00	0.068	14,894.003	0.00	0.00	98.15
193.75	0.00	0.085	14,980.378	0.00	0.00	123.04
193.80	0.00	0.102	15,067.003	0.00	0.00	148.08
193.85	0.00	0.119	15,153.878	0.00	0.00	173.27
193.90	0.00	0.137	15,241.002	0.00	0.00	198.60
193.95	0.00	0.154	15,328.376	0.00	0.00	224.07
194.00	0.00	0.172	15,416.000	0.00	0.00	249.69
194.05	0.00	0.190	15,503.450	0.00	0.00	275.46
194.10	0.00	0.208	15,591.148	0.00	0.00	301.37
194.15	0.00	0.226	15,679.093	0.00	0.00	327.43
194.20	0.00	0.244	15,767.285	0.00	0.00	353.63
194.25	0.00	0.262	15,855.725	0.00	0.00	379.98
194.30	1.36	0.280	15,944.412	0.00	1.36	407.85
194.35	2.72	0.298	16,033.346	0.00	2.72	435.86
194.40	4.08	0.317	16,122.528	0.00	4.08	464.01
194.45	5.44	0.335	16,211.957	0.00	5.44	492.31
194.50	3.40	0.354	16,301.633	0.00	3.40	517.37
194.55	8.18	0.373	16,391.557	0.00	8.18	549.39
194.60	9.53	0.392	16,481.728	0.00	9.53	578.14
194.65	10.89	0.411	16,572.146	0.00	10.89	607.04
194.70	12.26	0.430	16,662.812	0.00	12.26	636.11
194.75	13.61	0.449	16,753.725	0.00	13.61	665.31
194.80	14.30	0.468	16,844.885	0.00	14.30	693.99
194.85	14.99	0.487	16,936.293	0.00	14.99	722.84
194.90	15.71	0.507	17,027.948	0.00	15.71	751.86

Basin 2B

Subsection: Elevation-Volume-Flow Table (Pond) Return Event: 0 years
Label: 1 Storm Event:
Scenario: 100

Elevation (ft)	Outflow (ft³/s)	Storage (ac-ft)	Area (ft²)	Infiltration (ft³/s)	Flow (Total) (ft³/s)	2S/t + O (ft³/s)
194.95	16.41	0.527	17,119.850	0.00	16.41	781.02
195.00	17.15	0.546	17,212.000	0.00	17.15	810.37
195.05	17.89	0.566	17,303.353	0.00	17.89	839.87
195.10	18.64	0.586	17,394.948	0.00	18.64	869.53
195.15	19.34	0.606	17,486.784	0.00	19.34	899.30
195.20	20.04	0.626	17,578.863	0.00	20.04	929.23
195.25	20.66	0.646	17,671.183	0.00	20.66	959.22
195.30	21.28	0.667	17,763.745	0.00	21.28	989.37
195.35	21.85	0.687	17,856.549	0.00	21.85	1,019.62
195.40	22.38	0.708	17,949.594	0.00	22.38	1,049.99
195.45	22.92	0.728	18,042.882	0.00	22.92	1,080.52
195.50	23.45	0.749	18,136.411	0.00	23.45	1,111.20
195.55	23.99	0.770	18,230.182	0.00	23.99	1,142.05
195.60	24.48	0.791	18,324.194	0.00	24.48	1,173.00
195.65	24.97	0.812	18,418.449	0.00	24.97	1,204.11
195.70	25.42	0.833	18,512.945	0.00	25.42	1,235.33
195.75	25.92	0.855	18,607.683	0.00	25.92	1,266.77
195.80	26.36	0.876	18,702.663	0.00	26.36	1,298.30
195.85	26.81	0.898	18,797.884	0.00	26.81	1,330.00
195.90	27.27	0.919	18,893.348	0.00	27.27	1,361.87
195.95	27.72	0.941	18,989.053	0.00	27.72	1,393.88
196.00	28.15	0.963	19,085.000	0.00	28.15	1,426.04
196.05	28.58	0.985	19,180.152	0.00	28.58	1,458.36
196.10	29.00	1.007	19,275.541	0.00	29.00	1,490.83
196.15	29.40	1.029	19,371.166	0.00	29.40	1,523.44
196.20	29.81	1.051	19,467.028	0.00	29.81	1,556.21
196.25	31.28	1.074	19,563.127	0.00	31.28	1,590.21
196.30	33.64	1.096	19,659.462	0.00	33.64	1,625.25
196.35	36.58	1.119	19,756.034	0.00	36.58	1,661.04
196.40	39.96	1.142	19,852.843	0.00	39.96	1,697.43
196.45	43.76	1.164	19,949.888	0.00	43.76	1,734.39
196.50	47.92	1.187	20,047.169	0.00	47.92	1,771.88
196.55	52.38	1.210	20,144.688	0.00	52.38	1,809.84
196.60	57.15	1.234	20,242.443	0.00	57.15	1,848.26
196.65	62.24	1.257	20,340.434	0.00	62.24	1,887.18
196.70	67.54	1.280	20,438.662	0.00	67.54	1,926.46
196.75	73.12	1.304	20,537.127	0.00	73.12	1,966.19
196.80	78.28	1.327	20,635.828	0.00	78.28	2,005.65
196.85	82.64	1.351	20,734.766	0.00	82.64	2,044.49
196.90	87.10	1.375	20,833.941	0.00	87.10	2,083.59
196.95	91.49	1.399	20,933.352	0.00	91.49	2,122.78
197.00	95.78	1.423	21,033.000	0.00	95.78	2,162.04
197.05	100.18	1.447	21,132.614	0.00	100.18	2,201.59

Basin 2B

Subsection: Elevation-Volume-Flow Table (Pond) Return Event: 0 years
Label: 1 Storm Event:
Scenario: 100

Elevation (ft)	Outflow (ft³/s)	Storage (ac-ft)	Area (ft²)	Infiltration (ft³/s)	Flow (Total) (ft³/s)	2S/t + O (ft³/s)
197.10	104.37	1.472	21,232.464	0.00	104.37	2,241.08
197.15	108.52	1.496	21,332.549	0.00	108.52	2,280.70
197.20	112.34	1.521	21,432.869	0.00	112.34	2,320.15
197.25	115.94	1.545	21,533.425	0.00	115.94	2,359.57
197.30	119.02	1.570	21,634.216	0.00	119.02	2,398.61
197.35	121.21	1.595	21,735.242	0.00	121.21	2,436.94
197.40	122.04	1.620	21,836.504	0.00	122.04	2,474.09
197.45	122.64	1.645	21,938.001	0.00	122.64	2,511.17
197.50	123.25	1.670	22,039.733	0.00	123.25	2,548.43
197.55	123.87	1.696	22,141.701	0.00	123.87	2,585.86
197.60	124.35	1.721	22,243.904	0.00	124.35	2,623.33
197.65	124.96	1.747	22,346.342	0.00	124.96	2,661.10
197.70	125.57	1.772	22,449.016	0.00	125.57	2,699.04
197.75	126.16	1.798	22,551.925	0.00	126.16	2,737.13
197.80	126.77	1.824	22,655.069	0.00	126.77	2,775.41
197.85	127.36	1.850	22,758.449	0.00	127.36	2,813.85
197.90	127.96	1.876	22,862.064	0.00	127.96	2,852.46
197.95	128.55	1.903	22,965.914	0.00	128.55	2,891.24
198.00	129.15	1.929	23,070.000	0.00	129.15	2,930.21

Basin 2B

Subsection: Level Pool Pond Routing Summary
Label: 1 (IN)
Scenario: 100

Return Event: 0 years
Storm Event:

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions	
Elevation (Water Surface, Initial)	194.25 ft
Volume (Initial)	0.262 ac-ft
Flow (Initial Outlet)	0.00 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.00 ft³/s
Time Increment	1 min

Inflow/Outflow Hydrograph Summary			
Flow (Peak In)	61.60 ft³/s	Time to Peak (Flow, In)	252 min
Flow (Peak Outlet)	26.36 ft³/s	Time to Peak (Flow, Outlet)	258 min

Elevation (Water Surface, Peak)	195.80 ft
Volume (Peak)	0.876 ac-ft

Mass Balance (ac-ft)	
Volume (Initial)	0.262 ac-ft
Volume (Total Inflow)	2.807 ac-ft
Volume (Total Infiltration)	0.000 ac-ft
Volume (Total Outlet Outflow)	2.807 ac-ft
Volume (Retained)	0.262 ac-ft
Volume (Unrouted)	0.000 ac-ft
Error (Mass Balance)	0.0 %

Basin 2B

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1

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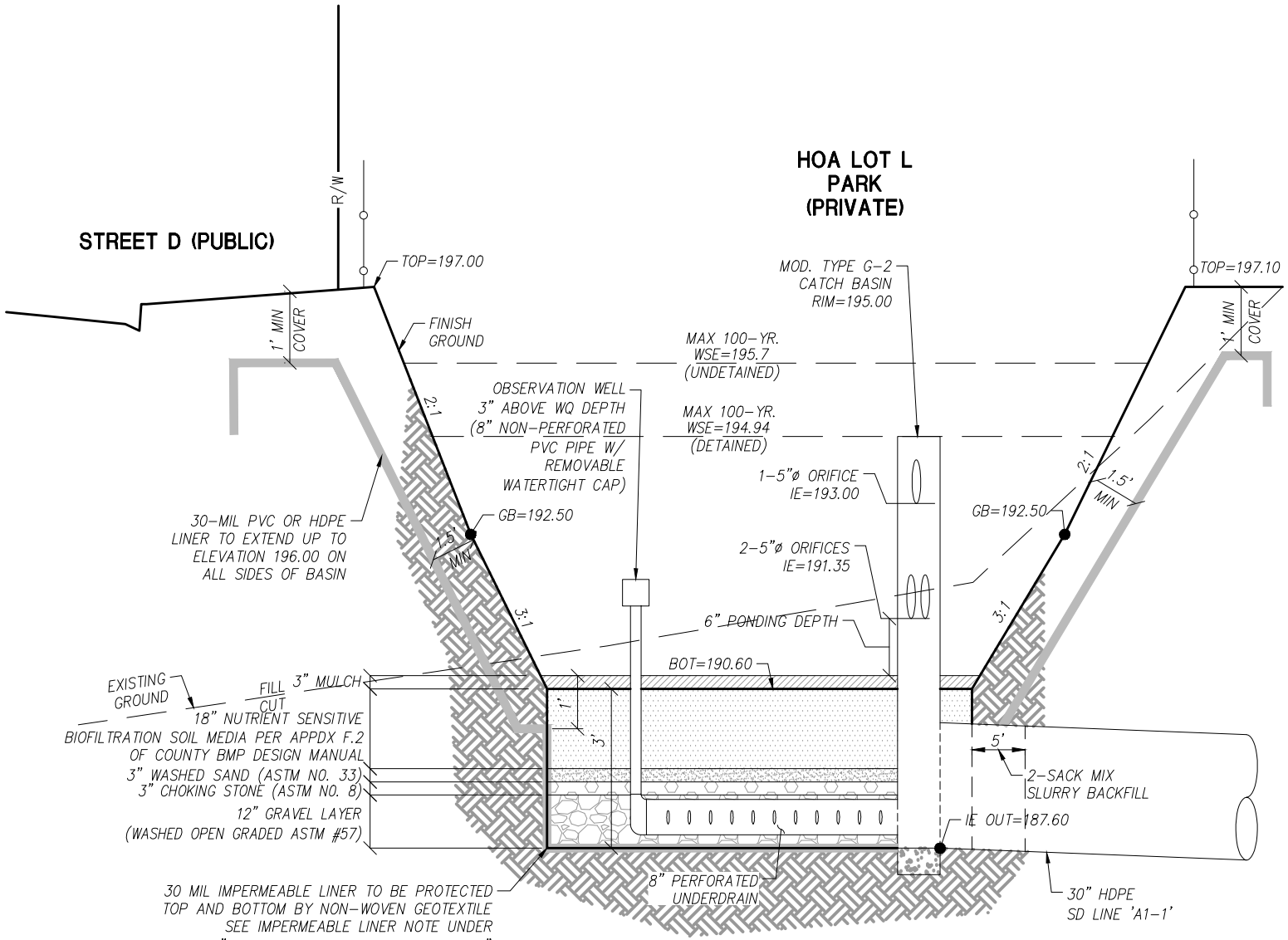
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2C



SECTION 2C-2C: BMP 2C
LINED BIOFILTRATION (PRIVATE)

NOT TO SCALE

N

SCALE:	1"=60'
JOB #:	4192.10
CREATED:	2/28/24

PREPARED BY:

PROJECT DESIGN CONSULTANTS
Planning | Landscape Architecture | Engineering | Survey

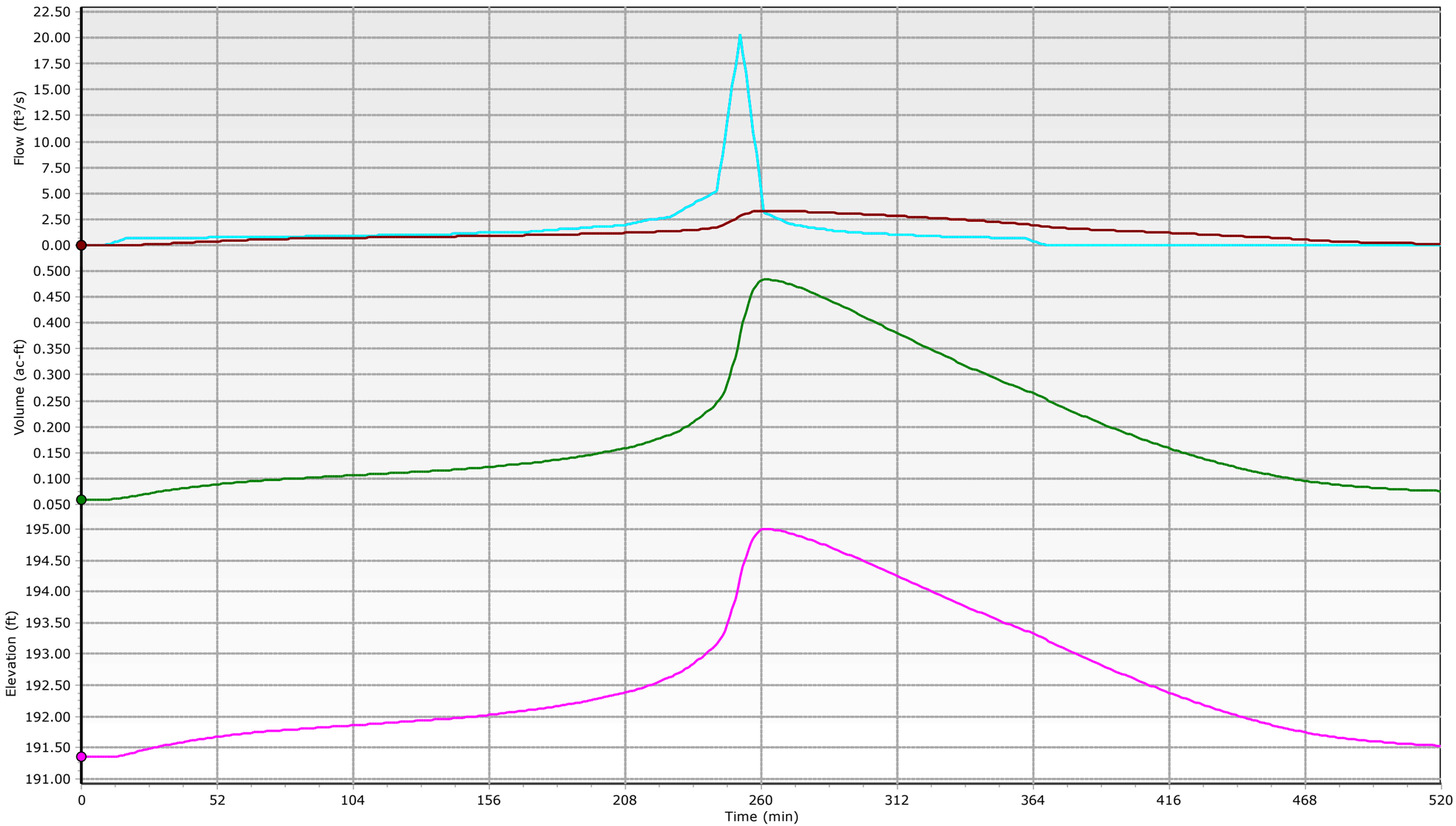
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COUNTY OF SAN DIEGO

OCEAN BREEZE RANCH

BASIN CROSS SECTIONS
BASIN 2C

Basin 2C



1 - 100 - Flow (Total In)
1 - 100 - Flow (Total Out)
1 - 100 - Volume
1 - 100 - Elevation
CM-1 - 100 - Flow (Total)
O-1 - 100 - Flow

RATIONAL METHOD HYDROGRAPH PROGRAM
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RUN DATE 5/16/2024
HYDROGRAPH FILE NAME BASIN 2C
TIME OF CONCENTRATION 9 MIN.
6 HOUR RAINFALL 3.3 INCHES
BASIN AREA 5.9 ACRES
RUNOFF COEFFICIENT 0.57
PEAK DISCHARGE 19.74 CFS

TIME	(MIN)	=	0	DISCHARGE	(CFS)	=	0
TIME	(MIN)	=	9	DISCHARGE	(CFS)	=	0
TIME	(MIN)	=	18	DISCHARGE	(CFS)	=	0.7
TIME	(MIN)	=	27	DISCHARGE	(CFS)	=	0.7
TIME	(MIN)	=	36	DISCHARGE	(CFS)	=	0.7
TIME	(MIN)	=	45	DISCHARGE	(CFS)	=	0.7
TIME	(MIN)	=	54	DISCHARGE	(CFS)	=	0.8
TIME	(MIN)	=	63	DISCHARGE	(CFS)	=	0.8
TIME	(MIN)	=	72	DISCHARGE	(CFS)	=	0.8
TIME	(MIN)	=	81	DISCHARGE	(CFS)	=	0.8
TIME	(MIN)	=	90	DISCHARGE	(CFS)	=	0.9
TIME	(MIN)	=	99	DISCHARGE	(CFS)	=	0.9
TIME	(MIN)	=	108	DISCHARGE	(CFS)	=	0.9
TIME	(MIN)	=	117	DISCHARGE	(CFS)	=	1
TIME	(MIN)	=	126	DISCHARGE	(CFS)	=	1
TIME	(MIN)	=	135	DISCHARGE	(CFS)	=	1
TIME	(MIN)	=	144	DISCHARGE	(CFS)	=	1.1
TIME	(MIN)	=	153	DISCHARGE	(CFS)	=	1.2
TIME	(MIN)	=	162	DISCHARGE	(CFS)	=	1.3
TIME	(MIN)	=	171	DISCHARGE	(CFS)	=	1.3
TIME	(MIN)	=	180	DISCHARGE	(CFS)	=	1.5
TIME	(MIN)	=	189	DISCHARGE	(CFS)	=	1.6
TIME	(MIN)	=	198	DISCHARGE	(CFS)	=	1.8
TIME	(MIN)	=	207	DISCHARGE	(CFS)	=	1.9
TIME	(MIN)	=	216	DISCHARGE	(CFS)	=	2.4
TIME	(MIN)	=	225	DISCHARGE	(CFS)	=	2.7
TIME	(MIN)	=	234	DISCHARGE	(CFS)	=	4
TIME	(MIN)	=	243	DISCHARGE	(CFS)	=	5.9
TIME	(MIN)	=	252	DISCHARGE	(CFS)	=	19.74
TIME	(MIN)	=	261	DISCHARGE	(CFS)	=	3.2
TIME	(MIN)	=	270	DISCHARGE	(CFS)	=	2.1
TIME	(MIN)	=	279	DISCHARGE	(CFS)	=	1.7
TIME	(MIN)	=	288	DISCHARGE	(CFS)	=	1.4
TIME	(MIN)	=	297	DISCHARGE	(CFS)	=	1.2
TIME	(MIN)	=	306	DISCHARGE	(CFS)	=	1.1
TIME	(MIN)	=	315	DISCHARGE	(CFS)	=	1
TIME	(MIN)	=	324	DISCHARGE	(CFS)	=	0.9
TIME	(MIN)	=	333	DISCHARGE	(CFS)	=	0.8
TIME	(MIN)	=	342	DISCHARGE	(CFS)	=	0.8
TIME	(MIN)	=	351	DISCHARGE	(CFS)	=	0.7
TIME	(MIN)	=	360	DISCHARGE	(CFS)	=	0.7
TIME	(MIN)	=	369	DISCHARGE	(CFS)	=	0

Basin 2C

Project Summary	
Title	Basin 2C
Engineer	PDC
Company	PDC
Date	6/6/2024

Notes

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1 (IN)		
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Basin 2C

Subsection: Master Network Summary

Catchments Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (min)	Peak Flow (ft^3/s)
CM-1	100	0	0.905	252	19.70

Node Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (min)	Peak Flow (ft^3/s)
O-1	100	0	0.889	261	3.28

Pond Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (min)	Peak Flow (ft^3/s)	Maximum Water Surface Elevation (ft)	Maximum Pond Storage (ac-ft)
1 (IN)	100	0	0.905	252	19.70	(N/A)	(N/A)
1 (OUT)	100	0	0.889	261	3.28	194.94	0.476

Basin 2C

Subsection: Read Hydrograph
Label: CM-1
Scenario: 100

Return Event: 100 years
Storm Event:

Peak Discharge	19.70 ft³/s
Time to Peak	252 min
Hydrograph Volume	0.905 ac-ft

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 9 min
Time on left represents time for first value in each row.

Time (min)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
0	0.00	0.00	0.70	0.70	0.70
45	0.70	0.80	0.80	0.80	0.80
90	0.90	0.90	0.90	1.00	1.00
135	1.00	1.10	1.20	1.30	1.30
180	1.50	1.60	1.80	1.90	2.40
225	2.70	4.00	5.20	19.70	3.20
270	2.10	1.70	1.40	1.20	1.10
315	1.00	0.90	0.80	0.80	0.70
360	0.70	0.00	(N/A)	(N/A)	(N/A)

Basin 2C

Subsection: Time vs. Volume
Label: 1
Scenario: 100

Return Event: 100 years
Storm Event:

Time vs. Volume (ac-ft)

Output Time increment = 1 min
Time on left represents time for first value in each row.

Time (min)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)
0	0.060	0.060	0.060	0.060	0.060
5	0.060	0.060	0.060	0.060	0.060
10	0.060	0.060	0.060	0.061	0.061
15	0.062	0.062	0.063	0.064	0.065
20	0.066	0.067	0.068	0.069	0.070
25	0.071	0.071	0.072	0.073	0.074
30	0.075	0.075	0.076	0.077	0.078
35	0.078	0.079	0.080	0.081	0.081
40	0.082	0.083	0.083	0.084	0.084
45	0.085	0.085	0.086	0.086	0.087
50	0.088	0.088	0.089	0.089	0.090
55	0.090	0.091	0.091	0.092	0.092
60	0.093	0.093	0.094	0.094	0.094
65	0.095	0.095	0.096	0.096	0.096
70	0.097	0.097	0.097	0.098	0.098
75	0.098	0.098	0.099	0.099	0.099
80	0.100	0.100	0.100	0.100	0.101
85	0.101	0.101	0.101	0.102	0.102
90	0.102	0.103	0.103	0.103	0.103
95	0.104	0.104	0.104	0.105	0.105
100	0.105	0.105	0.106	0.106	0.106
105	0.106	0.107	0.107	0.107	0.107
110	0.108	0.108	0.108	0.108	0.109
115	0.109	0.109	0.110	0.110	0.110
120	0.111	0.111	0.111	0.112	0.112
125	0.112	0.112	0.113	0.113	0.113
130	0.114	0.114	0.114	0.114	0.115
135	0.115	0.115	0.115	0.116	0.116
140	0.116	0.117	0.117	0.117	0.118
145	0.118	0.118	0.119	0.119	0.119
150	0.120	0.120	0.121	0.121	0.122
155	0.122	0.122	0.123	0.123	0.124
160	0.124	0.125	0.125	0.126	0.126
165	0.127	0.127	0.128	0.128	0.129
170	0.129	0.130	0.130	0.131	0.131
175	0.132	0.132	0.133	0.134	0.134
180	0.135	0.136	0.136	0.137	0.138
185	0.138	0.139	0.140	0.141	0.141
190	0.142	0.143	0.144	0.144	0.145
195	0.146	0.147	0.148	0.149	0.150

Basin 2C

Subsection: Time vs. Volume
Label: 1
Scenario: 100

Return Event: 100 years
Storm Event:

Time vs. Volume (ac-ft)

Output Time increment = 1 min
Time on left represents time for first value in each row.

Time (min)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)
200	0.151	0.152	0.153	0.154	0.154
205	0.155	0.156	0.157	0.158	0.160
210	0.161	0.162	0.163	0.165	0.166
215	0.167	0.169	0.171	0.172	0.174
220	0.176	0.177	0.179	0.181	0.183
225	0.184	0.186	0.188	0.191	0.193
230	0.196	0.199	0.202	0.205	0.208
235	0.212	0.216	0.219	0.223	0.228
240	0.232	0.236	0.241	0.246	0.252
245	0.260	0.270	0.282	0.296	0.312
250	0.330	0.350	0.373	0.395	0.414
255	0.431	0.445	0.456	0.465	0.471
260	0.475	0.476	0.476	0.475	0.475
265	0.474	0.473	0.472	0.471	0.470
270	0.468	0.467	0.465	0.463	0.462
275	0.460	0.458	0.456	0.454	0.452
280	0.450	0.448	0.446	0.444	0.441
285	0.439	0.437	0.435	0.432	0.430
290	0.428	0.425	0.423	0.421	0.418
295	0.416	0.413	0.411	0.408	0.406
300	0.404	0.401	0.399	0.396	0.394
305	0.391	0.389	0.386	0.384	0.382
310	0.379	0.377	0.374	0.372	0.369
315	0.367	0.365	0.362	0.360	0.357
320	0.355	0.353	0.350	0.348	0.346
325	0.343	0.341	0.338	0.336	0.334
330	0.331	0.329	0.327	0.324	0.322
335	0.320	0.318	0.315	0.313	0.311
340	0.309	0.307	0.304	0.302	0.300
345	0.298	0.296	0.294	0.292	0.290
350	0.288	0.286	0.284	0.282	0.280
355	0.278	0.276	0.274	0.272	0.270
360	0.268	0.267	0.265	0.263	0.261
365	0.259	0.256	0.254	0.252	0.249
370	0.247	0.245	0.242	0.240	0.238
375	0.235	0.233	0.231	0.229	0.227
380	0.224	0.222	0.220	0.218	0.216
385	0.214	0.212	0.210	0.208	0.206
390	0.204	0.202	0.200	0.198	0.196
395	0.194	0.192	0.190	0.188	0.186
400	0.184	0.182	0.180	0.179	0.177

Basin 2C

Subsection: Time vs. Volume
Label: 1
Scenario: 100

Return Event: 100 years
Storm Event:

Time vs. Volume (ac-ft)

Output Time increment = 1 min
Time on left represents time for first value in each row.

Time (min)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)
405	0.175	0.173	0.171	0.170	0.168
410	0.166	0.165	0.163	0.161	0.160
415	0.158	0.156	0.155	0.153	0.151
420	0.150	0.148	0.147	0.145	0.144
425	0.142	0.141	0.139	0.138	0.137
430	0.135	0.134	0.132	0.131	0.130
435	0.128	0.127	0.126	0.125	0.123
440	0.122	0.121	0.120	0.118	0.117
445	0.116	0.115	0.114	0.113	0.112
450	0.111	0.110	0.108	0.107	0.106
455	0.105	0.104	0.104	0.103	0.102
460	0.101	0.100	0.099	0.098	0.097
465	0.097	0.096	0.095	0.094	0.094
470	0.093	0.092	0.092	0.091	0.091
475	0.090	0.089	0.089	0.088	0.088
480	0.087	0.087	0.086	0.086	0.086
485	0.085	0.085	0.084	0.084	0.084
490	0.083	0.083	0.082	0.082	0.082
495	0.081	0.081	0.081	0.081	0.080
500	0.080	0.080	0.079	0.079	0.079
505	0.079	0.078	0.078	0.078	0.078
510	0.077	0.077	0.077	0.077	0.077
515	0.076	0.076	0.076	0.076	0.076
520	0.075	(N/A)	(N/A)	(N/A)	(N/A)

Basin 2C

Subsection: Elevation-Area Volume Curve
Return Event: 100 years
Label: 1
Storm Event:
Scenario: 100

Elevation (ft)	Planimeter (ft²)	Area (ft²)	A1+A2+sqr (A1*A2) (ft²)	Volume (ac-ft)	Volume (Total) (ac-ft)
190.60	0.0	3,197.000	0.000	0.000	0.000
191.00	0.0	3,495.000	10,034.681	0.031	0.031
192.00	0.0	4,280.000	11,642.635	0.089	0.120
193.00	0.0	4,994.000	13,897.237	0.106	0.226
194.00	0.0	5,615.000	15,904.405	0.122	0.348
195.00	0.0	6,263.000	17,808.156	0.136	0.484
196.00	0.0	6,939.000	19,794.341	0.151	0.636
197.00	0.0	7,603.000	21,805.416	0.167	0.802

Basin 2C

Subsection: Volume Equations
Label: 1
Scenario: 100

Return Event: 100 years
Storm Event:

Pond Volume Equations
* Incremental volume computed by the Conic Method for Reservoir Volumes.

Volume = (1/3) * (EL2 - El1) * (Area1 + Area2 + sqr(Area1 * Area2))

where:	EL1, EL2	Lower and upper elevations of the increment
	Area1, Area2	Areas computed for EL1, EL2, respectively
	Volume	Incremental volume between EL1 and EL2

Basin 2C

Subsection: Outlet Input Data
Label: Outlet#1
Scenario: 100

Return Event: 100 years
Storm Event:

Requested Pond Water Surface Elevations	
Minimum (Headwater)	190.60 ft
Increment (Headwater)	0.10 ft
Maximum (Headwater)	197.00 ft

Outlet Connectivity

Structure Type	Outlet ID	Direction	Outfall	E1 (ft)	E2 (ft)
Orifice-Circular	Orifice - MF	Forward + Reverse	TW	193.00	197.00
Inlet Box	Riser - 1	Forward	TW	195.00	197.00
Orifice-Circular	Orifice - LF	Forward	TW	191.35	197.00
Tailwater Settings	Tailwater			(N/A)	(N/A)

Basin 2C

Subsection: Outlet Input Data
Label: Outlet#1
Scenario: 100

Return Event: 100 years
Storm Event:

Structure ID: Orifice - LF Structure Type: Orifice-Circular	
Number of Openings	2
Elevation	191.35 ft
Orifice Diameter	5.0 in
Orifice Coefficient	0.600

Structure ID: Riser - 1 Structure Type: Inlet Box	
Number of Openings	1
Elevation	195.00 ft
Orifice Area	9.2 ft²
Orifice Coefficient	0.600
Weir Length	12.40 ft
Weir Coefficient	3.00 (ft^0.5)/s
K Reverse	1.000
Manning's n	0.000
Kev, Charged Riser	0.000
Weir Submergence	False
Orifice H to crest	True

Structure ID: Orifice - MF Structure Type: Orifice-Circular	
Number of Openings	1
Elevation	193.00 ft
Orifice Diameter	5.0 in
Orifice Coefficient	0.600

Basin 2C

Subsection: Composite Rating Curve
Label: Outlet#1
Scenario: 100

Return Event: 100 years
Storm Event:

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft^3/s)	Tailwater Elevation (ft)	Convergence Error (ft)
190.60	0.00	191.13	0.00
190.70	0.00	191.13	0.00
190.80	0.00	191.13	0.00
190.90	0.00	191.13	0.00
191.00	0.00	191.13	0.00
191.10	0.00	191.13	0.00
191.20	0.00	191.13	0.00
191.30	0.00	191.13	0.00
191.35	0.00	191.13	0.00
191.40	0.01	191.13	0.00
191.50	0.09	191.13	0.00
191.60	0.24	191.13	0.00
191.70	0.44	191.13	0.00
191.80	0.65	191.13	0.00
191.90	0.77	191.13	0.00
192.00	0.87	191.13	0.00
192.10	0.97	191.13	0.00
192.20	1.05	191.13	0.00
192.30	1.13	191.13	0.00
192.40	1.20	191.13	0.00
192.50	1.27	191.13	0.00
192.60	1.34	191.13	0.00
192.70	1.40	191.13	0.00
192.80	1.46	191.13	0.00
192.90	1.52	191.13	0.00
193.00	1.58	191.13	0.00
193.10	1.65	191.13	0.00
193.20	1.76	191.13	0.00
193.30	1.90	191.13	0.00
193.40	2.05	191.13	0.00
193.50	2.18	191.13	0.00
193.60	2.29	191.13	0.00
193.70	2.38	191.13	0.00
193.80	2.47	191.13	0.00
193.90	2.55	191.13	0.00
194.00	2.63	191.13	0.00
194.10	2.71	191.13	0.00
194.20	2.79	191.13	0.00
194.30	2.86	191.13	0.00
194.40	2.93	191.13	0.00
194.50	3.00	191.13	0.00
194.60	3.06	191.13	0.00

Basin 2C

Subsection: Composite Rating Curve
Label: Outlet#1
Scenario: 100

Return Event: 100 years
Storm Event:

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft^3/s)	Tailwater Elevation (ft)	Convergence Error (ft)
194.70	3.13	191.13	0.00
194.80	3.19	191.13	0.00
194.90	3.25	191.13	0.00
195.00	3.31	191.13	0.00
195.10	4.55	191.13	0.00
195.20	6.76	191.13	0.00
195.30	9.60	191.13	0.00
195.40	12.96	191.13	0.00
195.50	16.75	191.13	0.00
195.60	20.94	191.13	0.00
195.70	25.49	191.13	0.00
195.80	30.38	191.13	0.00
195.90	35.57	191.13	0.00
196.00	41.06	191.13	0.00
196.10	46.83	191.13	0.00
196.20	52.47	191.13	0.00
196.30	54.50	191.13	0.00
196.40	56.45	191.13	0.00
196.50	58.34	191.13	0.00
196.60	60.17	191.13	0.00
196.70	61.94	191.13	0.00
196.80	63.66	191.13	0.00
196.90	65.33	191.13	0.00
197.00	66.96	191.13	0.00

Contributing Structures
Riser - 1
Riser - 1
Riser - 1
Riser - 1
Riser - 1
None Contributing
None Contributing
None Contributing
Orifice - LF
Orifice - LF
Orifice - LF
Orifice - LF
Orifice - LF
Orifice - LF
Orifice - LF
Orifice - LF

Basin 2C

Subsection: Composite Rating Curve
Label: Outlet#1
Scenario: 100

Return Event: 100 years
Storm Event:

Composite Outflow Summary

Contributing Structures
Orifice - LF
Orifice - LF
Orifice - LF
Orifice - LF
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Orifice - MF + Riser - 1 + Orifice - LF
Orifice - MF + Riser - 1 + Orifice - LF
Orifice - MF + Riser - 1 + Orifice - LF
Orifice - MF + Riser - 1 + Orifice - LF
Orifice - MF + Riser - 1 + Orifice - LF
Orifice - MF + Riser - 1 + Orifice - LF
Orifice - MF + Riser - 1 + Orifice - LF
Orifice - MF + Riser - 1 + Orifice - LF

Basin 2C

Subsection: Composite Rating Curve
Label: Outlet#1
Scenario: 100

Return Event: 100 years
Storm Event:

Composite Outflow Summary

Contributing Structures
Orifice - MF + Riser - 1 + Orifice - LF
Orifice - MF + Riser - 1 + Orifice - LF
Orifice - MF + Riser - 1 + Orifice - LF
Orifice - MF + Riser - 1 + Orifice - LF
Orifice - MF + Riser - 1 + Orifice - LF
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Orifice - MF + Riser - 1 + Orifice - LF
Orifice - MF + Riser - 1 + Orifice - LF
Orifice - MF + Riser - 1 + Orifice - LF
Orifice - MF + Riser - 1 + Orifice - LF

Basin 2C

Subsection: Elevation-Volume-Flow Table (Pond)
Label: 1
Scenario: 100

Return Event: 100 years
Storm Event:

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions	
Elevation (Water Surface, Initial)	191.35 ft
Volume (Initial)	0.060 ac-ft
Flow (Initial Outlet)	0.00 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.00 ft³/s
Time Increment	1 min

Elevation (ft)	Outflow (ft³/s)	Storage (ac-ft)	Area (ft²)	Infiltration (ft³/s)	Flow (Total) (ft³/s)	2S/t + O (ft³/s)
190.60	0.00	0.000	3,197.000	0.00	0.00	0.00
190.70	0.00	0.007	3,270.255	0.00	0.00	10.78
190.80	0.00	0.015	3,344.340	0.00	0.00	21.80
190.90	0.00	0.023	3,419.255	0.00	0.00	33.08
191.00	0.00	0.031	3,495.000	0.00	0.00	44.60
191.10	0.00	0.039	3,569.924	0.00	0.00	56.37
191.20	0.00	0.047	3,645.643	0.00	0.00	68.40
191.30	0.00	0.056	3,722.157	0.00	0.00	80.68
191.35	0.00	0.060	3,760.711	0.00	0.00	86.91
191.40	0.01	0.064	3,799.465	0.00	0.01	93.22
191.50	0.09	0.073	3,877.567	0.00	0.09	106.10
191.60	0.24	0.082	3,956.465	0.00	0.24	119.30
191.70	0.44	0.091	4,036.157	0.00	0.44	132.82
191.80	0.65	0.101	4,116.643	0.00	0.65	146.62
191.90	0.77	0.110	4,197.924	0.00	0.77	160.60
192.00	0.87	0.120	4,280.000	0.00	0.87	174.83
192.10	0.97	0.130	4,348.923	0.00	0.97	189.31
192.20	1.05	0.140	4,418.396	0.00	1.05	204.01
192.30	1.13	0.150	4,488.420	0.00	1.13	218.93
192.40	1.20	0.160	4,558.994	0.00	1.20	234.08
192.50	1.27	0.171	4,630.118	0.00	1.27	249.47
192.60	1.34	0.182	4,701.794	0.00	1.34	265.09
192.70	1.40	0.193	4,774.020	0.00	1.40	280.94
192.80	1.46	0.204	4,846.796	0.00	1.46	297.04
192.90	1.52	0.215	4,920.123	0.00	1.52	313.37
193.00	1.58	0.226	4,994.000	0.00	1.58	329.95
193.10	1.65	0.238	5,054.463	0.00	1.65	346.77
193.20	1.76	0.249	5,115.289	0.00	1.76	363.83
193.30	1.90	0.261	5,176.480	0.00	1.90	381.12

Basin 2C

Subsection: Elevation-Volume-Flow Table (Pond) Return Event: 100 years
Label: 1 Storm Event:
Scenario: 100

Elevation (ft)	Outflow (ft³/s)	Storage (ac-ft)	Area (ft²)	Infiltration (ft³/s)	Flow (Total) (ft³/s)	2S/t + O (ft³/s)
193.40	2.05	0.273	5,238.034	0.00	2.05	398.63
193.50	2.18	0.285	5,299.952	0.00	2.18	416.33
193.60	2.29	0.297	5,362.234	0.00	2.29	434.20
193.70	2.38	0.310	5,424.880	0.00	2.38	452.27
193.80	2.47	0.322	5,487.889	0.00	2.47	470.55
193.90	2.55	0.335	5,551.263	0.00	2.55	489.03
194.00	2.63	0.348	5,615.000	0.00	2.63	507.73
194.10	2.71	0.361	5,678.208	0.00	2.71	526.62
194.20	2.79	0.374	5,741.770	0.00	2.79	545.73
194.30	2.86	0.387	5,805.685	0.00	2.86	565.05
194.40	2.93	0.401	5,869.955	0.00	2.93	584.58
194.50	3.00	0.414	5,934.578	0.00	3.00	604.32
194.60	3.06	0.428	5,999.555	0.00	3.06	624.28
194.70	3.13	0.442	6,064.885	0.00	3.13	644.45
194.80	3.19	0.456	6,130.570	0.00	3.19	664.84
194.90	3.25	0.470	6,196.608	0.00	3.25	685.45
195.00	3.31	0.484	6,263.000	0.00	3.31	706.27
195.10	4.55	0.499	6,329.041	0.00	4.55	728.49
195.20	6.76	0.513	6,395.429	0.00	6.76	751.91
195.30	9.60	0.528	6,462.163	0.00	9.60	776.18
195.40	12.96	0.543	6,529.244	0.00	12.96	801.19
195.50	16.75	0.558	6,596.670	0.00	16.75	826.86
195.60	20.94	0.573	6,664.444	0.00	20.94	853.16
195.70	25.49	0.589	6,732.563	0.00	25.49	880.03
195.80	30.38	0.604	6,801.029	0.00	30.38	907.47
195.90	35.57	0.620	6,869.841	0.00	35.57	935.45
196.00	41.06	0.636	6,939.000	0.00	41.06	963.96
196.10	46.83	0.652	7,004.035	0.00	46.83	992.96
196.20	52.47	0.668	7,069.373	0.00	52.47	1,022.06
196.30	54.50	0.684	7,135.015	0.00	54.50	1,047.76
196.40	56.45	0.701	7,200.960	0.00	56.45	1,073.61
196.50	58.34	0.717	7,267.208	0.00	58.34	1,099.61
196.60	60.17	0.734	7,333.760	0.00	60.17	1,125.77
196.70	61.94	0.751	7,400.615	0.00	61.94	1,152.10
196.80	63.66	0.768	7,467.773	0.00	63.66	1,178.60
196.90	65.33	0.785	7,535.235	0.00	65.33	1,205.28
197.00	66.96	0.802	7,603.000	0.00	66.96	1,232.14

Basin 2C

Subsection: Level Pool Pond Routing Summary
Label: 1 (IN)
Scenario: 100

Return Event: 100 years
Storm Event:

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions	
Elevation (Water Surface, Initial)	191.35 ft
Volume (Initial)	0.060 ac-ft
Flow (Initial Outlet)	0.00 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.00 ft³/s
Time Increment	1 min

Inflow/Outflow Hydrograph Summary			
Flow (Peak In)	19.70 ft³/s	Time to Peak (Flow, In)	252 min
Flow (Peak Outlet)	3.28 ft³/s	Time to Peak (Flow, Outlet)	261 min

Elevation (Water Surface, Peak)	194.94 ft
Volume (Peak)	0.476 ac-ft

Mass Balance (ac-ft)	
Volume (Initial)	0.060 ac-ft
Volume (Total Inflow)	0.905 ac-ft
Volume (Total Infiltration)	0.000 ac-ft
Volume (Total Outlet Outflow)	0.889 ac-ft
Volume (Retained)	0.075 ac-ft
Volume (Unrouted)	0.000 ac-ft
Error (Mass Balance)	0.0 %

Basin 2C

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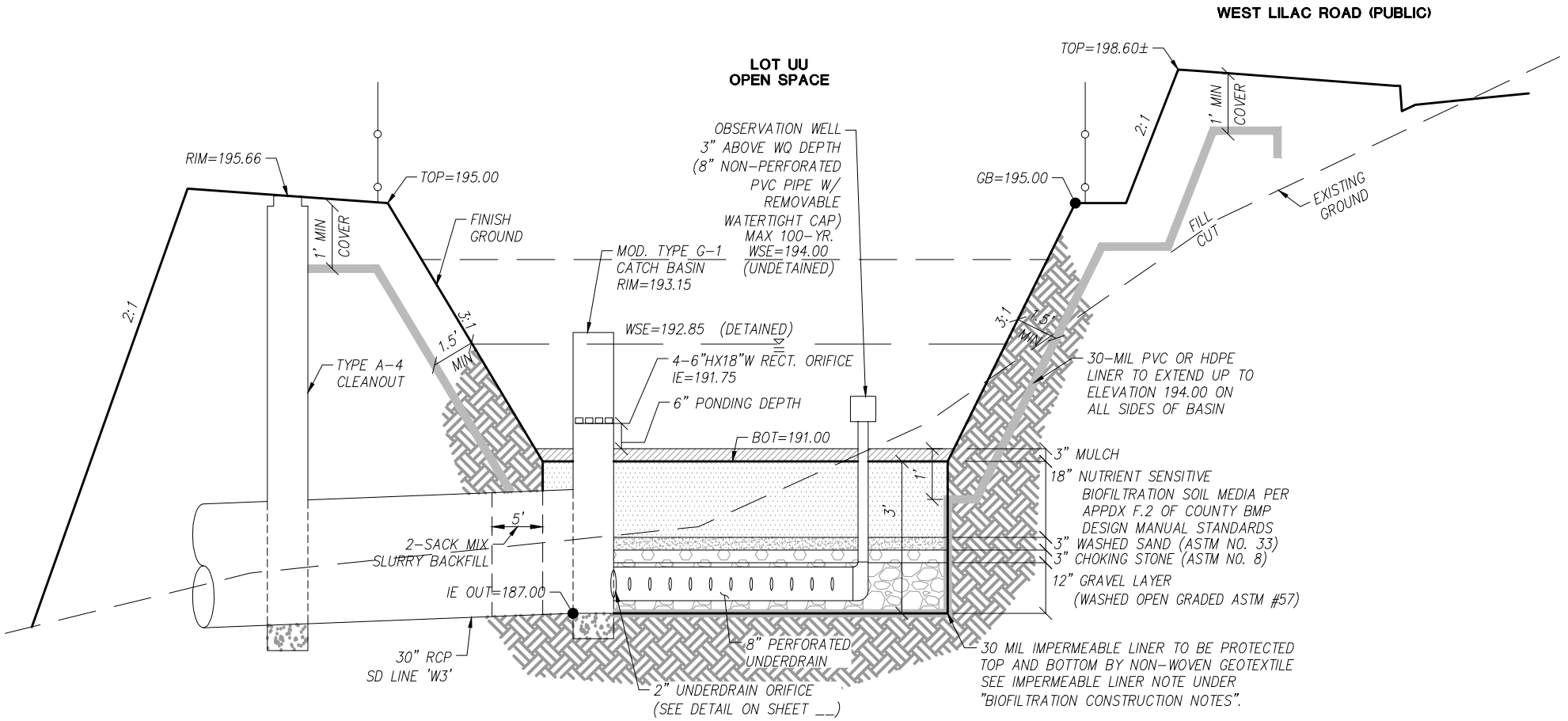
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2H



SECTION 2H-2H: BMP 2H
LINED BIOFILTRATION (PRIVATE)

NOT TO SCALE

N

SCALE:	1"=60'
JOB #:	4192.10
CREATED:	5/18/20

PREPARED BY:

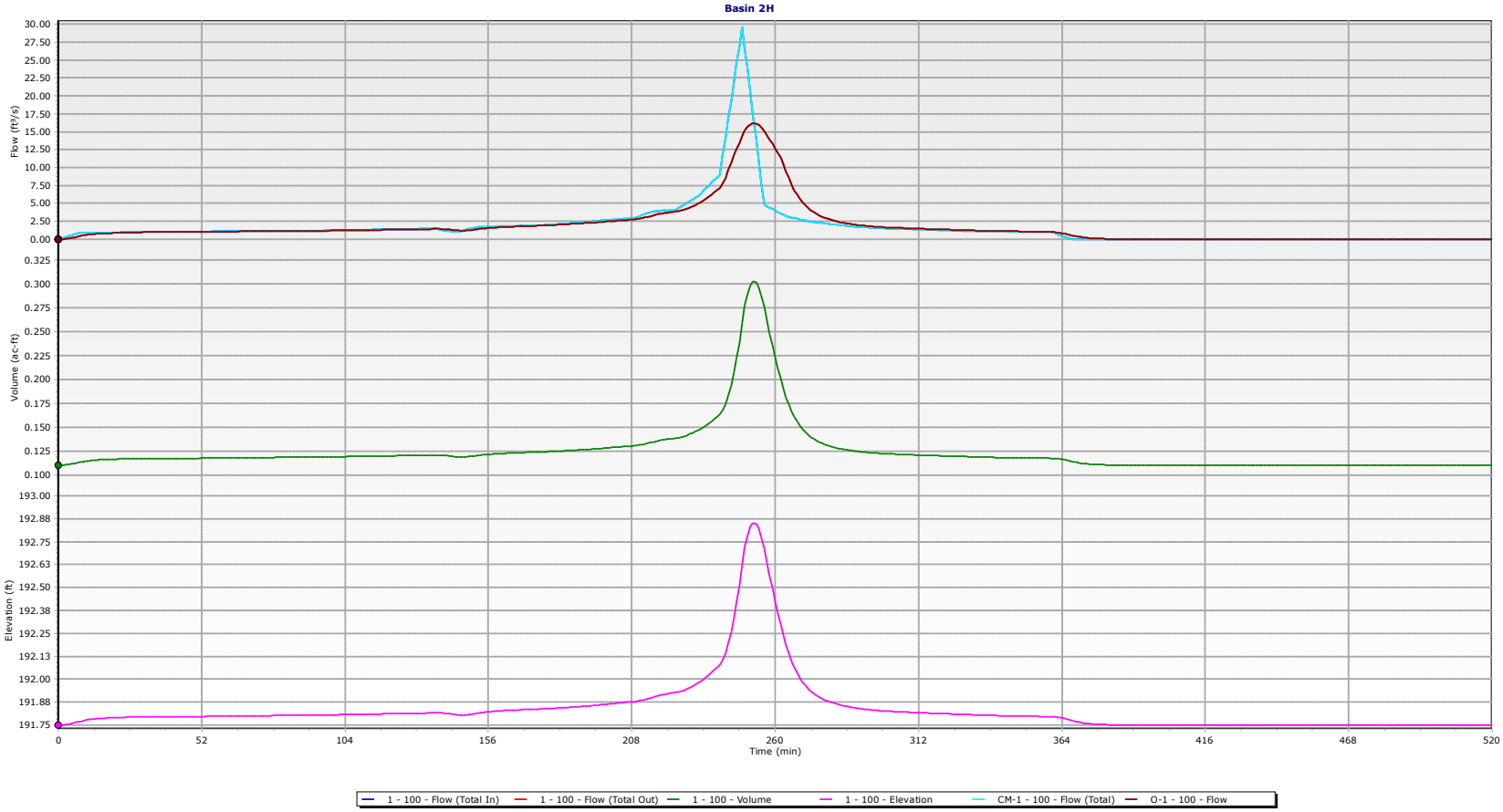
PROJECT DESIGN CONSULTANTS
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COUNTY OF SAN DIEGO

OCEAN BREEZE RANCH

BASIN CROSS SECTIONS
EXHIBIT (3 OF 14)


Basin 2H
Flow (ft³/s)
30.00
27.50
25.00
22.50
20.00
17.50
15.00
12.50
10.00
7.50
5.00
2.50
0.00
Volume (ac-ft)
0.325
0.300
0.275
0.250
0.225
0.200
0.175
0.150
0.125
0.100
Elevation (ft)
193.00
192.88
192.75
192.63
192.50
192.38
192.25
192.13
192.00
191.88
191.75
0
52
104
156
208
260
312
364
416
468
520
Time (min)
1 - 100 - Flow (Total In)
1 - 100 - Flow (Total Out)
1 - 100 - Volume
1 - 100 - Elevation
CM-1 - 100 - Flow (Total)
O-1 - 100 - Flow

Basin 2H

Project Summary	
Title	Basin 2H
Engineer	PDC
Company	PDC
Date	8/7/2024

Notes

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Basin 2H

Subsection: Master Network Summary

Catchments Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (min)	Peak Flow (ft^3/s)
CM-1	100	0	1.283	248	29.60

Node Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (min)	Peak Flow (ft^3/s)
O-1	100	0	1.283	252	16.16

Pond Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (min)	Peak Flow (ft^3/s)	Maximum Water Surface Elevation (ft)	Maximum Pond Storage (ac-ft)
1 (IN)	100	0	1.283	248	29.60	(N/A)	(N/A)
1 (OUT)	100	0	1.283	252	16.16	192.85	0.302

Basin 2H

Subsection: Read Hydrograph
Label: CM-1
Scenario: 100

Return Event: 100 years
Storm Event:

Peak Discharge	29.60 ft³/s
Time to Peak	248 min
Hydrograph Volume	1.283 ac-ft

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 8 min
Time on left represents time for first value in each row.

Time (min)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
0	0.00	0.90	0.90	1.00	1.00
40	1.00	1.00	1.10	1.10	1.10
80	1.20	1.20	1.20	1.30	1.30
120	1.40	1.40	1.50	1.00	1.70
160	1.80	1.90	2.00	2.20	2.40
200	2.70	2.90	3.90	4.10	6.00
240	9.00	29.60	4.80	3.20	2.50
280	2.10	1.80	1.60	1.50	1.40
320	1.30	1.20	1.10	1.10	1.00
360	1.00	0.00	(N/A)	(N/A)	(N/A)

Basin 2H

Subsection: Addition Summary
Label: O-1
Scenario: 100

Return Event: 100 years
Storm Event:

Summary for Hydrograph Addition at 'O-1'

Upstream Link	Upstream Node
Outlet-1	1

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (min)	Flow (Peak) (ft^3/s)
Flow (From)	Outlet-1	1.283	252	16.16
Flow (In)	O-1	1.283	252	16.16

Basin 2H

Subsection: Time vs. Volume
Label: 1
Scenario: 100

Return Event: 100 years
Storm Event:

Time vs. Volume (ac-ft)

Output Time increment = 1 min
Time on left represents time for first value in each row.

Time (min)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)
0	0.110	0.110	0.111	0.111	0.111
5	0.112	0.112	0.113	0.113	0.114
10	0.115	0.115	0.115	0.116	0.116
15	0.116	0.116	0.116	0.116	0.117
20	0.117	0.117	0.117	0.117	0.117
25	0.117	0.117	0.117	0.117	0.117
30	0.117	0.117	0.117	0.117	0.117
35	0.118	0.118	0.118	0.118	0.118
40	0.118	0.118	0.118	0.118	0.118
45	0.118	0.118	0.118	0.118	0.118
50	0.118	0.118	0.118	0.118	0.118
55	0.118	0.118	0.118	0.118	0.118
60	0.118	0.118	0.118	0.118	0.118
65	0.118	0.118	0.118	0.118	0.118
70	0.118	0.118	0.118	0.118	0.118
75	0.118	0.118	0.118	0.119	0.119
80	0.119	0.119	0.119	0.119	0.119
85	0.119	0.119	0.119	0.119	0.119
90	0.119	0.119	0.119	0.119	0.119
95	0.119	0.119	0.119	0.119	0.119
100	0.119	0.119	0.119	0.119	0.119
105	0.119	0.119	0.120	0.120	0.120
110	0.120	0.120	0.120	0.120	0.120
115	0.120	0.120	0.120	0.120	0.120
120	0.120	0.120	0.120	0.120	0.120
125	0.120	0.120	0.120	0.120	0.120
130	0.120	0.121	0.121	0.121	0.121
135	0.121	0.121	0.121	0.121	0.121
140	0.121	0.120	0.120	0.120	0.119
145	0.119	0.119	0.119	0.119	0.119
150	0.120	0.120	0.120	0.121	0.121
155	0.121	0.122	0.122	0.122	0.122
160	0.123	0.123	0.123	0.123	0.123
165	0.123	0.123	0.123	0.124	0.124
170	0.124	0.124	0.124	0.124	0.124
175	0.124	0.124	0.124	0.125	0.125
180	0.125	0.125	0.125	0.125	0.125
185	0.126	0.126	0.126	0.126	0.126
190	0.126	0.127	0.127	0.127	0.127
195	0.127	0.128	0.128	0.128	0.128

Basin 2H

Subsection: Time vs. Volume
Label: 1
Scenario: 100

Return Event: 100 years
Storm Event:

Time vs. Volume (ac-ft)

Output Time increment = 1 min
Time on left represents time for first value in each row.

Time (min)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)
200	0.129	0.129	0.129	0.129	0.130
205	0.130	0.130	0.130	0.130	0.131
210	0.131	0.132	0.132	0.133	0.133
215	0.134	0.135	0.136	0.136	0.137
220	0.137	0.138	0.138	0.138	0.139
225	0.139	0.140	0.141	0.142	0.143
230	0.144	0.145	0.147	0.148	0.150
235	0.152	0.154	0.156	0.159	0.161
240	0.164	0.168	0.174	0.183	0.194
245	0.206	0.222	0.239	0.259	0.277
250	0.290	0.299	0.302	0.302	0.297
255	0.288	0.276	0.262	0.248	0.236
260	0.223	0.212	0.201	0.191	0.181
265	0.173	0.167	0.161	0.156	0.152
270	0.148	0.145	0.142	0.140	0.138
275	0.136	0.135	0.133	0.132	0.131
280	0.130	0.129	0.129	0.128	0.127
285	0.127	0.126	0.126	0.126	0.125
290	0.125	0.124	0.124	0.124	0.124
295	0.123	0.123	0.123	0.123	0.123
300	0.122	0.122	0.122	0.122	0.122
305	0.122	0.122	0.122	0.121	0.121
310	0.121	0.121	0.121	0.121	0.121
315	0.121	0.121	0.121	0.120	0.120
320	0.120	0.120	0.120	0.120	0.120
325	0.120	0.120	0.120	0.120	0.119
330	0.119	0.119	0.119	0.119	0.119
335	0.119	0.119	0.119	0.119	0.119
340	0.119	0.119	0.118	0.118	0.118
345	0.118	0.118	0.118	0.118	0.118
350	0.118	0.118	0.118	0.118	0.118
355	0.118	0.118	0.118	0.118	0.118
360	0.118	0.118	0.117	0.117	0.117
365	0.116	0.115	0.115	0.114	0.113
370	0.113	0.112	0.112	0.112	0.112
375	0.111	0.111	0.111	0.111	0.111
380	0.111	0.111	0.111	0.111	0.111
385	0.110	0.110	0.110	0.110	0.110
390	0.110	0.110	0.110	0.110	0.110
395	0.110	0.110	0.110	0.110	0.110
400	0.110	0.110	0.110	0.110	0.110

Basin 2H

Subsection: Time vs. Volume
Label: 1
Scenario: 100

Return Event: 100 years
Storm Event:

Time vs. Volume (ac-ft)

Output Time increment = 1 min
Time on left represents time for first value in each row.

Time (min)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)
405	0.110	0.110	0.110	0.110	0.110
410	0.110	0.110	0.110	0.110	0.110
415	0.110	0.110	0.110	0.110	0.110
420	0.110	0.110	0.110	0.110	0.110
425	0.110	0.110	0.110	0.110	0.110
430	0.110	0.110	0.110	0.110	0.110
435	0.110	0.110	0.110	0.110	0.110
440	0.110	0.110	0.110	0.110	0.110
445	0.110	0.110	0.110	0.110	0.110
450	0.110	0.110	0.110	0.110	0.110
455	0.110	0.110	0.110	0.110	0.110
460	0.110	0.110	0.110	0.110	0.110
465	0.110	0.110	0.110	0.110	0.110
470	0.110	0.110	0.110	0.110	0.110
475	0.110	0.110	0.110	0.110	0.110
480	0.110	0.110	0.110	0.110	0.110
485	0.110	0.110	0.110	0.110	0.110
490	0.110	0.110	0.110	0.110	0.110
495	0.110	0.110	0.110	0.110	0.110
500	0.110	0.110	0.110	0.110	0.110
505	0.110	0.110	0.110	0.110	0.110
510	0.110	0.110	0.110	0.110	0.110
515	0.110	0.110	0.110	0.110	0.110
520	0.110	(N/A)	(N/A)	(N/A)	(N/A)

Basin 2H

Subsection: Elevation-Area Volume Curve
Label: 1
Scenario: 100

Return Event: 100 years
Storm Event:

Elevation (ft)	Planimeter (ft²)	Area (ft²)	A1+A2+sqr (A1*A2) (ft²)	Volume (ac-ft)	Volume (Total) (ac-ft)
191.00	0.0	5,981.000	0.000	0.000	0.000
192.00	0.0	7,146.000	19,664.601	0.150	0.150
193.00	0.0	8,654.000	23,663.936	0.181	0.332
194.00	0.0	10,109.000	28,116.250	0.215	0.547
195.00	0.0	11,629.000	32,580.396	0.249	0.796

Basin 2H

Subsection: Volume Equations
Label: 1
Scenario: 100

Return Event: 100 years
Storm Event:

Pond Volume Equations
* Incremental volume computed by the Conic Method for Reservoir Volumes.

Volume = (1/3) * (EL2 - El1) * (Area1 + Area2 + sqr(Area1 * Area2))

where:	EL1, EL2	Lower and upper elevations of the increment
	Area1, Area2	Areas computed for EL1, EL2, respectively
	Volume	Incremental volume between EL1 and EL2

Basin 2H

Subsection: Outlet Input Data
Label: Outlet#1
Scenario: 100

Return Event: 100 years
Storm Event:

Requested Pond Water Surface Elevations	
Minimum (Headwater)	191.00 ft
Increment (Headwater)	0.10 ft
Maximum (Headwater)	195.00 ft

Outlet Connectivity

Structure Type	Outlet ID	Direction	Outfall	E1 (ft)	E2 (ft)
Inlet Box	Riser - 1	Forward	TW	193.15	195.00
Orifice-Area	Orifice - LF	Forward	TW	191.75	195.00
Tailwater Settings	Tailwater			(N/A)	(N/A)

Basin 2H

Subsection: Outlet Input Data
Label: Outlet#1
Scenario: 100

Return Event: 100 years
Storm Event:

Structure ID: Riser - 1 Structure Type: Inlet Box	
Number of Openings	1
Elevation	193.15 ft
Orifice Area	9.4 ft²
Orifice Coefficient	0.600
Weir Length	12.40 ft
Weir Coefficient	3.00 (ft^0.5)/s
K Reverse	1.000
Manning's n	0.000
Kev, Charged Riser	0.000
Weir Submergence	False
Orifice H to crest	True

Structure ID: Orifice - LF Structure Type: Orifice-Area	
Number of Openings	4
Elevation	191.75 ft
Orifice Area	0.8 ft²
Top Elevation	192.25 ft
Datum Elevation	191.75 ft
Orifice Coefficient	0.600

Structure ID: TW Structure Type: TW Setup, DS Channel	
Tailwater Type	Free Outfall

Convergence Tolerances	
Maximum Iterations	80
Tailwater Tolerance (Minimum)	0.01 ft
Tailwater Tolerance (Maximum)	0.10 ft
Headwater Tolerance (Minimum)	0.01 ft
Headwater Tolerance (Maximum)	0.10 ft
Flow Tolerance (Minimum)	0.001 ft³/s
Flow Tolerance (Maximum)	10.000 ft³/s

Basin 2H

Subsection: Composite Rating Curve
Label: Outlet#1
Scenario: 100

Return Event: 100 years
Storm Event:

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft^3/s)	Tailwater Elevation (ft)	Convergence Error (ft)
191.00	0.00	(N/A)	0.00
191.10	0.00	(N/A)	0.00
191.20	0.00	(N/A)	0.00
191.30	0.00	(N/A)	0.00
191.40	0.00	(N/A)	0.00
191.50	0.00	(N/A)	0.00
191.60	0.00	(N/A)	0.00
191.70	0.00	(N/A)	0.00
191.75	0.00	(N/A)	0.00
191.80	1.09	(N/A)	0.00
191.90	3.27	(N/A)	0.00
192.00	5.45	(N/A)	0.00
192.10	7.62	(N/A)	0.00
192.20	9.80	(N/A)	0.00
192.30	11.42	(N/A)	0.00
192.40	12.42	(N/A)	0.00
192.50	13.34	(N/A)	0.00
192.60	14.20	(N/A)	0.00
192.70	15.01	(N/A)	0.00
192.80	15.78	(N/A)	0.00
192.90	16.52	(N/A)	0.00
193.00	17.22	(N/A)	0.00
193.10	17.90	(N/A)	0.00
193.15	18.22	(N/A)	0.00
193.20	18.96	(N/A)	0.00
193.30	21.34	(N/A)	0.00
193.40	24.43	(N/A)	0.00
193.50	28.08	(N/A)	0.00
193.60	32.18	(N/A)	0.00
193.70	36.68	(N/A)	0.00
193.80	41.55	(N/A)	0.00
193.90	46.75	(N/A)	0.00
194.00	52.25	(N/A)	0.00
194.10	58.06	(N/A)	0.00
194.20	64.13	(N/A)	0.00
194.30	70.47	(N/A)	0.00
194.40	75.65	(N/A)	0.00
194.50	78.11	(N/A)	0.00
194.60	80.48	(N/A)	0.00
194.70	82.78	(N/A)	0.00
194.80	85.01	(N/A)	0.00
194.90	87.19	(N/A)	0.00

Basin 2H

Subsection: Composite Rating Curve
Label: Outlet#1
Scenario: 100

Return Event: 100 years
Storm Event:

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft^3/s)	Tailwater Elevation (ft)	Convergence Error (ft)
195.00	89.30	(N/A)	0.00

Contributing Structures
None Contributing
None Contributing
None Contributing
None Contributing
None Contributing
None Contributing
None Contributing
None Contributing
Orifice - LF
Orifice - LF
Orifice - LF
Orifice - LF
Orifice - LF
Orifice - LF
Orifice - LF
Orifice - LF
Orifice - LF
Orifice - LF
Orifice - LF
Orifice - LF
Orifice - LF
Orifice - LF
Orifice - LF
Riser - 1 + Orifice - LF
Riser - 1 + Orifice - LF
Riser - 1 + Orifice - LF
Riser - 1 + Orifice - LF
Riser - 1 + Orifice - LF
Riser - 1 + Orifice - LF
Riser - 1 + Orifice - LF
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Riser - 1 + Orifice - LF
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Riser - 1 + Orifice - LF
Riser - 1 + Orifice - LF
Riser - 1 + Orifice - LF
Riser - 1 + Orifice - LF
Riser - 1 + Orifice - LF
Riser - 1 + Orifice - LF
Riser - 1 + Orifice - LF

Basin 2H

Subsection: Composite Rating Curve
Label: Outlet#1
Scenario: 100

Return Event: 100 years
Storm Event:

Composite Outflow Summary

Contributing Structures
Riser - 1 + Orifice - LF
Riser - 1 + Orifice - LF
Riser - 1 + Orifice - LF

Basin 2H

Subsection: Elevation-Volume-Flow Table (Pond)
Label: 1
Scenario: 100

Return Event: 100 years
Storm Event:

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions	
Elevation (Water Surface, Initial)	191.75 ft
Volume (Initial)	0.110 ac-ft
Flow (Initial Outlet)	0.00 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.00 ft³/s
Time Increment	1 min

Elevation (ft)	Outflow (ft³/s)	Storage (ac-ft)	Area (ft²)	Infiltration (ft³/s)	Flow (Total) (ft³/s)	2S/t + O (ft³/s)
191.00	0.00	0.000	5,981.000	0.00	0.00	0.00
191.10	0.00	0.014	6,092.838	0.00	0.00	20.12
191.20	0.00	0.028	6,205.712	0.00	0.00	40.62
191.30	0.00	0.042	6,319.622	0.00	0.00	61.50
191.40	0.00	0.057	6,434.568	0.00	0.00	82.75
191.50	0.00	0.072	6,550.550	0.00	0.00	104.39
191.60	0.00	0.087	6,667.568	0.00	0.00	126.42
191.70	0.00	0.103	6,785.622	0.00	0.00	148.85
191.75	0.00	0.110	6,845.038	0.00	0.00	160.20
191.80	1.09	0.118	6,904.712	0.00	1.09	172.75
191.90	3.27	0.134	7,024.838	0.00	3.27	198.14
192.00	5.45	0.150	7,146.000	0.00	5.45	223.94
192.10	7.62	0.167	7,290.308	0.00	7.62	250.18
192.20	9.80	0.184	7,436.059	0.00	9.80	276.90
192.30	11.42	0.201	7,583.253	0.00	11.42	303.55
192.40	12.42	0.219	7,731.889	0.00	12.42	330.07
192.50	13.34	0.237	7,881.968	0.00	13.34	357.02
192.60	14.20	0.255	8,033.489	0.00	14.20	384.40
192.70	15.01	0.274	8,186.453	0.00	15.01	412.25
192.80	15.78	0.293	8,340.859	0.00	15.78	440.56
192.90	16.52	0.312	8,496.708	0.00	16.52	469.36
193.00	17.22	0.332	8,654.000	0.00	17.22	498.65
193.10	17.90	0.352	8,794.415	0.00	17.90	528.40
193.15	18.22	0.362	8,865.046	0.00	18.22	543.45
193.20	18.96	0.372	8,935.960	0.00	18.96	559.02
193.30	21.34	0.393	9,078.635	0.00	21.34	591.42
193.40	24.43	0.414	9,222.440	0.00	24.43	625.02
193.50	28.08	0.435	9,367.375	0.00	28.08	659.64
193.60	32.18	0.457	9,513.440	0.00	32.18	695.21

Basin 2H

Subsection: Elevation-Volume-Flow Table (Pond) Return Event: 100 years
Label: 1 Storm Event:
Scenario: 100

Elevation (ft)	Outflow (ft^3/s)	Storage (ac-ft)	Area (ft^2)	Infiltration (ft^3/s)	Flow (Total) (ft^3/s)	2S/t + O (ft^3/s)
193.70	36.68	0.479	9,660.635	0.00	36.68	731.67
193.80	41.55	0.501	9,808.960	0.00	41.55	768.99
193.90	46.75	0.524	9,958.415	0.00	46.75	807.13
194.00	52.25	0.547	10,109.000	0.00	52.25	846.09
194.10	58.06	0.570	10,256.211	0.00	58.06	885.83
194.20	64.13	0.594	10,404.487	0.00	64.13	926.34
194.30	70.47	0.618	10,553.827	0.00	70.47	967.61
194.40	75.65	0.642	10,704.230	0.00	75.65	1,008.22
194.50	78.11	0.667	10,855.698	0.00	78.11	1,046.61
194.60	80.48	0.692	11,008.230	0.00	80.48	1,085.42
194.70	82.78	0.718	11,161.827	0.00	82.78	1,124.67
194.80	85.01	0.743	11,316.487	0.00	85.01	1,164.37
194.90	87.19	0.770	11,472.211	0.00	87.19	1,204.52
195.00	89.30	0.796	11,629.000	0.00	89.30	1,245.14

Basin 2H

Subsection: Level Pool Pond Routing Summary
Label: 1 (IN)
Scenario: 100

Return Event: 100 years
Storm Event:

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions	
Elevation (Water Surface, Initial)	191.75 ft
Volume (Initial)	0.110 ac-ft
Flow (Initial Outlet)	0.00 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.00 ft³/s
Time Increment	1 min

Inflow/Outflow Hydrograph Summary			
Flow (Peak In)	29.60 ft³/s	Time to Peak (Flow, In)	248 min
Flow (Peak Outlet)	16.16 ft³/s	Time to Peak (Flow, Outlet)	252 min

Elevation (Water Surface, Peak)	192.85 ft
Volume (Peak)	0.302 ac-ft

Mass Balance (ac-ft)	
Volume (Initial)	0.110 ac-ft
Volume (Total Inflow)	1.283 ac-ft
Volume (Total Infiltration)	0.000 ac-ft
Volume (Total Outlet Outflow)	1.283 ac-ft
Volume (Retained)	0.110 ac-ft
Volume (Unrouted)	0.000 ac-ft
Error (Mass Balance)	0.0 %

Basin 2H

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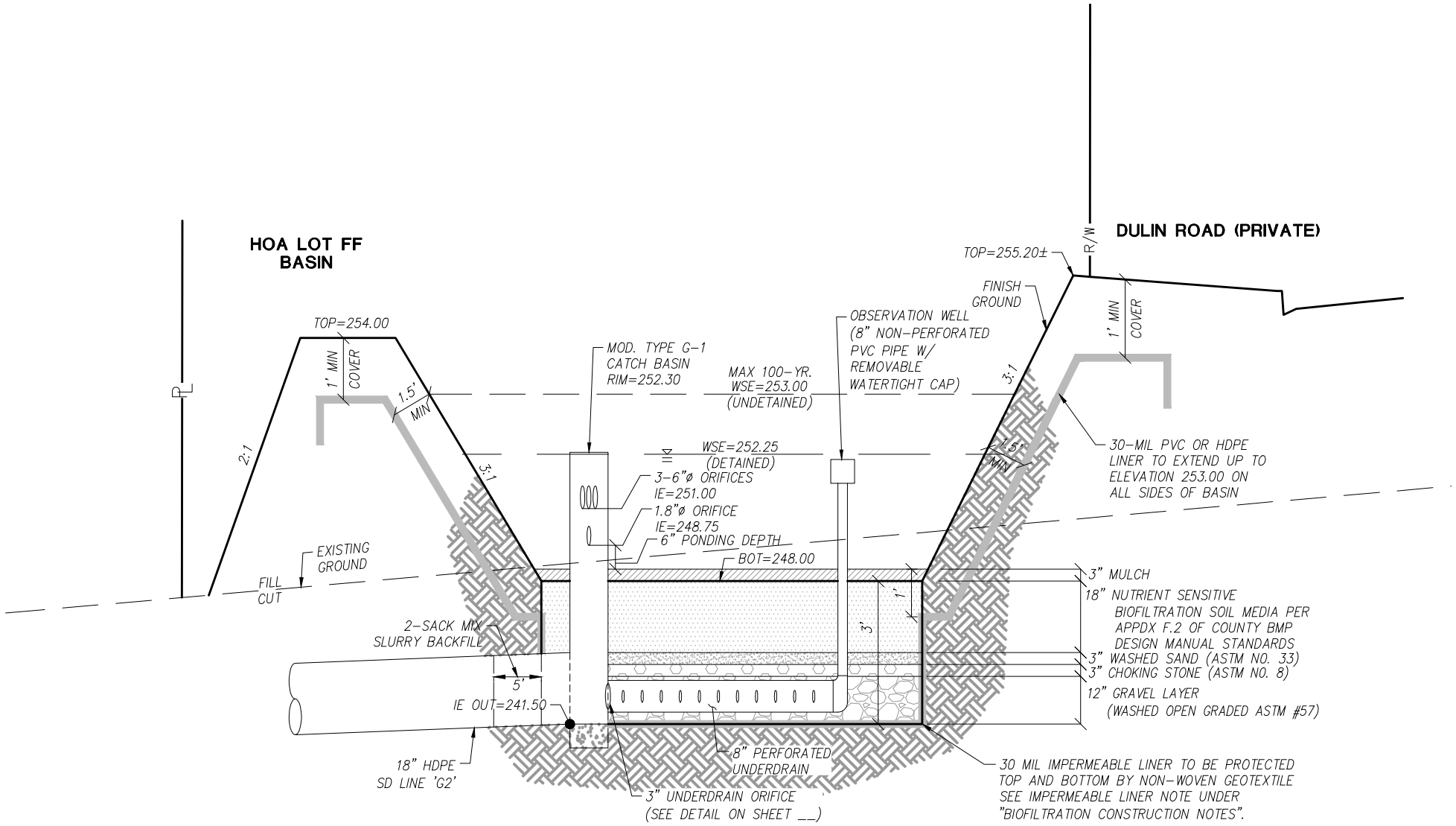
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RUN DATE 8/5/2024
HYDROGRAPH FILE NAME BASIN 2H
TIME OF CONCENTRATION 8 MIN.
6 HOUR RAINFALL 3.3 INCHES
BASIN AREA 8.3 ACRES
RUNOFF COEFFICIENT 0.56
PEAK DISCHARGE 29.4 CFS

TIME	(MIN)	=	0	DISCHARGE	(CFS)	=	0
TIME	(MIN)	=	8	DISCHARGE	(CFS)	=	0.9
TIME	(MIN)	=	16	DISCHARGE	(CFS)	=	0.9
TIME	(MIN)	=	24	DISCHARGE	(CFS)	=	1
TIME	(MIN)	=	32	DISCHARGE	(CFS)	=	1
TIME	(MIN)	=	40	DISCHARGE	(CFS)	=	1
TIME	(MIN)	=	48	DISCHARGE	(CFS)	=	1
TIME	(MIN)	=	56	DISCHARGE	(CFS)	=	1.1
TIME	(MIN)	=	64	DISCHARGE	(CFS)	=	1.1
TIME	(MIN)	=	72	DISCHARGE	(CFS)	=	1.1
TIME	(MIN)	=	80	DISCHARGE	(CFS)	=	1.1
TIME	(MIN)	=	88	DISCHARGE	(CFS)	=	1.2
TIME	(MIN)	=	96	DISCHARGE	(CFS)	=	1.2
TIME	(MIN)	=	104	DISCHARGE	(CFS)	=	1.3
TIME	(MIN)	=	112	DISCHARGE	(CFS)	=	1.3
TIME	(MIN)	=	120	DISCHARGE	(CFS)	=	1.4
TIME	(MIN)	=	128	DISCHARGE	(CFS)	=	1.4
TIME	(MIN)	=	136	DISCHARGE	(CFS)	=	1.5
TIME	(MIN)	=	144	DISCHARGE	(CFS)	=	1.6
TIME	(MIN)	=	152	DISCHARGE	(CFS)	=	1.7
TIME	(MIN)	=	160	DISCHARGE	(CFS)	=	1.7
TIME	(MIN)	=	168	DISCHARGE	(CFS)	=	1.9
TIME	(MIN)	=	176	DISCHARGE	(CFS)	=	2
TIME	(MIN)	=	184	DISCHARGE	(CFS)	=	2.2
TIME	(MIN)	=	192	DISCHARGE	(CFS)	=	2.3
TIME	(MIN)	=	200	DISCHARGE	(CFS)	=	2.7
TIME	(MIN)	=	208	DISCHARGE	(CFS)	=	2.9
TIME	(MIN)	=	216	DISCHARGE	(CFS)	=	3.5
TIME	(MIN)	=	224	DISCHARGE	(CFS)	=	4
TIME	(MIN)	=	232	DISCHARGE	(CFS)	=	5.9
TIME	(MIN)	=	240	DISCHARGE	(CFS)	=	8.8
TIME	(MIN)	=	248	DISCHARGE	(CFS)	=	29.4
TIME	(MIN)	=	256	DISCHARGE	(CFS)	=	4.7
TIME	(MIN)	=	264	DISCHARGE	(CFS)	=	3.2
TIME	(MIN)	=	272	DISCHARGE	(CFS)	=	2.5
TIME	(MIN)	=	280	DISCHARGE	(CFS)	=	2.1
TIME	(MIN)	=	288	DISCHARGE	(CFS)	=	1.8
TIME	(MIN)	=	296	DISCHARGE	(CFS)	=	1.6
TIME	(MIN)	=	304	DISCHARGE	(CFS)	=	1.5
TIME	(MIN)	=	312	DISCHARGE	(CFS)	=	1.3
TIME	(MIN)	=	320	DISCHARGE	(CFS)	=	1.2
TIME	(MIN)	=	328	DISCHARGE	(CFS)	=	1.2
TIME	(MIN)	=	336	DISCHARGE	(CFS)	=	1.1
TIME	(MIN)	=	344	DISCHARGE	(CFS)	=	1
TIME	(MIN)	=	352	DISCHARGE	(CFS)	=	1
TIME	(MIN)	=	360	DISCHARGE	(CFS)	=	0.9
TIME	(MIN)	=	368	DISCHARGE	(CFS)	=	0

3A



SECTION 3A-3A: BMP 3A
LINED BIOFILTRATION (PRIVATE)

NOT TO SCALE

N

SCALE:	1"=60'
JOB #:	4192.10
CREATED:	5/18/20

PREPARED BY:

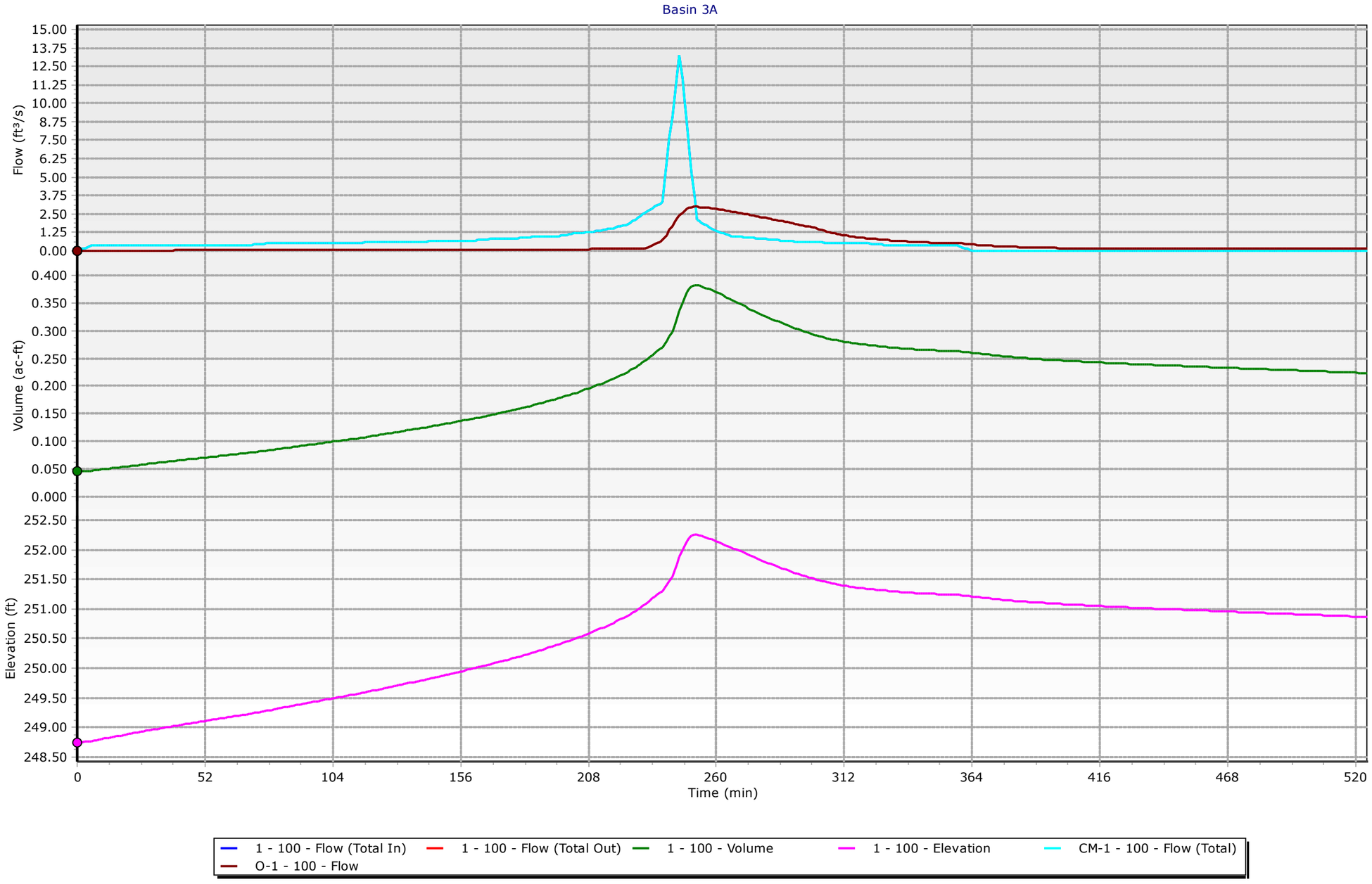
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COUNTY OF SAN DIEGO

OCEAN BREEZE RANCH

BASIN CROSS SECTIONS
EXHIBIT (4 OF 14)


Basin 3A
Flow (ft³/s)
15.00
13.75
12.50
11.25
10.00
8.75
7.50
6.25
5.00
3.75
2.50
1.25
0.00
Volume (ac-ft)
0.400
0.350
0.300
0.250
0.200
0.150
0.100
0.050
0.000
Elevation (ft)
252.50
252.00
251.50
251.00
250.50
250.00
249.50
249.00
248.50
0
52
104
156
208
260
312
364
416
468
520
Time (min)
1 - 100 - Flow (Total In)
1 - 100 - Flow (Total Out)
1 - 100 - Volume
1 - 100 - Elevation
CM-1 - 100 - Flow (Total)
O-1 - 100 - Flow

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RUN DATE 5/24/2024
HYDROGRAPH FILE NAME Basin 3A
TIME OF CONCENTRATION 7 MIN.
6 HOUR RAINFALL 3.3 INCHES
BASIN AREA 3 ACRES
RUNOFF COEFFICIENT 0.62
PEAK DISCHARGE 13.3 CFS

TIME	(MIN)	=	0	DISCHARGE (CFS)	=	0
TIME	(MIN)	=	7	DISCHARGE (CFS)	=	0.4
TIME	(MIN)	=	14	DISCHARGE (CFS)	=	0.4
TIME	(MIN)	=	21	DISCHARGE (CFS)	=	0.4
TIME	(MIN)	=	28	DISCHARGE (CFS)	=	0.4
TIME	(MIN)	=	35	DISCHARGE (CFS)	=	0.4
TIME	(MIN)	=	42	DISCHARGE (CFS)	=	0.4
TIME	(MIN)	=	49	DISCHARGE (CFS)	=	0.4
TIME	(MIN)	=	56	DISCHARGE (CFS)	=	0.4
TIME	(MIN)	=	63	DISCHARGE (CFS)	=	0.4
TIME	(MIN)	=	70	DISCHARGE (CFS)	=	0.4
TIME	(MIN)	=	77	DISCHARGE (CFS)	=	0.5
TIME	(MIN)	=	84	DISCHARGE (CFS)	=	0.5
TIME	(MIN)	=	91	DISCHARGE (CFS)	=	0.5
TIME	(MIN)	=	98	DISCHARGE (CFS)	=	0.5
TIME	(MIN)	=	105	DISCHARGE (CFS)	=	0.5
TIME	(MIN)	=	112	DISCHARGE (CFS)	=	0.5
TIME	(MIN)	=	119	DISCHARGE (CFS)	=	0.6
TIME	(MIN)	=	126	DISCHARGE (CFS)	=	0.6
TIME	(MIN)	=	133	DISCHARGE (CFS)	=	0.6
TIME	(MIN)	=	140	DISCHARGE (CFS)	=	0.6
TIME	(MIN)	=	147	DISCHARGE (CFS)	=	0.7
TIME	(MIN)	=	154	DISCHARGE (CFS)	=	0.7
TIME	(MIN)	=	161	DISCHARGE (CFS)	=	0.7
TIME	(MIN)	=	168	DISCHARGE (CFS)	=	0.8
TIME	(MIN)	=	175	DISCHARGE (CFS)	=	0.8
TIME	(MIN)	=	182	DISCHARGE (CFS)	=	0.9
TIME	(MIN)	=	189	DISCHARGE (CFS)	=	1
TIME	(MIN)	=	196	DISCHARGE (CFS)	=	1
TIME	(MIN)	=	203	DISCHARGE (CFS)	=	1.2
TIME	(MIN)	=	210	DISCHARGE (CFS)	=	1.3
TIME	(MIN)	=	217	DISCHARGE (CFS)	=	1.5
TIME	(MIN)	=	224	DISCHARGE (CFS)	=	1.8
TIME	(MIN)	=	231	DISCHARGE (CFS)	=	2.6
TIME	(MIN)	=	238	DISCHARGE (CFS)	=	3.3
TIME	(MIN)	=	245	DISCHARGE (CFS)	=	13.3
TIME	(MIN)	=	252	DISCHARGE (CFS)	=	2.1
TIME	(MIN)	=	259	DISCHARGE (CFS)	=	1.4
TIME	(MIN)	=	266	DISCHARGE (CFS)	=	1
TIME	(MIN)	=	273	DISCHARGE (CFS)	=	0.9
TIME	(MIN)	=	280	DISCHARGE (CFS)	=	0.8
TIME	(MIN)	=	287	DISCHARGE (CFS)	=	0.7
TIME	(MIN)	=	294	DISCHARGE (CFS)	=	0.6
TIME	(MIN)	=	301	DISCHARGE (CFS)	=	0.6
TIME	(MIN)	=	308	DISCHARGE (CFS)	=	0.5
TIME	(MIN)	=	315	DISCHARGE (CFS)	=	0.5
TIME	(MIN)	=	322	DISCHARGE (CFS)	=	0.5
TIME	(MIN)	=	329	DISCHARGE (CFS)	=	0.4
TIME	(MIN)	=	336	DISCHARGE (CFS)	=	0.4
TIME	(MIN)	=	343	DISCHARGE (CFS)	=	0.4
TIME	(MIN)	=	350	DISCHARGE (CFS)	=	0.4
TIME	(MIN)	=	357	DISCHARGE (CFS)	=	0.4
TIME	(MIN)	=	364	DISCHARGE (CFS)	=	0

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Basin 3A

Subsection: Master Network Summary

Catchments Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (min)	Peak Flow (ft^3/s)
CM-1	100	0	0.507	245	13.30

Node Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (min)	Peak Flow (ft^3/s)
O-1	100	0	0.330	251	2.99

Pond Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (min)	Peak Flow (ft^3/s)	Maximum Water Surface Elevation (ft)	Maximum Pond Storage (ac-ft)
1 (IN)	100	0	0.507	245	13.30	(N/A)	(N/A)
1 (OUT)	100	0	0.330	251	2.99	252.25	0.383

Basin 3A

Subsection: Read Hydrograph
Label: CM-1
Scenario: 100

Return Event: 100 years
Storm Event:

Peak Discharge	13.30 ft³/s
Time to Peak	245 min
Hydrograph Volume	0.507 ac-ft

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 7 min
Time on left represents time for first value in each row.

Time (min)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
0	0.00	0.40	0.40	0.40	0.40
35	0.40	0.40	0.40	0.40	0.40
70	0.40	0.50	0.50	0.50	0.50
105	0.50	0.50	0.60	0.60	0.60
140	0.60	0.70	0.70	0.70	0.80
175	0.80	0.90	1.00	1.00	1.20
210	1.30	1.50	1.80	2.60	3.30
245	13.30	2.10	1.40	1.00	0.90
280	0.80	0.70	0.60	0.60	0.50
315	0.50	0.50	0.40	0.40	0.40
350	0.40	0.40	0.00	(N/A)	(N/A)

Basin 3A

Subsection: Time vs. Volume
Label: 1
Scenario: 100

Return Event: 100 years
Storm Event:

Time vs. Volume (ac-ft)

Output Time increment = 1 min
Time on left represents time for first value in each row.

Time (min)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)
0	0.046	0.046	0.046	0.046	0.046
5	0.047	0.047	0.048	0.048	0.049
10	0.049	0.050	0.050	0.051	0.051
15	0.052	0.053	0.053	0.054	0.054
20	0.055	0.055	0.056	0.056	0.057
25	0.057	0.058	0.058	0.059	0.059
30	0.060	0.060	0.061	0.061	0.062
35	0.062	0.063	0.063	0.064	0.064
40	0.065	0.065	0.066	0.066	0.067
45	0.067	0.068	0.068	0.069	0.069
50	0.070	0.070	0.071	0.071	0.072
55	0.072	0.073	0.073	0.074	0.074
60	0.075	0.075	0.076	0.076	0.077
65	0.077	0.078	0.078	0.079	0.079
70	0.079	0.080	0.080	0.081	0.082
75	0.082	0.083	0.083	0.084	0.085
80	0.085	0.086	0.086	0.087	0.088
85	0.088	0.089	0.089	0.090	0.091
90	0.091	0.092	0.092	0.093	0.094
95	0.094	0.095	0.095	0.096	0.097
100	0.097	0.098	0.098	0.099	0.100
105	0.100	0.101	0.101	0.102	0.102
110	0.103	0.104	0.104	0.105	0.105
115	0.106	0.107	0.107	0.108	0.109
120	0.110	0.110	0.111	0.112	0.112
125	0.113	0.114	0.115	0.115	0.116
130	0.117	0.117	0.118	0.119	0.120
135	0.120	0.121	0.122	0.122	0.123
140	0.124	0.125	0.125	0.126	0.127
145	0.128	0.128	0.129	0.130	0.131
150	0.132	0.133	0.134	0.134	0.135
155	0.136	0.137	0.138	0.139	0.139
160	0.140	0.141	0.142	0.143	0.144
165	0.145	0.146	0.146	0.147	0.148
170	0.149	0.150	0.151	0.152	0.153
175	0.154	0.155	0.156	0.157	0.158
180	0.159	0.160	0.161	0.163	0.164
185	0.165	0.166	0.167	0.168	0.170
190	0.171	0.172	0.173	0.175	0.176
195	0.177	0.178	0.180	0.181	0.182

Basin 3A

Subsection: Time vs. Volume
Label: 1
Scenario: 100

Return Event: 100 years
Storm Event:

Time vs. Volume (ac-ft)

Output Time increment = 1 min
Time on left represents time for first value in each row.

Time (min)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)
200	0.183	0.185	0.186	0.188	0.189
205	0.191	0.192	0.194	0.196	0.197
210	0.199	0.200	0.202	0.204	0.206
215	0.207	0.209	0.211	0.213	0.215
220	0.217	0.219	0.221	0.224	0.226
225	0.228	0.231	0.234	0.236	0.239
230	0.243	0.246	0.249	0.253	0.256
235	0.260	0.263	0.267	0.270	0.275
240	0.281	0.289	0.298	0.309	0.321
245	0.336	0.349	0.361	0.370	0.376
250	0.381	0.383	0.383	0.381	0.380
255	0.379	0.377	0.375	0.373	0.371
260	0.369	0.367	0.365	0.363	0.361
265	0.358	0.356	0.354	0.352	0.349
270	0.347	0.345	0.343	0.341	0.339
275	0.336	0.334	0.332	0.330	0.328
280	0.326	0.324	0.322	0.320	0.319
285	0.317	0.315	0.313	0.311	0.309
290	0.308	0.306	0.304	0.303	0.301
295	0.300	0.298	0.297	0.295	0.294
300	0.292	0.291	0.290	0.289	0.287
305	0.286	0.285	0.284	0.283	0.282
310	0.282	0.281	0.280	0.279	0.279
315	0.278	0.277	0.277	0.276	0.275
320	0.275	0.274	0.274	0.273	0.273
325	0.272	0.272	0.272	0.271	0.271
330	0.270	0.270	0.269	0.269	0.269
335	0.268	0.268	0.268	0.267	0.267
340	0.267	0.266	0.266	0.266	0.265
345	0.265	0.265	0.265	0.265	0.264
350	0.264	0.264	0.264	0.264	0.263
355	0.263	0.263	0.263	0.263	0.262
360	0.262	0.262	0.261	0.261	0.260
365	0.260	0.259	0.258	0.258	0.257
370	0.257	0.256	0.256	0.255	0.255
375	0.255	0.254	0.254	0.253	0.253
380	0.252	0.252	0.252	0.251	0.251
385	0.251	0.250	0.250	0.250	0.249
390	0.249	0.249	0.248	0.248	0.248
395	0.248	0.247	0.247	0.247	0.247
400	0.246	0.246	0.246	0.246	0.245

Basin 3A

Subsection: Time vs. Volume
Label: 1
Scenario: 100

Return Event: 100 years
Storm Event:

Time vs. Volume (ac-ft)

Output Time increment = 1 min
Time on left represents time for first value in each row.

Time (min)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)
405	0.245	0.245	0.245	0.244	0.244
410	0.244	0.244	0.243	0.243	0.243
415	0.243	0.243	0.242	0.242	0.242
420	0.242	0.241	0.241	0.241	0.241
425	0.241	0.240	0.240	0.240	0.240
430	0.240	0.239	0.239	0.239	0.239
435	0.239	0.238	0.238	0.238	0.238
440	0.238	0.238	0.237	0.237	0.237
445	0.237	0.237	0.237	0.236	0.236
450	0.236	0.236	0.236	0.236	0.235
455	0.235	0.235	0.235	0.235	0.235
460	0.234	0.234	0.234	0.234	0.234
465	0.233	0.233	0.233	0.233	0.233
470	0.233	0.232	0.232	0.232	0.232
475	0.232	0.232	0.231	0.231	0.231
480	0.231	0.231	0.231	0.230	0.230
485	0.230	0.230	0.230	0.230	0.229
490	0.229	0.229	0.229	0.229	0.229
495	0.228	0.228	0.228	0.228	0.228
500	0.228	0.227	0.227	0.227	0.227
505	0.227	0.227	0.226	0.226	0.226
510	0.226	0.226	0.226	0.225	0.225
515	0.225	0.225	0.225	0.224	0.224
520	0.224	0.224	0.224	0.224	0.223
525	0.223	(N/A)	(N/A)	(N/A)	(N/A)

Basin 3A

Subsection: Elevation-Area Volume Curve
Return Event: 100 years
Label: 1
Storm Event:
Scenario: 100

Elevation (ft)	Planimeter (ft²)	Area (ft²)	A1+A2+sqr (A1*A2) (ft²)	Volume (ac-ft)	Volume (Total) (ac-ft)
248.00	0.0	2,422.000	0.000	0.000	0.000
250.00	0.0	3,800.000	9,255.744	0.142	0.142
254.00	0.0	7,234.000	16,277.014	0.498	0.640

Basin 3A

Subsection: Volume Equations
Label: 1
Scenario: 100

Return Event: 100 years
Storm Event:

Pond Volume Equations
* Incremental volume computed by the Conic Method for Reservoir Volumes.

Volume = (1/3) * (EL2 - El1) * (Area1 + Area2 + sqr(Area1 * Area2))

where:	EL1, EL2	Lower and upper elevations of the increment
	Area1, Area2	Areas computed for EL1, EL2, respectively
	Volume	Incremental volume between EL1 and EL2

Basin 3A

Subsection: Outlet Input Data
Label: Outlet#1
Scenario: 100

Return Event: 100 years
Storm Event:

Requested Pond Water Surface Elevations	
Minimum (Headwater)	248.00 ft
Increment (Headwater)	0.10 ft
Maximum (Headwater)	254.00 ft

Outlet Connectivity

Structure Type	Outlet ID	Direction	Outfall	E1 (ft)	E2 (ft)
Orifice-Circular	Orifice - HF	Forward	TW	251.00	254.00
Inlet Box	Riser - 1	Forward	TW	252.30	254.00
Orifice-Circular	Orifice - LF	Forward	TW	248.75	254.00
Tailwater Settings	Tailwater			(N/A)	(N/A)

Basin 3A

Subsection: Outlet Input Data
Label: Outlet#1
Scenario: 100

Return Event: 100 years
Storm Event:

Structure ID: Orifice - LF Structure Type: Orifice-Circular	
Number of Openings	1
Elevation	248.75 ft
Orifice Diameter	1.8 in
Orifice Coefficient	0.600

Structure ID: Riser - 1 Structure Type: Inlet Box	
Number of Openings	1
Elevation	252.30 ft
Orifice Area	4.7 ft²
Orifice Coefficient	0.600
Weir Length	9.20 ft
Weir Coefficient	3.00 (ft^0.5)/s
K Reverse	1.000
Manning's n	0.000
Kev, Charged Riser	0.000
Weir Submergence	False
Orifice H to crest	True

Structure ID: Orifice - HF Structure Type: Orifice-Circular	
Number of Openings	3
Elevation	251.00 ft
Orifice Diameter	6.0 in
Orifice Coefficient	0.600

Structure ID: TW Structure Type: TW Setup, DS Channel	
Tailwater Type	Free Outfall

Convergence Tolerances	
Maximum Iterations	80
Tailwater Tolerance (Minimum)	0.01 ft
Tailwater Tolerance (Maximum)	0.10 ft
Headwater Tolerance (Minimum)	0.01 ft
Headwater Tolerance (Maximum)	0.10 ft
Flow Tolerance (Minimum)	0.001 ft³/s

Basin 3A

Subsection: Outlet Input Data
Label: Outlet#1
Scenario: 100

Return Event: 100 years
Storm Event:

Convergence Tolerances	
Flow Tolerance (Maximum)	10.000 ft³/s

Basin 3A

Subsection: Composite Rating Curve
Label: Outlet#1
Scenario: 100

Return Event: 100 years
Storm Event:

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft^3/s)	Tailwater Elevation (ft)	Convergence Error (ft)
248.00	0.00	(N/A)	0.00
248.10	0.00	(N/A)	0.00
248.20	0.00	(N/A)	0.00
248.30	0.00	(N/A)	0.00
248.40	0.00	(N/A)	0.00
248.50	0.00	(N/A)	0.00
248.60	0.00	(N/A)	0.00
248.70	0.00	(N/A)	0.00
248.75	0.00	(N/A)	0.00
248.80	0.00	(N/A)	0.00
248.90	0.02	(N/A)	0.00
249.00	0.04	(N/A)	0.00
249.10	0.04	(N/A)	0.00
249.20	0.05	(N/A)	0.00
249.30	0.06	(N/A)	0.00
249.40	0.06	(N/A)	0.00
249.50	0.07	(N/A)	0.00
249.60	0.07	(N/A)	0.00
249.70	0.08	(N/A)	0.00
249.80	0.08	(N/A)	0.00
249.90	0.09	(N/A)	0.00
250.00	0.09	(N/A)	0.00
250.10	0.10	(N/A)	0.00
250.20	0.10	(N/A)	0.00
250.30	0.10	(N/A)	0.00
250.40	0.11	(N/A)	0.00
250.50	0.11	(N/A)	0.00
250.60	0.11	(N/A)	0.00
250.70	0.12	(N/A)	0.00
250.80	0.12	(N/A)	0.00
250.90	0.12	(N/A)	0.00
251.00	0.13	(N/A)	0.00
251.10	0.20	(N/A)	0.00
251.20	0.40	(N/A)	0.00
251.30	0.70	(N/A)	0.00
251.40	1.08	(N/A)	0.00
251.50	1.56	(N/A)	0.00
251.60	1.82	(N/A)	0.00
251.70	2.05	(N/A)	0.00
251.80	2.25	(N/A)	0.00
251.90	2.43	(N/A)	0.00
252.00	2.61	(N/A)	0.00

Basin 3A

Subsection: Composite Rating Curve
Label: Outlet#1
Scenario: 100

Return Event: 100 years
Storm Event:

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft^3/s)	Tailwater Elevation (ft)	Convergence Error (ft)
252.10	2.77	(N/A)	0.00
252.20	2.92	(N/A)	0.00
252.30	3.06	(N/A)	0.00
252.40	4.07	(N/A)	0.00
252.50	5.80	(N/A)	0.00
252.60	7.99	(N/A)	0.00
252.70	10.56	(N/A)	0.00
252.80	13.46	(N/A)	0.00
252.90	16.64	(N/A)	0.00
253.00	20.09	(N/A)	0.00
253.10	23.78	(N/A)	0.00
253.20	25.60	(N/A)	0.00
253.30	26.86	(N/A)	0.00
253.40	28.06	(N/A)	0.00
253.50	29.22	(N/A)	0.00
253.60	30.32	(N/A)	0.00
253.70	31.39	(N/A)	0.00
253.80	32.42	(N/A)	0.00
253.90	33.42	(N/A)	0.00
254.00	34.39	(N/A)	0.00

Contributing Structures
None Contributing
None Contributing
None Contributing
None Contributing
None Contributing
None Contributing
None Contributing
None Contributing
None Contributing
Orifice - LF
Orifice - LF
Orifice - LF
Orifice - LF
Orifice - LF
Orifice - LF
Orifice - LF
Orifice - LF
Orifice - LF
Orifice - LF
Orifice - LF

Basin 3A

Subsection: Composite Rating Curve
Label: Outlet#1
Scenario: 100

Return Event: 100 years
Storm Event:

Composite Outflow Summary

Contributing Structures
Orifice - LF
Orifice - LF
Orifice - LF
Orifice - LF
Orifice - LF
Orifice - LF
Orifice - LF
Orifice - LF
Orifice - LF
Orifice - LF
Orifice - LF
Orifice - HF + Orifice - LF
Orifice - HF + Orifice - LF
Orifice - HF + Orifice - LF
Orifice - HF + Orifice - LF
Orifice - HF + Orifice - LF
Orifice - HF + Orifice - LF
Orifice - HF + Orifice - LF
Orifice - HF + Orifice - LF
Orifice - HF + Orifice - LF
Orifice - HF + Orifice - LF
Orifice - HF + Orifice - LF
Orifice - HF + Orifice - LF
Orifice - HF + Riser - 1 + Orifice - LF
Orifice - HF + Riser - 1 + Orifice - LF
Orifice - HF + Riser - 1 + Orifice - LF
Orifice - HF + Riser - 1 + Orifice - LF
Orifice - HF + Riser - 1 + Orifice - LF
Orifice - HF + Riser - 1 + Orifice - LF
Orifice - HF + Riser - 1 + Orifice - LF
Orifice - HF + Riser - 1 + Orifice - LF
Orifice - HF + Riser - 1 + Orifice - LF
Orifice - HF + Riser - 1 + Orifice - LF
Orifice - HF + Riser - 1 + Orifice - LF

Basin 3A

Subsection: Composite Rating Curve
Label: Outlet#1
Scenario: 100

Return Event: 100 years
Storm Event:

Composite Outflow Summary

Contributing Structures
Orifice - HF + Riser - 1 + Orifice - LF
Orifice - HF + Riser - 1 + Orifice - LF
Orifice - HF + Riser - 1 + Orifice - LF
Orifice - HF + Riser - 1 + Orifice - LF
Orifice - HF + Riser - 1 + Orifice - LF
Orifice - HF + Riser - 1 + Orifice - LF
Orifice - HF + Riser - 1 + Orifice - LF

Basin 3A

Subsection: Elevation-Volume-Flow Table (Pond)
Label: 1
Scenario: 100

Return Event: 100 years
Storm Event:

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions	
Elevation (Water Surface, Initial)	248.75 ft
Volume (Initial)	0.046 ac-ft
Flow (Initial Outlet)	0.00 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.00 ft³/s
Time Increment	1 min

Elevation (ft)	Outflow (ft³/s)	Storage (ac-ft)	Area (ft²)	Infiltration (ft³/s)	Flow (Total) (ft³/s)	2S/t + O (ft³/s)
248.00	0.00	0.000	2,422.000	0.00	0.00	0.00
248.10	0.00	0.006	2,483.561	0.00	0.00	8.18
248.20	0.00	0.011	2,545.894	0.00	0.00	16.56
248.30	0.00	0.017	2,609.000	0.00	0.00	25.15
248.40	0.00	0.023	2,672.878	0.00	0.00	33.95
248.50	0.00	0.030	2,737.529	0.00	0.00	42.97
248.60	0.00	0.036	2,802.952	0.00	0.00	52.20
248.70	0.00	0.042	2,869.148	0.00	0.00	61.66
248.75	0.00	0.046	2,902.536	0.00	0.00	66.47
248.80	0.00	0.049	2,936.117	0.00	0.00	71.33
248.90	0.02	0.056	3,003.858	0.00	0.02	81.25
249.00	0.04	0.063	3,072.372	0.00	0.04	91.39
249.10	0.04	0.070	3,141.658	0.00	0.04	101.76
249.20	0.05	0.077	3,211.717	0.00	0.05	112.36
249.30	0.06	0.085	3,282.548	0.00	0.06	123.19
249.40	0.06	0.092	3,354.152	0.00	0.06	134.25
249.50	0.07	0.100	3,426.529	0.00	0.07	145.56
249.60	0.07	0.108	3,499.678	0.00	0.07	157.11
249.70	0.08	0.116	3,573.600	0.00	0.08	168.90
249.80	0.08	0.125	3,648.294	0.00	0.08	180.94
249.90	0.09	0.133	3,723.761	0.00	0.09	193.23
250.00	0.09	0.142	3,800.000	0.00	0.09	205.78
250.10	0.10	0.150	3,872.493	0.00	0.10	218.57
250.20	0.10	0.159	3,945.671	0.00	0.10	231.60
250.30	0.10	0.169	4,019.534	0.00	0.10	244.88
250.40	0.11	0.178	4,094.083	0.00	0.11	258.40
250.50	0.11	0.187	4,169.316	0.00	0.11	272.18
250.60	0.11	0.197	4,245.234	0.00	0.11	286.21
250.70	0.12	0.207	4,321.837	0.00	0.12	300.49

Basin 3A

Subsection: Elevation-Volume-Flow Table (Pond) Return Event: 100 years
Label: 1 Storm Event:
Scenario: 100

Elevation (ft)	Outflow (ft³/s)	Storage (ac-ft)	Area (ft²)	Infiltration (ft³/s)	Flow (Total) (ft³/s)	2S/t + O (ft³/s)
250.80	0.12	0.217	4,399.125	0.00	0.12	315.03
250.90	0.12	0.227	4,477.098	0.00	0.12	329.82
251.00	0.13	0.237	4,555.755	0.00	0.13	344.88
251.10	0.20	0.248	4,635.098	0.00	0.20	360.27
251.20	0.40	0.259	4,715.126	0.00	0.40	376.05
251.30	0.70	0.270	4,795.839	0.00	0.70	392.21
251.40	1.08	0.281	4,877.237	0.00	1.08	408.71
251.50	1.56	0.292	4,959.319	0.00	1.56	425.58
251.60	1.82	0.304	5,042.087	0.00	1.82	442.51
251.70	2.05	0.315	5,125.540	0.00	2.05	459.68
251.80	2.25	0.327	5,209.677	0.00	2.25	477.11
251.90	2.43	0.339	5,294.500	0.00	2.43	494.81
252.00	2.61	0.351	5,380.007	0.00	2.61	512.77
252.10	2.77	0.364	5,466.200	0.00	2.77	531.01
252.20	2.92	0.376	5,553.077	0.00	2.92	549.52
252.30	3.06	0.389	5,640.640	0.00	3.06	568.32
252.40	4.07	0.402	5,728.887	0.00	4.07	588.28
252.50	5.80	0.416	5,817.819	0.00	5.80	609.25
252.60	7.99	0.429	5,907.437	0.00	7.99	630.99
252.70	10.56	0.443	5,997.739	0.00	10.56	653.40
252.80	13.46	0.457	6,088.726	0.00	13.46	676.44
252.90	16.64	0.471	6,180.398	0.00	16.64	700.07
253.00	20.09	0.485	6,272.755	0.00	20.09	724.27
253.10	23.78	0.499	6,365.798	0.00	23.78	749.03
253.20	25.60	0.514	6,459.525	0.00	25.60	772.22
253.30	26.86	0.529	6,553.937	0.00	26.86	795.17
253.40	28.06	0.544	6,649.034	0.00	28.06	818.38
253.50	29.22	0.560	6,744.816	0.00	29.22	841.86
253.60	30.32	0.575	6,841.283	0.00	30.32	865.61
253.70	31.39	0.591	6,938.434	0.00	31.39	889.64
253.80	32.42	0.607	7,036.271	0.00	32.42	913.96
253.90	33.42	0.623	7,134.793	0.00	33.42	938.58
254.00	34.39	0.640	7,234.000	0.00	34.39	963.50

Basin 3A

Subsection: Level Pool Pond Routing Summary
Label: 1 (IN)
Scenario: 100

Return Event: 100 years
Storm Event:

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions	
Elevation (Water Surface, Initial)	248.75 ft
Volume (Initial)	0.046 ac-ft
Flow (Initial Outlet)	0.00 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.00 ft³/s
Time Increment	1 min

Inflow/Outflow Hydrograph Summary			
Flow (Peak In)	13.30 ft³/s	Time to Peak (Flow, In)	245 min
Flow (Peak Outlet)	2.99 ft³/s	Time to Peak (Flow, Outlet)	251 min

Elevation (Water Surface, Peak)	252.25 ft
Volume (Peak)	0.383 ac-ft

Mass Balance (ac-ft)	
Volume (Initial)	0.046 ac-ft
Volume (Total Inflow)	0.507 ac-ft
Volume (Total Infiltration)	0.000 ac-ft
Volume (Total Outlet Outflow)	0.330 ac-ft
Volume (Retained)	0.223 ac-ft
Volume (Unrouted)	0.000 ac-ft
Error (Mass Balance)	0.0 %

Basin 3A

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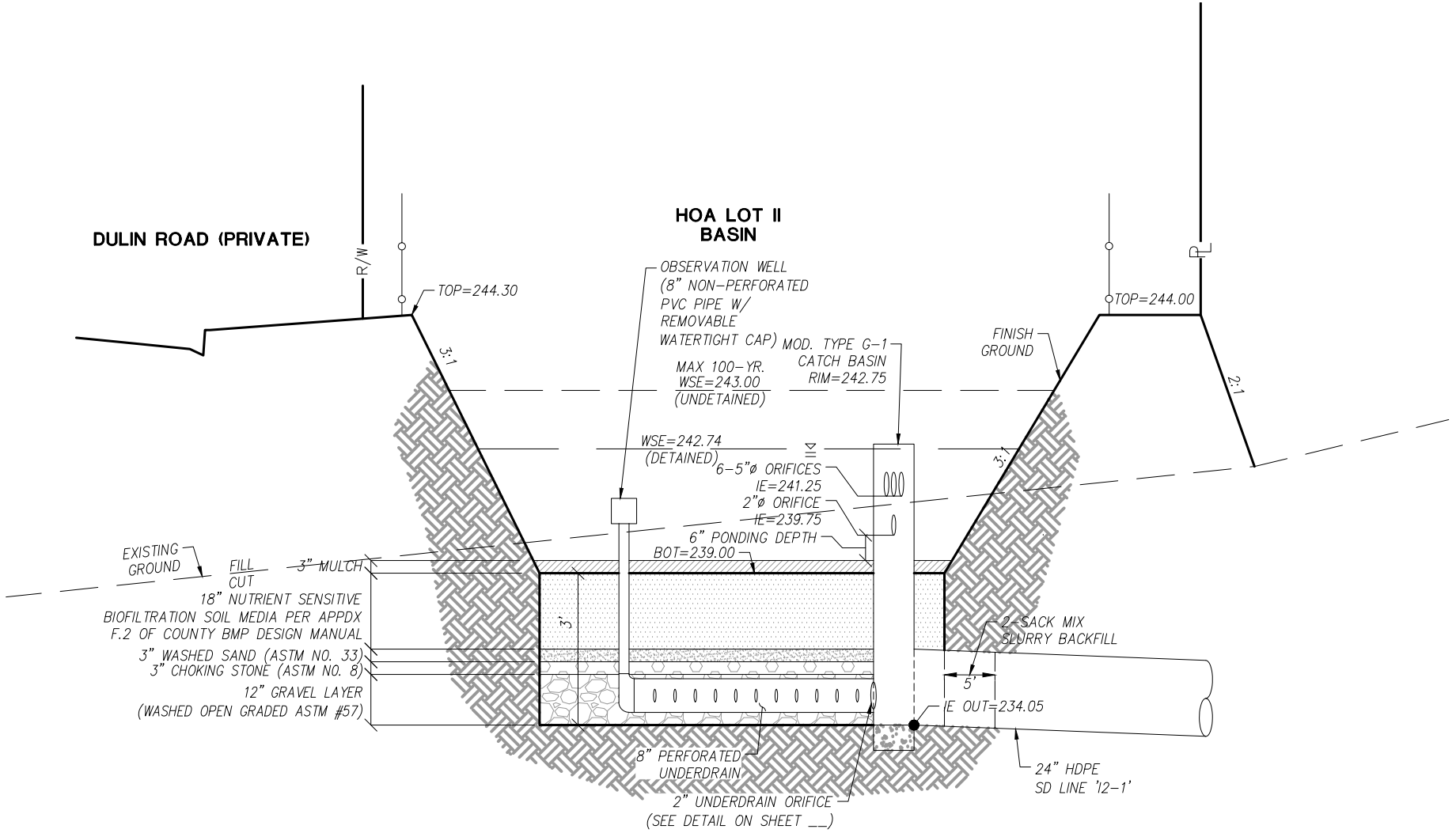
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3C



SECTION 3C-3C: BMP 3C BIOFILTRATION W/ PARTIAL INFILTRATION (PRIVATE)

NOT TO SCALE

N

SCALE:	1"=60'
JOB #:	4192.10
CREATED:	5/18/20

PREPARED BY:

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COUNTY OF SAN DIEGO

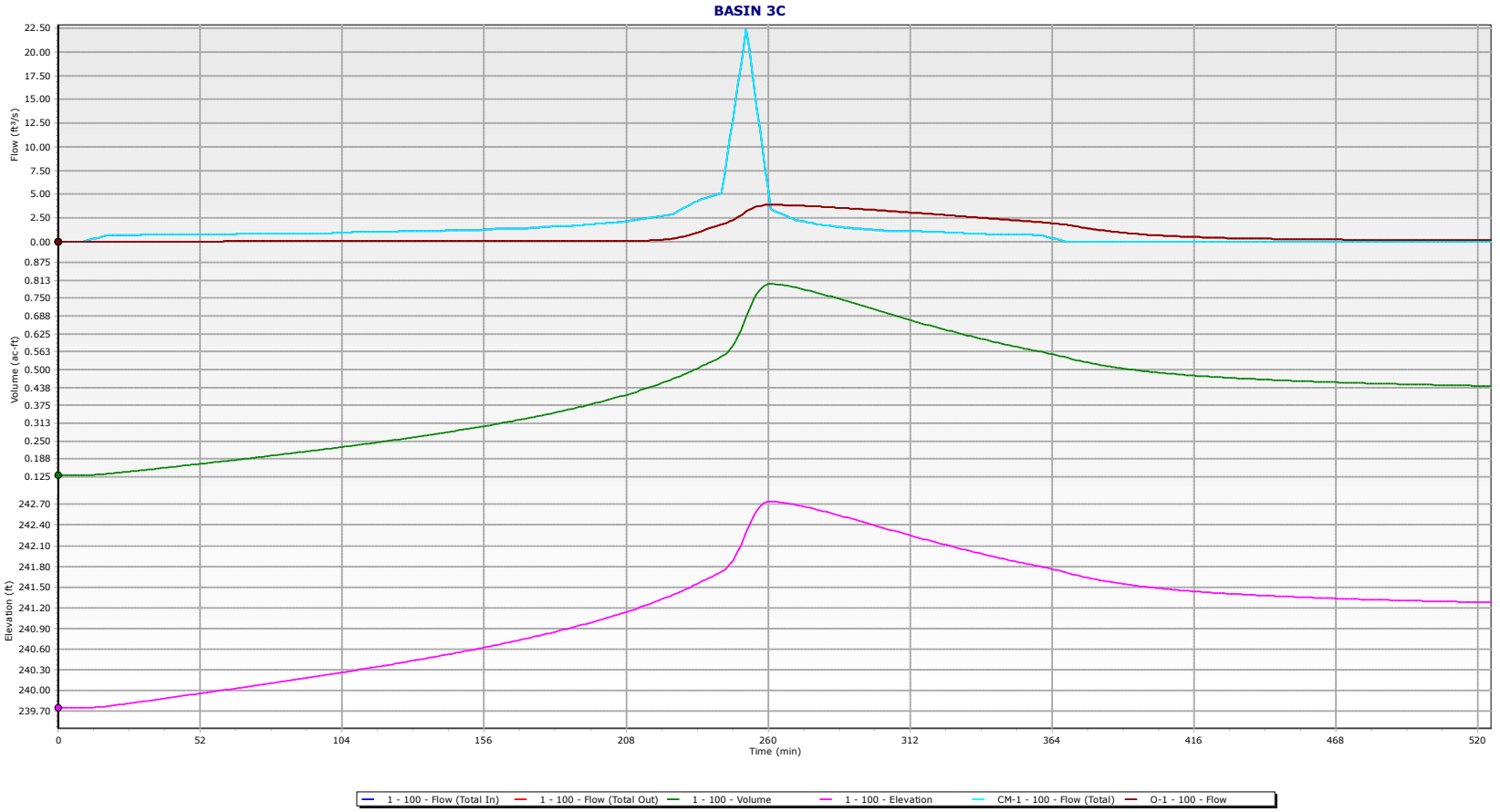
OCEAN BREEZE RANCH

BASIN CROSS SECTIONS
EXHIBIT (6 OF 14)

RATIONAL METHOD HYDROGRAPH PROGRAM
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RUN DATE 9/25/2024
HYDROGRAPH FILE NAME Basin 3C
TIME OF CONCENTRATION 9 MIN.
6 HOUR RAINFALL 3.3 INCHES
BASIN AREA 8.8 ACRES
RUNOFF COEFFICIENT 0.41
PEAK DISCHARGE 22.4 CFS

TIME	(MIN)	=	0	DISCHARGE	(CFS)	=	0
TIME	(MIN)	=	9	DISCHARGE	(CFS)	=	0
TIME	(MIN)	=	18	DISCHARGE	(CFS)	=	0.7
TIME	(MIN)	=	27	DISCHARGE	(CFS)	=	0.7
TIME	(MIN)	=	36	DISCHARGE	(CFS)	=	0.8
TIME	(MIN)	=	45	DISCHARGE	(CFS)	=	0.8
TIME	(MIN)	=	54	DISCHARGE	(CFS)	=	0.8
TIME	(MIN)	=	63	DISCHARGE	(CFS)	=	0.8
TIME	(MIN)	=	72	DISCHARGE	(CFS)	=	0.9
TIME	(MIN)	=	81	DISCHARGE	(CFS)	=	0.9
TIME	(MIN)	=	90	DISCHARGE	(CFS)	=	0.9
TIME	(MIN)	=	99	DISCHARGE	(CFS)	=	0.9
TIME	(MIN)	=	108	DISCHARGE	(CFS)	=	1
TIME	(MIN)	=	117	DISCHARGE	(CFS)	=	1
TIME	(MIN)	=	126	DISCHARGE	(CFS)	=	1.1
TIME	(MIN)	=	135	DISCHARGE	(CFS)	=	1.1
TIME	(MIN)	=	144	DISCHARGE	(CFS)	=	1.2
TIME	(MIN)	=	153	DISCHARGE	(CFS)	=	1.2
TIME	(MIN)	=	162	DISCHARGE	(CFS)	=	1.4
TIME	(MIN)	=	171	DISCHARGE	(CFS)	=	1.4
TIME	(MIN)	=	180	DISCHARGE	(CFS)	=	1.6
TIME	(MIN)	=	189	DISCHARGE	(CFS)	=	1.7
TIME	(MIN)	=	198	DISCHARGE	(CFS)	=	1.9
TIME	(MIN)	=	207	DISCHARGE	(CFS)	=	2.1
TIME	(MIN)	=	216	DISCHARGE	(CFS)	=	2.5
TIME	(MIN)	=	225	DISCHARGE	(CFS)	=	2.9
TIME	(MIN)	=	234	DISCHARGE	(CFS)	=	4.3
TIME	(MIN)	=	243	DISCHARGE	(CFS)	=	5.1
TIME	(MIN)	=	252	DISCHARGE	(CFS)	=	22.4
TIME	(MIN)	=	261	DISCHARGE	(CFS)	=	3.4
TIME	(MIN)	=	270	DISCHARGE	(CFS)	=	2.3
TIME	(MIN)	=	279	DISCHARGE	(CFS)	=	1.8
TIME	(MIN)	=	288	DISCHARGE	(CFS)	=	1.5
TIME	(MIN)	=	297	DISCHARGE	(CFS)	=	1.3
TIME	(MIN)	=	306	DISCHARGE	(CFS)	=	1.1
TIME	(MIN)	=	315	DISCHARGE	(CFS)	=	1.1
TIME	(MIN)	=	324	DISCHARGE	(CFS)	=	1
TIME	(MIN)	=	333	DISCHARGE	(CFS)	=	0.9
TIME	(MIN)	=	342	DISCHARGE	(CFS)	=	0.8
TIME	(MIN)	=	351	DISCHARGE	(CFS)	=	0.8
TIME	(MIN)	=	360	DISCHARGE	(CFS)	=	0.7
TIME	(MIN)	=	369	DISCHARGE	(CFS)	=	0


BASIN 3C
Flow (ft³/s)
22.50
20.00
17.50
15.00
12.50
10.00
7.50
5.00
2.50
0.00
Volume (ac-ft)
0.875
0.813
0.750
0.688
0.625
0.563
0.500
0.438
0.375
0.313
0.250
0.188
0.125
Elevation (ft)
242.70
242.40
242.10
241.80
241.50
241.20
240.90
240.60
240.30
240.00
239.70
0
52
104
156
208
260
312
364
416
468
520
Time (min)
1 - 100 - Flow (Total In)
1 - 100 - Flow (Total Out)
1 - 100 - Volume
1 - 100 - Elevation
CM-1 - 100 - Flow (Total)
O-1 - 100 - Flow

Basin 3C

Project Summary	
Title	Basin 3C
Engineer	PDC
Company	PDC
Date	10/24/2024

Notes

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1 (IN)		
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Basin 3C

Subsection: Master Network Summary

Catchments Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (min)	Peak Flow (ft^3/s)
CM-1	100	0	0.977	252	22.40

Node Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (min)	Peak Flow (ft^3/s)
O-1	100	0	0.666	261	3.90

Pond Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (min)	Peak Flow (ft^3/s)	Maximum Water Surface Elevation (ft)	Maximum Pond Storage (ac-ft)
1 (IN)	100	0	0.977	252	22.40	(N/A)	(N/A)
1 (OUT)	100	0	0.666	261	3.90	242.74	0.800

Basin 3C

Subsection: Read Hydrograph
Label: CM-1
Scenario: 100

Return Event: 100 years
Storm Event:

Peak Discharge	22.40 ft³/s
Time to Peak	252 min
Hydrograph Volume	0.977 ac-ft

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 9 min
Time on left represents time for first value in each row.

Time (min)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
0	0.00	0.00	0.70	0.70	0.80
45	0.80	0.80	0.80	0.90	0.90
90	0.90	0.90	1.00	1.00	1.10
135	1.10	1.20	1.20	1.40	1.40
180	1.60	1.70	1.90	2.10	2.50
225	2.90	4.30	5.10	22.40	3.40
270	2.30	1.80	1.50	1.30	1.10
315	1.10	1.00	0.90	0.80	0.80
360	0.70	0.00	(N/A)	(N/A)	(N/A)

Basin 3C

Subsection: Time vs. Volume
Label: 1
Scenario: 100

Return Event: 100 years
Storm Event:

Time vs. Volume (ac-ft)

Output Time increment = 1 min
Time on left represents time for first value in each row.

Time (min)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)
0	0.131	0.131	0.131	0.131	0.131
5	0.131	0.131	0.131	0.131	0.131
10	0.131	0.132	0.132	0.132	0.133
15	0.133	0.134	0.135	0.136	0.137
20	0.138	0.139	0.139	0.140	0.141
25	0.142	0.143	0.144	0.145	0.146
30	0.147	0.148	0.149	0.150	0.151
35	0.152	0.153	0.154	0.156	0.157
40	0.158	0.159	0.160	0.161	0.162
45	0.163	0.164	0.165	0.166	0.167
50	0.168	0.169	0.170	0.171	0.173
55	0.174	0.175	0.176	0.177	0.178
60	0.179	0.180	0.181	0.182	0.183
65	0.184	0.185	0.186	0.187	0.188
70	0.190	0.191	0.192	0.193	0.194
75	0.195	0.197	0.198	0.199	0.200
80	0.201	0.202	0.204	0.205	0.206
85	0.207	0.208	0.209	0.210	0.212
90	0.213	0.214	0.215	0.216	0.217
95	0.219	0.220	0.221	0.222	0.223
100	0.224	0.225	0.227	0.228	0.229
105	0.230	0.232	0.233	0.234	0.235
110	0.237	0.238	0.239	0.240	0.242
115	0.243	0.244	0.246	0.247	0.248
120	0.249	0.251	0.252	0.253	0.255
125	0.256	0.258	0.259	0.260	0.262
130	0.263	0.265	0.266	0.267	0.269
135	0.270	0.272	0.273	0.275	0.276
140	0.277	0.279	0.280	0.282	0.283
145	0.285	0.287	0.288	0.290	0.291
150	0.293	0.294	0.296	0.297	0.299
155	0.300	0.302	0.304	0.305	0.307
160	0.309	0.310	0.312	0.314	0.316
165	0.318	0.319	0.321	0.323	0.325
170	0.326	0.328	0.330	0.332	0.334
175	0.336	0.338	0.340	0.342	0.344
180	0.346	0.348	0.350	0.352	0.354
185	0.356	0.358	0.360	0.363	0.365
190	0.367	0.369	0.371	0.374	0.376
195	0.378	0.381	0.383	0.386	0.388

Basin 3C

Subsection: Time vs. Volume
Label: 1
Scenario: 100

Return Event: 100 years
Storm Event:

Time vs. Volume (ac-ft)

Output Time increment = 1 min
Time on left represents time for first value in each row.

Time (min)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)
200	0.391	0.393	0.396	0.398	0.401
205	0.404	0.406	0.409	0.412	0.415
210	0.417	0.420	0.423	0.426	0.430
215	0.433	0.436	0.439	0.443	0.446
220	0.449	0.453	0.456	0.460	0.463
225	0.467	0.471	0.474	0.478	0.482
230	0.486	0.491	0.495	0.500	0.504
235	0.509	0.513	0.518	0.522	0.527
240	0.531	0.536	0.540	0.545	0.551
245	0.559	0.570	0.583	0.599	0.617
250	0.637	0.660	0.685	0.710	0.732
255	0.751	0.766	0.779	0.789	0.795
260	0.799	0.800	0.799	0.798	0.797
265	0.796	0.794	0.793	0.791	0.789
270	0.787	0.785	0.783	0.781	0.778
275	0.776	0.774	0.771	0.769	0.766
280	0.763	0.761	0.758	0.755	0.753
285	0.750	0.747	0.744	0.741	0.739
290	0.736	0.733	0.730	0.727	0.724
295	0.722	0.719	0.716	0.713	0.710
300	0.707	0.704	0.701	0.699	0.696
305	0.693	0.690	0.687	0.684	0.681
310	0.678	0.676	0.673	0.670	0.668
315	0.665	0.662	0.660	0.657	0.654
320	0.652	0.649	0.647	0.644	0.642
325	0.639	0.637	0.634	0.632	0.629
330	0.627	0.624	0.622	0.620	0.617
335	0.615	0.612	0.610	0.608	0.605
340	0.603	0.601	0.599	0.596	0.594
345	0.592	0.590	0.588	0.585	0.583
350	0.581	0.579	0.577	0.575	0.573
355	0.572	0.570	0.568	0.566	0.564
360	0.562	0.560	0.558	0.556	0.554
365	0.552	0.550	0.547	0.545	0.543
370	0.540	0.538	0.535	0.533	0.531
375	0.529	0.527	0.525	0.523	0.521
380	0.519	0.517	0.516	0.514	0.512
385	0.511	0.509	0.508	0.506	0.505
390	0.504	0.502	0.501	0.500	0.499
395	0.498	0.496	0.495	0.494	0.493
400	0.492	0.491	0.490	0.489	0.488

Basin 3C

Subsection: Time vs. Volume
Label: 1
Scenario: 100

Return Event: 100 years
Storm Event:

Time vs. Volume (ac-ft)

Output Time increment = 1 min
Time on left represents time for first value in each row.

Time (min)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)
405	0.488	0.487	0.486	0.485	0.484
410	0.483	0.483	0.482	0.481	0.480
415	0.480	0.479	0.478	0.478	0.477
420	0.476	0.476	0.475	0.474	0.474
425	0.473	0.473	0.472	0.472	0.471
430	0.471	0.470	0.470	0.469	0.469
435	0.468	0.468	0.467	0.467	0.466
440	0.466	0.466	0.465	0.465	0.464
445	0.464	0.463	0.463	0.463	0.462
450	0.462	0.461	0.461	0.461	0.460
455	0.460	0.460	0.459	0.459	0.458
460	0.458	0.458	0.457	0.457	0.457
465	0.456	0.456	0.456	0.456	0.455
470	0.455	0.455	0.454	0.454	0.454
475	0.453	0.453	0.453	0.453	0.452
480	0.452	0.452	0.452	0.451	0.451
485	0.451	0.451	0.450	0.450	0.450
490	0.450	0.449	0.449	0.449	0.449
495	0.448	0.448	0.448	0.448	0.448
500	0.447	0.447	0.447	0.447	0.447
505	0.446	0.446	0.446	0.446	0.446
510	0.445	0.445	0.445	0.445	0.444
515	0.444	0.444	0.444	0.444	0.444
520	0.443	0.443	0.443	0.443	0.443
525	0.442	(N/A)	(N/A)	(N/A)	(N/A)

Basin 3C

Subsection: Elevation-Area Volume Curve
Label: 1
Scenario: 100

Return Event: 100 years
Storm Event:

Elevation (ft)	Planimeter (ft²)	Area (ft²)	A1+A2+sqr (A1*A2) (ft²)	Volume (ac-ft)	Volume (Total) (ac-ft)
239.00	0.0	7,232.000	0.000	0.000	0.000
240.00	0.0	8,302.000	23,282.552	0.178	0.178
241.00	0.0	9,429.000	26,578.574	0.203	0.382
242.00	0.0	10,613.000	30,045.498	0.230	0.611
243.00	0.0	11,853.000	33,681.877	0.258	0.869
244.00	0.0	13,157.000	37,497.991	0.287	1.156

Basin 3C

Subsection: Volume Equations
Label: 1
Scenario: 100

Return Event: 100 years
Storm Event:

Pond Volume Equations
* Incremental volume computed by the Conic Method for Reservoir Volumes.

Volume = (1/3) * (EL2 - El1) * (Area1 + Area2 + sqr(Area1 * Area2))

where:	EL1, EL2	Lower and upper elevations of the increment
	Area1, Area2	Areas computed for EL1, EL2, respectively
	Volume	Incremental volume between EL1 and EL2

Basin 3C

Subsection: Outlet Input Data
Label: Outlet#1
Scenario: 100

Return Event: 100 years
Storm Event:

Requested Pond Water Surface Elevations	
Minimum (Headwater)	239.00 ft
Increment (Headwater)	0.10 ft
Maximum (Headwater)	244.00 ft

Outlet Connectivity

Structure Type	Outlet ID	Direction	Outfall	E1 (ft)	E2 (ft)
Orifice-Circular	Orifice - HF	Forward	TW	241.25	244.00
Inlet Box	Riser - 1	Forward	TW	242.75	244.00
Orifice-Circular	Orifice - LF	Forward	TW	239.75	244.00
Tailwater Settings	Tailwater			(N/A)	(N/A)

Basin 3C

Subsection: Outlet Input Data
Label: Outlet#1
Scenario: 100

Return Event: 100 years
Storm Event:

Structure ID: Orifice - LF Structure Type: Orifice-Circular	
Number of Openings	1
Elevation	239.75 ft
Orifice Diameter	2.0 in
Orifice Coefficient	0.600

Structure ID: Riser - 1 Structure Type: Inlet Box	
Number of Openings	1
Elevation	242.75 ft
Orifice Area	4.7 ft²
Orifice Coefficient	0.600
Weir Length	9.20 ft
Weir Coefficient	3.00 (ft^0.5)/s
K Reverse	1.000
Manning's n	0.000
Kev, Charged Riser	0.000
Weir Submergence	False
Orifice H to crest	True

Structure ID: Orifice - HF Structure Type: Orifice-Circular	
Number of Openings	5
Elevation	241.25 ft
Orifice Diameter	5.0 in
Orifice Coefficient	0.600

Structure ID: TW Structure Type: TW Setup, DS Channel	
Tailwater Type	Free Outfall

Convergence Tolerances	
Maximum Iterations	80
Tailwater Tolerance (Minimum)	0.01 ft
Tailwater Tolerance (Maximum)	0.10 ft
Headwater Tolerance (Minimum)	0.01 ft
Headwater Tolerance (Maximum)	0.10 ft
Flow Tolerance (Minimum)	0.001 ft³/s

Basin 3C

Subsection: Outlet Input Data
Label: Outlet#1
Scenario: 100

Return Event: 100 years
Storm Event:

Convergence Tolerances	
Flow Tolerance (Maximum)	10.000 ft³/s

Basin 3C

Subsection: Composite Rating Curve
Label: Outlet#1
Scenario: 100

Return Event: 100 years
Storm Event:

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft^3/s)	Tailwater Elevation (ft)	Convergence Error (ft)
239.00	0.00	(N/A)	0.00
239.10	0.00	(N/A)	0.00
239.20	0.00	(N/A)	0.00
239.30	0.00	(N/A)	0.00
239.40	0.00	(N/A)	0.00
239.50	0.00	(N/A)	0.00
239.60	0.00	(N/A)	0.00
239.70	0.00	(N/A)	0.00
239.75	0.00	(N/A)	0.00
239.80	0.00	(N/A)	0.00
239.90	0.02	(N/A)	0.00
240.00	0.04	(N/A)	0.00
240.10	0.05	(N/A)	0.00
240.20	0.06	(N/A)	0.00
240.30	0.07	(N/A)	0.00
240.40	0.08	(N/A)	0.00
240.50	0.09	(N/A)	0.00
240.60	0.09	(N/A)	0.00
240.70	0.10	(N/A)	0.00
240.80	0.10	(N/A)	0.00
240.90	0.11	(N/A)	0.00
241.00	0.11	(N/A)	0.00
241.10	0.12	(N/A)	0.00
241.20	0.12	(N/A)	0.00
241.25	0.12	(N/A)	0.00
241.30	0.15	(N/A)	0.00
241.40	0.36	(N/A)	0.00
241.50	0.73	(N/A)	0.00
241.60	1.23	(N/A)	0.00
241.70	1.76	(N/A)	0.00
241.80	2.07	(N/A)	0.00
241.90	2.33	(N/A)	0.00
242.00	2.57	(N/A)	0.00
242.10	2.79	(N/A)	0.00
242.20	2.99	(N/A)	0.00
242.30	3.18	(N/A)	0.00
242.40	3.35	(N/A)	0.00
242.50	3.52	(N/A)	0.00
242.60	3.68	(N/A)	0.00
242.70	3.83	(N/A)	0.00
242.75	3.91	(N/A)	0.00
242.80	4.29	(N/A)	0.00

Basin 3C

Subsection: Composite Rating Curve
Label: Outlet#1
Scenario: 100

Return Event: 100 years
Storm Event:

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft^3/s)	Tailwater Elevation (ft)	Convergence Error (ft)
242.90	5.73	(N/A)	0.00
243.00	7.71	(N/A)	0.00
243.10	10.11	(N/A)	0.00
243.20	12.85	(N/A)	0.00
243.30	15.91	(N/A)	0.00
243.40	19.23	(N/A)	0.00
243.50	22.82	(N/A)	0.00
243.60	25.86	(N/A)	0.00
243.70	27.17	(N/A)	0.00
243.80	28.41	(N/A)	0.00
243.90	29.60	(N/A)	0.00
244.00	30.74	(N/A)	0.00

Contributing Structures
None Contributing
None Contributing
None Contributing
None Contributing
None Contributing
None Contributing
None Contributing
None Contributing
None Contributing
Orifice - LF
Orifice - LF
Orifice - LF
Orifice - LF
Orifice - LF
Orifice - LF
Orifice - LF
Orifice - LF
Orifice - LF
Orifice - LF
Orifice - LF
Orifice - LF
Orifice - LF
Orifice - LF
Orifice - LF
Orifice - LF
Orifice - LF
Orifice - HF + Orifice - LF
Orifice - HF + Orifice - LF
Orifice - HF + Orifice - LF
Orifice - HF + Orifice - LF

Basin 3C

Subsection: Composite Rating Curve
Label: Outlet#1
Scenario: 100

Return Event: 100 years
Storm Event:

Composite Outflow Summary

Contributing Structures
Orifice - HF + Orifice - LF
Orifice - HF + Orifice - LF
Orifice - HF + Orifice - LF
Orifice - HF + Orifice - LF
Orifice - HF + Orifice - LF
Orifice - HF + Orifice - LF
Orifice - HF + Orifice - LF
Orifice - HF + Orifice - LF
Orifice - HF + Orifice - LF
Orifice - HF + Orifice - LF
Orifice - HF + Orifice - LF
Orifice - HF + Riser - 1 + Orifice - LF
Orifice - HF + Riser - 1 + Orifice - LF
Orifice - HF + Riser - 1 + Orifice - LF
Orifice - HF + Riser - 1 + Orifice - LF
Orifice - HF + Riser - 1 + Orifice - LF
Orifice - HF + Riser - 1 + Orifice - LF
Orifice - HF + Riser - 1 + Orifice - LF
Orifice - HF + Riser - 1 + Orifice - LF
Orifice - HF + Riser - 1 + Orifice - LF
Orifice - HF + Riser - 1 + Orifice - LF
Orifice - HF + Riser - 1 + Orifice - LF
Orifice - HF + Riser - 1 + Orifice - LF
Orifice - HF + Riser - 1 + Orifice - LF
Orifice - HF + Riser - 1 + Orifice - LF

Basin 3C

Subsection: Elevation-Volume-Flow Table (Pond)
Label: 1
Scenario: 100

Return Event: 100 years
Storm Event:

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions	
Elevation (Water Surface, Initial)	239.75 ft
Volume (Initial)	0.131 ac-ft
Flow (Initial Outlet)	0.00 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.00 ft³/s
Time Increment	1 min

Elevation (ft)	Outflow (ft³/s)	Storage (ac-ft)	Area (ft²)	Infiltration (ft³/s)	Flow (Total) (ft³/s)	2S/t + O (ft³/s)
239.00	0.00	0.000	7,232.000	0.00	0.00	0.00
239.10	0.00	0.017	7,335.679	0.00	0.00	24.28
239.20	0.00	0.034	7,440.097	0.00	0.00	48.91
239.30	0.00	0.051	7,545.252	0.00	0.00	73.88
239.40	0.00	0.068	7,651.145	0.00	0.00	99.21
239.50	0.00	0.086	7,757.776	0.00	0.00	124.89
239.60	0.00	0.104	7,865.145	0.00	0.00	150.93
239.70	0.00	0.122	7,973.252	0.00	0.00	177.32
239.75	0.00	0.131	8,027.582	0.00	0.00	190.66
239.80	0.00	0.141	8,082.097	0.00	0.00	204.09
239.90	0.02	0.159	8,191.679	0.00	0.02	231.23
240.00	0.04	0.178	8,302.000	0.00	0.04	258.74
240.10	0.05	0.197	8,411.473	0.00	0.05	286.60
240.20	0.06	0.217	8,521.664	0.00	0.06	314.84
240.30	0.07	0.236	8,632.571	0.00	0.07	343.43
240.40	0.08	0.256	8,744.195	0.00	0.08	372.40
240.50	0.09	0.277	8,856.537	0.00	0.09	401.74
240.60	0.09	0.297	8,969.595	0.00	0.09	431.46
240.70	0.10	0.318	9,083.371	0.00	0.10	461.55
240.80	0.10	0.339	9,197.864	0.00	0.10	492.03
240.90	0.11	0.360	9,313.073	0.00	0.11	522.88
241.00	0.11	0.382	9,429.000	0.00	0.11	554.13
241.10	0.12	0.403	9,544.250	0.00	0.12	585.75
241.20	0.12	0.425	9,660.199	0.00	0.12	617.76
241.25	0.12	0.436	9,718.437	0.00	0.12	633.92
241.30	0.15	0.448	9,776.849	0.00	0.15	650.19
241.40	0.36	0.470	9,894.199	0.00	0.36	683.18
241.50	0.73	0.493	10,012.249	0.00	0.73	716.73
241.60	1.23	0.516	10,130.999	0.00	1.23	750.80

Basin 3C

Subsection: Elevation-Volume-Flow Table (Pond) Return Event: 100 years
Label: 1 Storm Event:
Scenario: 100

Elevation (ft)	Outflow (ft^3/s)	Storage (ac-ft)	Area (ft^2)	Infiltration (ft^3/s)	Flow (Total) (ft^3/s)	2S/t + O (ft^3/s)
241.70	1.76	0.540	10,250.449	0.00	1.76	785.30
241.80	2.07	0.563	10,370.599	0.00	2.07	819.97
241.90	2.33	0.587	10,491.450	0.00	2.33	855.01
242.00	2.57	0.611	10,613.000	0.00	2.57	890.42
242.10	2.79	0.636	10,733.918	0.00	2.79	926.22
242.20	2.99	0.661	10,855.521	0.00	2.99	962.40
242.30	3.18	0.686	10,977.808	0.00	3.18	998.98
242.40	3.35	0.711	11,100.781	0.00	3.35	1,035.95
242.50	3.52	0.737	11,224.438	0.00	3.52	1,073.33
242.60	3.68	0.763	11,348.781	0.00	3.68	1,111.11
242.70	3.83	0.789	11,473.808	0.00	3.83	1,149.30
242.75	3.91	0.802	11,536.579	0.00	3.91	1,168.55
242.80	4.29	0.815	11,599.521	0.00	4.29	1,188.21
242.90	5.73	0.842	11,725.918	0.00	5.73	1,228.52
243.00	7.71	0.869	11,853.000	0.00	7.71	1,269.81
243.10	10.11	0.897	11,980.338	0.00	10.11	1,311.93
243.20	12.85	0.924	12,108.357	0.00	12.85	1,354.82
243.30	15.91	0.952	12,237.056	0.00	15.91	1,398.45
243.40	19.23	0.980	12,366.436	0.00	19.23	1,442.78
243.50	22.82	1.009	12,496.496	0.00	22.82	1,487.80
243.60	25.86	1.038	12,627.236	0.00	25.86	1,532.72
243.70	27.17	1.067	12,758.656	0.00	27.17	1,576.33
243.80	28.41	1.096	12,890.757	0.00	28.41	1,620.32
243.90	29.60	1.126	13,023.538	0.00	29.60	1,664.70
244.00	30.74	1.156	13,157.000	0.00	30.74	1,709.48

Basin 3C

Subsection: Level Pool Pond Routing Summary
Label: 1 (IN)
Scenario: 100

Return Event: 100 years
Storm Event:

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions	
Elevation (Water Surface, Initial)	239.75 ft
Volume (Initial)	0.131 ac-ft
Flow (Initial Outlet)	0.00 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.00 ft³/s
Time Increment	1 min

Inflow/Outflow Hydrograph Summary			
Flow (Peak In)	22.40 ft³/s	Time to Peak (Flow, In)	252 min
Flow (Peak Outlet)	3.90 ft³/s	Time to Peak (Flow, Outlet)	261 min

Elevation (Water Surface, Peak)	242.74 ft
Volume (Peak)	0.800 ac-ft

Mass Balance (ac-ft)	
Volume (Initial)	0.131 ac-ft
Volume (Total Inflow)	0.977 ac-ft
Volume (Total Infiltration)	0.000 ac-ft
Volume (Total Outlet Outflow)	0.666 ac-ft
Volume (Retained)	0.442 ac-ft
Volume (Unrouted)	0.000 ac-ft
Error (Mass Balance)	0.0 %

Basin 3C

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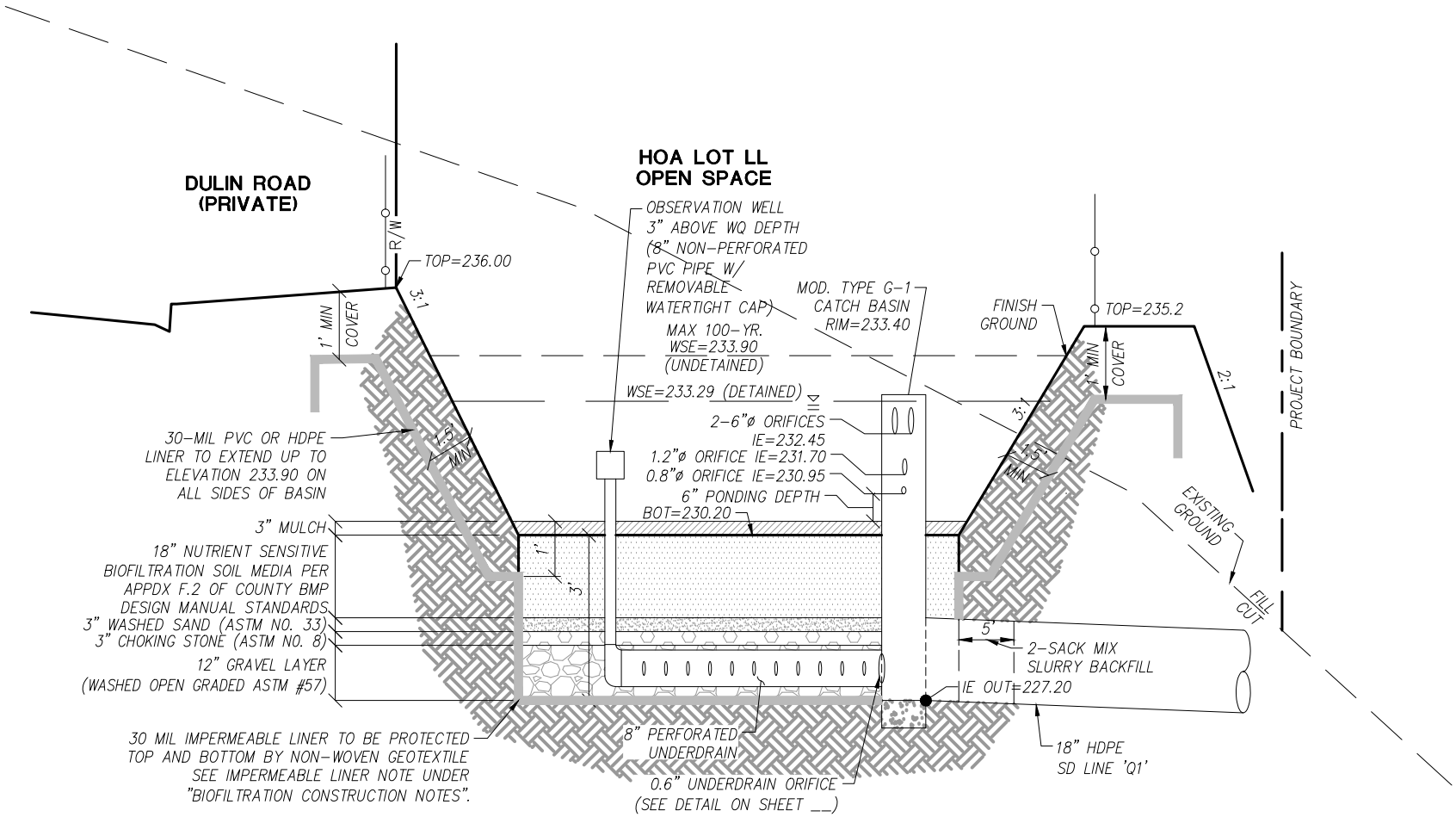
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3D



SECTION 3E-3E: BMP 3E
LINED BIOFILTRATION (PRIVATE)

NOT TO SCALE

N

SCALE:	1"=60'
JOB #:	4192.10
CREATED:	5/18/20

PREPARED BY:

PROJECT DESIGN CONSULTANTS
Planning | Landscape Architecture | Engineering | Survey

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COUNTY OF SAN DIEGO

OCEAN BREEZE RANCH

BASIN CROSS SECTIONS
EXHIBIT (8 OF 14)

RATIONAL METHOD HYDROGRAPH PROGRAM
COPYRIGHT 1992, 2001 RICK ENGINEERING COMPANY

RUN DATE 6/3/2024
HYDROGRAPH FILE NAME Basin 3D
TIME OF CONCENTRATION 10 MIN.
6 HOUR RAINFALL 3.3 INCHES
BASIN AREA 15.8 ACRES
RUNOFF COEFFICIENT 0.58
PEAK DISCHARGE 46.2 CFS

TIME	(MIN)	=	0	DISCHARGE	(CFS)	=	0
TIME	(MIN)	=	10	DISCHARGE	(CFS)	=	1.8
TIME	(MIN)	=	20	DISCHARGE	(CFS)	=	1.8
TIME	(MIN)	=	30	DISCHARGE	(CFS)	=	1.9
TIME	(MIN)	=	40	DISCHARGE	(CFS)	=	2
TIME	(MIN)	=	50	DISCHARGE	(CFS)	=	2
TIME	(MIN)	=	60	DISCHARGE	(CFS)	=	2.1
TIME	(MIN)	=	70	DISCHARGE	(CFS)	=	2.2
TIME	(MIN)	=	80	DISCHARGE	(CFS)	=	2.2
TIME	(MIN)	=	90	DISCHARGE	(CFS)	=	2.4
TIME	(MIN)	=	100	DISCHARGE	(CFS)	=	2.4
TIME	(MIN)	=	110	DISCHARGE	(CFS)	=	2.6
TIME	(MIN)	=	120	DISCHARGE	(CFS)	=	2.7
TIME	(MIN)	=	130	DISCHARGE	(CFS)	=	2.9
TIME	(MIN)	=	140	DISCHARGE	(CFS)	=	3
TIME	(MIN)	=	150	DISCHARGE	(CFS)	=	3.2
TIME	(MIN)	=	160	DISCHARGE	(CFS)	=	3.4
TIME	(MIN)	=	170	DISCHARGE	(CFS)	=	3.7
TIME	(MIN)	=	180	DISCHARGE	(CFS)	=	4
TIME	(MIN)	=	190	DISCHARGE	(CFS)	=	4.6
TIME	(MIN)	=	200	DISCHARGE	(CFS)	=	4.9
TIME	(MIN)	=	210	DISCHARGE	(CFS)	=	6
TIME	(MIN)	=	220	DISCHARGE	(CFS)	=	6.9
TIME	(MIN)	=	230	DISCHARGE	(CFS)	=	10.1
TIME	(MIN)	=	240	DISCHARGE	(CFS)	=	19
TIME	(MIN)	=	250	DISCHARGE	(CFS)	=	46.2
TIME	(MIN)	=	260	DISCHARGE	(CFS)	=	8.1
TIME	(MIN)	=	270	DISCHARGE	(CFS)	=	5.4
TIME	(MIN)	=	280	DISCHARGE	(CFS)	=	4.2
TIME	(MIN)	=	290	DISCHARGE	(CFS)	=	3.5
TIME	(MIN)	=	300	DISCHARGE	(CFS)	=	3.1
TIME	(MIN)	=	310	DISCHARGE	(CFS)	=	2.8
TIME	(MIN)	=	320	DISCHARGE	(CFS)	=	2.5
TIME	(MIN)	=	330	DISCHARGE	(CFS)	=	2.3
TIME	(MIN)	=	340	DISCHARGE	(CFS)	=	2.1
TIME	(MIN)	=	350	DISCHARGE	(CFS)	=	2
TIME	(MIN)	=	360	DISCHARGE	(CFS)	=	1.9
TIME	(MIN)	=	370	DISCHARGE	(CFS)	=	0

Basin 3D

Project Summary	
Title	Basin 3D
Engineer	PDC
Company	PDC
Date	10/24/2024

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Basin 3D

Subsection: Master Network Summary

Catchments Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (min)	Peak Flow (ft^3/s)
CM-1	100	0	2.506	250	46.20

Node Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (min)	Peak Flow (ft^3/s)
O-1	100	0	2.106	257	19.55

Pond Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (min)	Peak Flow (ft^3/s)	Maximum Water Surface Elevation (ft)	Maximum Pond Storage (ac-ft)
1 (IN)	100	0	2.506	250	46.20	(N/A)	(N/A)
1 (OUT)	100	0	2.106	257	19.55	227.68	1.305

Basin 3D

Subsection: Read Hydrograph
Label: CM-1
Scenario: 100

Return Event: 0 years
Storm Event:

Peak Discharge	46.20 ft³/s
Time to Peak	250 min
Hydrograph Volume	2.506 ac-ft

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 10 min
Time on left represents time for first value in each row.

Time (min)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
0	0.00	1.80	1.80	1.90	2.00
50	2.00	2.10	2.20	2.20	2.40
100	2.40	2.60	2.70	2.90	3.00
150	3.20	3.40	3.70	4.00	4.60
200	4.90	6.00	6.90	10.10	19.00
250	46.20	8.10	5.40	4.20	3.50
300	3.10	2.80	2.50	2.30	2.10
350	2.00	1.90	0.00	(N/A)	(N/A)

Basin 3D

Subsection: Time vs. Volume
Label: 1
Scenario: 100

Return Event: 0 years
Storm Event:

Time vs. Volume (ac-ft)

Output Time increment = 1 min
Time on left represents time for first value in each row.

Time (min)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)
0	0.274	0.274	0.274	0.275	0.276
5	0.277	0.278	0.280	0.282	0.284
10	0.286	0.289	0.291	0.294	0.296
15	0.299	0.301	0.303	0.306	0.308
20	0.311	0.313	0.316	0.318	0.321
25	0.323	0.326	0.328	0.331	0.333
30	0.336	0.338	0.341	0.344	0.346
35	0.349	0.351	0.354	0.357	0.359
40	0.362	0.365	0.367	0.370	0.372
45	0.375	0.378	0.380	0.383	0.385
50	0.388	0.391	0.393	0.396	0.399
55	0.401	0.404	0.406	0.409	0.412
60	0.414	0.417	0.420	0.423	0.425
65	0.428	0.431	0.433	0.436	0.439
70	0.442	0.445	0.447	0.450	0.453
75	0.456	0.459	0.461	0.464	0.467
80	0.470	0.472	0.475	0.478	0.481
85	0.484	0.487	0.490	0.493	0.496
90	0.499	0.502	0.505	0.508	0.511
95	0.514	0.517	0.520	0.523	0.526
100	0.529	0.532	0.535	0.538	0.541
105	0.544	0.547	0.550	0.553	0.556
110	0.560	0.563	0.566	0.570	0.573
115	0.576	0.579	0.583	0.586	0.589
120	0.593	0.596	0.599	0.603	0.606
125	0.610	0.613	0.617	0.620	0.624
130	0.628	0.631	0.635	0.638	0.642
135	0.646	0.649	0.653	0.657	0.661
140	0.664	0.668	0.672	0.676	0.679
145	0.683	0.687	0.691	0.695	0.699
150	0.703	0.707	0.711	0.715	0.719
155	0.723	0.727	0.731	0.735	0.739
160	0.743	0.746	0.749	0.752	0.754
165	0.756	0.759	0.761	0.762	0.764
170	0.766	0.767	0.769	0.770	0.771
175	0.772	0.774	0.775	0.776	0.776
180	0.777	0.778	0.779	0.780	0.781
185	0.782	0.783	0.783	0.784	0.785
190	0.786	0.787	0.788	0.788	0.789
195	0.790	0.791	0.791	0.792	0.792

Basin 3D

Subsection: Time vs. Volume
Label: 1
Scenario: 100

Return Event: 0 years
Storm Event:

Time vs. Volume (ac-ft)

Output Time increment = 1 min
Time on left represents time for first value in each row.

Time (min)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)
200	0.793	0.794	0.794	0.795	0.796
205	0.797	0.798	0.799	0.800	0.801
210	0.803	0.804	0.805	0.806	0.808
215	0.809	0.810	0.811	0.813	0.814
220	0.815	0.816	0.818	0.820	0.822
225	0.825	0.827	0.830	0.833	0.836
230	0.840	0.843	0.848	0.853	0.860
235	0.866	0.874	0.882	0.891	0.901
240	0.911	0.923	0.939	0.958	0.979
245	1.004	1.031	1.062	1.095	1.130
250	1.169	1.206	1.237	1.262	1.281
255	1.294	1.302	1.305	1.302	1.294
260	1.282	1.266	1.251	1.236	1.220
265	1.205	1.190	1.174	1.159	1.144
270	1.129	1.114	1.099	1.084	1.070
275	1.056	1.042	1.029	1.015	1.002
280	0.989	0.977	0.965	0.953	0.942
285	0.931	0.920	0.909	0.899	0.890
290	0.881	0.872	0.864	0.856	0.849
295	0.842	0.836	0.831	0.826	0.821
300	0.817	0.813	0.809	0.806	0.803
305	0.800	0.797	0.795	0.793	0.790
310	0.789	0.787	0.785	0.783	0.782
315	0.781	0.779	0.778	0.777	0.776
320	0.775	0.774	0.773	0.772	0.772
325	0.771	0.770	0.769	0.769	0.768
330	0.768	0.767	0.767	0.766	0.766
335	0.765	0.765	0.764	0.764	0.763
340	0.763	0.763	0.762	0.762	0.762
345	0.761	0.761	0.761	0.761	0.760
350	0.760	0.760	0.760	0.759	0.759
355	0.759	0.759	0.759	0.758	0.758
360	0.758	0.758	0.757	0.756	0.756
365	0.754	0.753	0.752	0.750	0.749
370	0.747	0.745	0.744	0.743	0.741
375	0.740	0.739	0.738	0.737	0.737
380	0.736	0.735	0.735	0.734	0.734
385	0.733	0.733	0.732	0.732	0.731
390	0.731	0.731	0.730	0.730	0.729
395	0.729	0.728	0.728	0.727	0.727
400	0.727	0.726	0.726	0.725	0.725

Basin 3D

Subsection: Time vs. Volume
Label: 1
Scenario: 100

Return Event: 0 years
Storm Event:

Time vs. Volume (ac-ft)

Output Time increment = 1 min
Time on left represents time for first value in each row.

Time (min)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)
405	0.724	0.724	0.723	0.723	0.723
410	0.722	0.722	0.721	0.721	0.720
415	0.720	0.720	0.719	0.719	0.718
420	0.718	0.717	0.717	0.716	0.716
425	0.716	0.715	0.715	0.714	0.714
430	0.713	0.713	0.713	0.712	0.712
435	0.711	0.711	0.710	0.710	0.710
440	0.709	0.709	0.708	0.708	0.707
445	0.707	0.707	0.706	0.706	0.705
450	0.705	0.704	0.704	0.704	0.703
455	0.703	0.702	0.702	0.701	0.701
460	0.701	0.700	0.700	0.699	0.699
465	0.698	0.698	0.698	0.697	0.697
470	0.696	0.696	0.695	0.695	0.695
475	0.694	0.694	0.693	0.693	0.693
480	0.692	0.692	0.691	0.691	0.690
485	0.690	0.690	0.689	0.689	0.688
490	0.688	0.687	0.687	0.687	0.686
495	0.686	0.685	0.685	0.685	0.684
500	0.684	0.683	0.683	0.682	0.682
505	0.682	0.681	0.681	0.680	0.680
510	0.680	0.679	0.679	0.678	0.678
515	0.677	0.677	0.677	0.676	0.676
520	0.675	0.675	0.675	0.674	0.674
525	0.673	(N/A)	(N/A)	(N/A)	(N/A)

Basin 3D

Subsection: Elevation-Area Volume Curve
Label: 1
Scenario: 100

Return Event: 0 years
Storm Event:

Elevation (ft)	Planimeter (ft²)	Area (ft²)	A1+A2+sqr (A1*A2) (ft²)	Volume (ac-ft)	Volume (Total) (ac-ft)
224.50	0.0	15,326.000	0.000	0.000	0.000
225.00	0.0	16,097.000	47,129.770	0.180	0.180
226.00	0.0	17,694.000	50,667.620	0.388	0.568
227.00	0.0	19,348.000	55,544.527	0.425	0.993
228.00	0.0	21,059.000	60,592.379	0.464	1.457
229.00	0.0	22,826.000	65,809.706	0.504	1.960
229.50	0.0	23,731.000	69,831.102	0.267	2.228

Basin 3D

Subsection: Volume Equations
Label: 1
Scenario: 100

Return Event: 0 years
Storm Event:

Pond Volume Equations
* Incremental volume computed by the Conic Method for Reservoir Volumes.

Volume = (1/3) * (EL2 - El1) * (Area1 + Area2 + sqr(Area1 * Area2))

where:	EL1, EL2	Lower and upper elevations of the increment
	Area1, Area2	Areas computed for EL1, EL2, respectively
	Volume	Incremental volume between EL1 and EL2

Basin 3D

Subsection: Outlet Input Data
Label: Outlet#1
Scenario: 100

Return Event: 0 years
Storm Event:

Requested Pond Water Surface Elevations	
Minimum (Headwater)	224.50 ft
Increment (Headwater)	0.10 ft
Maximum (Headwater)	229.50 ft

Outlet Connectivity

Structure Type	Outlet ID	Direction	Outfall	E1 (ft)	E2 (ft)
Inlet Box	Riser - 1	Forward	TW	227.70	229.50
Orifice-Circular	Orifice - 1	Forward	TW	225.25	229.50
Inlet Box	Emergency Riser - 1	Forward	TW	227.90	229.50
Orifice-Area	Orifice - 2A	Forward	TW	226.40	229.50
Tailwater Settings	Tailwater			(N/A)	(N/A)

Basin 3D

Subsection: Outlet Input Data
Label: Outlet#1
Scenario: 100

Return Event: 0 years
Storm Event:

Structure ID: Riser - 1 Structure Type: Inlet Box	
Number of Openings	1
Elevation	227.70 ft
Orifice Area	16.0 ft²
Orifice Coefficient	0.600
Weir Length	16.00 ft
Weir Coefficient	3.00 (ft^0.5)/s
K Reverse	1.000
Manning's n	0.000
Kev, Charged Riser	0.000
Weir Submergence	False
Orifice H to crest	True

Structure ID: Orifice - 1 Structure Type: Orifice-Circular	
Number of Openings	1
Elevation	225.25 ft
Orifice Diameter	3.5 in
Orifice Coefficient	0.600

Structure ID: Orifice - 2A Structure Type: Orifice-Area	
Number of Openings	5
Elevation	226.40 ft
Orifice Area	0.7 ft²
Top Elevation	226.73 ft
Datum Elevation	226.40 ft
Orifice Coefficient	0.600

Structure ID: Emergency Riser - 1 Structure Type: Inlet Box	
Number of Openings	1
Elevation	227.90 ft
Orifice Area	16.0 ft²
Orifice Coefficient	0.600
Weir Length	16.00 ft
Weir Coefficient	3.00 (ft^0.5)/s
K Reverse	1.000
Manning's n	0.000
Kev, Charged Riser	0.000
Weir Submergence	False

Basin 3D

Subsection: Outlet Input Data
Label: Outlet#1
Scenario: 100

Return Event: 0 years
Storm Event:

Structure ID: Emergency Riser - 1 Structure Type: Inlet Box	
Orifice H to crest	True

Structure ID: TW Structure Type: TW Setup, DS Channel	
Tailwater Type	Free Outfall

Convergence Tolerances	
Maximum Iterations	80
Tailwater Tolerance (Minimum)	0.01 ft
Tailwater Tolerance (Maximum)	0.10 ft
Headwater Tolerance (Minimum)	0.01 ft
Headwater Tolerance (Maximum)	0.10 ft
Flow Tolerance (Minimum)	0.001 ft³/s
Flow Tolerance (Maximum)	10.000 ft³/s

Basin 3D

Subsection: Composite Rating Curve
Label: Outlet#1
Scenario: 100

Return Event: 0 years
Storm Event:

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft^3/s)	Tailwater Elevation (ft)	Convergence Error (ft)
224.50	0.00	(N/A)	0.00
224.60	0.00	(N/A)	0.00
224.70	0.00	(N/A)	0.00
224.80	0.00	(N/A)	0.00
224.90	0.00	(N/A)	0.00
225.00	0.00	(N/A)	0.00
225.10	0.00	(N/A)	0.00
225.20	0.00	(N/A)	0.00
225.25	0.00	(N/A)	0.00
225.30	0.00	(N/A)	0.00
225.40	0.04	(N/A)	0.00
225.50	0.09	(N/A)	0.00
225.60	0.15	(N/A)	0.00
225.70	0.18	(N/A)	0.00
225.80	0.20	(N/A)	0.00
225.90	0.23	(N/A)	0.00
226.00	0.25	(N/A)	0.00
226.10	0.27	(N/A)	0.00
226.20	0.29	(N/A)	0.00
226.30	0.31	(N/A)	0.00
226.40	0.32	(N/A)	0.00
226.50	3.27	(N/A)	0.00
226.60	6.22	(N/A)	0.00
226.70	9.16	(N/A)	0.00
226.80	11.04	(N/A)	0.00
226.90	12.31	(N/A)	0.00
227.00	13.46	(N/A)	0.00
227.10	14.51	(N/A)	0.00
227.20	15.50	(N/A)	0.00
227.30	16.42	(N/A)	0.00
227.40	17.30	(N/A)	0.00
227.50	18.13	(N/A)	0.00
227.60	18.93	(N/A)	0.00
227.70	19.70	(N/A)	0.00
227.80	21.95	(N/A)	0.00
227.90	25.43	(N/A)	0.00
228.00	31.23	(N/A)	0.00
228.10	38.93	(N/A)	0.00
228.20	48.00	(N/A)	0.00
228.30	58.22	(N/A)	0.00
228.40	69.46	(N/A)	0.00
228.50	81.63	(N/A)	0.00

Basin 3D

Subsection: Composite Rating Curve
Label: Outlet#1
Scenario: 100

Return Event: 0 years
Storm Event:

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft³/s)	Tailwater Elevation (ft)	Convergence Error (ft)	Contributing Structures
228.60	94.66	(N/A)	0.00	None Contributing
228.70	108.48	(N/A)	0.00	None Contributing
228.80	123.05	(N/A)	0.00	None Contributing
228.90	138.33	(N/A)	0.00	None Contributing
229.00	154.30	(N/A)	0.00	None Contributing
229.10	170.91	(N/A)	0.00	None Contributing
229.20	188.14	(N/A)	0.00	None Contributing
229.30	205.98	(N/A)	0.00	None Contributing
229.40	218.41	(N/A)	0.00	None Contributing
229.50	230.77	(N/A)	0.00	None Contributing
				Orifice - 1
				Orifice - 1
				Orifice - 1
				Orifice - 1
				Orifice - 1
				Orifice - 1
				Orifice - 1
				Orifice - 1
				Orifice - 1
				Orifice - 1
				Orifice - 1
				Orifice - 1 + Orifice - 2A
				Orifice - 1 + Orifice - 2A
				Orifice - 1 + Orifice - 2A
				Orifice - 1 + Orifice - 2A
				Orifice - 1 + Orifice - 2A
				Orifice - 1 + Orifice - 2A
				Orifice - 1 + Orifice - 2A
				Orifice - 1 + Orifice - 2A
				Orifice - 1 + Orifice - 2A
				Orifice - 1 + Orifice - 2A

Basin 3D

Subsection: Composite Rating Curve
Label: Outlet#1
Scenario: 100

Return Event: 0 years
Storm Event:

Composite Outflow Summary

Contributing Structures
Orifice - 1 + Orifice - 2A
Orifice - 1 + Orifice - 2A
Riser - 1 + Orifice - 1 + Orifice - 2A
Riser - 1 + Orifice - 1 + Orifice - 2A
Riser - 1 + Orifice - 1 + Emergency Riser - 1 + Orifice - 2A
Riser - 1 + Orifice - 1 + Emergency Riser - 1 + Orifice - 2A
Riser - 1 + Orifice - 1 + Emergency Riser - 1 + Orifice - 2A
Riser - 1 + Orifice - 1 + Emergency Riser - 1 + Orifice - 2A
Riser - 1 + Orifice - 1 + Emergency Riser - 1 + Orifice - 2A
Riser - 1 + Orifice - 1 + Emergency Riser - 1 + Orifice - 2A
Riser - 1 + Orifice - 1 + Emergency Riser - 1 + Orifice - 2A
Riser - 1 + Orifice - 1 + Emergency Riser - 1 + Orifice - 2A
Riser - 1 + Orifice - 1 + Emergency Riser - 1 + Orifice - 2A
Riser - 1 + Orifice - 1 + Emergency Riser - 1 + Orifice - 2A
Riser - 1 + Orifice - 1 + Emergency Riser - 1 + Orifice - 2A
Riser - 1 + Orifice - 1 + Emergency Riser - 1 + Orifice - 2A
Riser - 1 + Orifice - 1 + Emergency Riser - 1 + Orifice - 2A
Riser - 1 + Orifice - 1 + Emergency Riser - 1 + Orifice - 2A
Riser - 1 + Orifice - 1 + Emergency Riser - 1 + Orifice - 2A
Riser - 1 + Orifice - 1 + Emergency Riser - 1 + Orifice - 2A

Basin 3D

Subsection: Composite Rating Curve
Label: Outlet#1
Scenario: 100

Return Event: 0 years
Storm Event:

Composite Outflow Summary

Contributing Structures
Riser - 1 + Orifice - 1 + Emergency Riser - 1 + Orifice - 2A
Riser - 1 + Orifice - 1 + Emergency Riser - 1 + Orifice - 2A
Riser - 1 + Orifice - 1 + Emergency Riser - 1 + Orifice - 2A

Basin 3D

Subsection: Elevation-Volume-Flow Table (Pond)
Label: 1
Scenario: 100

Return Event: 0 years
Storm Event:

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions	
Elevation (Water Surface, Initial)	225.25 ft
Volume (Initial)	0.274 ac-ft
Flow (Initial Outlet)	0.00 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.00 ft³/s
Time Increment	1 min

Elevation (ft)	Outflow (ft³/s)	Storage (ac-ft)	Area (ft²)	Infiltration (ft³/s)	Flow (Total) (ft³/s)	2S/t + O (ft³/s)
224.50	0.00	0.000	15,326.000	0.00	0.00	0.00
224.60	0.00	0.035	15,478.686	0.00	0.00	51.34
224.70	0.00	0.071	15,632.130	0.00	0.00	103.19
224.80	0.00	0.107	15,786.330	0.00	0.00	155.56
224.90	0.00	0.144	15,941.286	0.00	0.00	208.44
225.00	0.00	0.180	16,097.000	0.00	0.00	261.83
225.10	0.00	0.217	16,253.302	0.00	0.00	315.75
225.20	0.00	0.255	16,410.359	0.00	0.00	370.19
225.25	0.00	0.274	16,489.170	0.00	0.00	397.60
225.30	0.00	0.293	16,568.171	0.00	0.00	425.16
225.40	0.04	0.331	16,726.738	0.00	0.04	480.68
225.50	0.09	0.370	16,886.060	0.00	0.09	536.76
225.60	0.15	0.409	17,046.138	0.00	0.15	593.36
225.70	0.18	0.448	17,206.971	0.00	0.18	650.48
225.80	0.20	0.488	17,368.559	0.00	0.20	708.14
225.90	0.23	0.528	17,530.902	0.00	0.23	766.33
226.00	0.25	0.568	17,694.000	0.00	0.25	825.06
226.10	0.27	0.609	17,856.075	0.00	0.27	884.33
226.20	0.29	0.650	18,018.889	0.00	0.29	944.14
226.30	0.31	0.692	18,182.441	0.00	0.31	1,004.49
226.40	0.32	0.734	18,346.733	0.00	0.32	1,065.39
226.50	3.27	0.776	18,511.764	0.00	3.27	1,129.77
226.60	6.22	0.819	18,677.533	0.00	6.22	1,194.69
226.70	9.16	0.862	18,844.041	0.00	9.16	1,260.18
226.80	11.04	0.905	19,011.289	0.00	11.04	1,325.14
226.90	12.31	0.949	19,179.275	0.00	12.31	1,390.06
227.00	13.46	0.993	19,348.000	0.00	13.46	1,455.42
227.10	14.51	1.038	19,515.838	0.00	14.51	1,521.25
227.20	15.50	1.083	19,684.401	0.00	15.50	1,587.57

Basin 3D

Subsection: Elevation-Volume-Flow Table (Pond) Return Event: 0 years
Label: 1 Storm Event:
Scenario: 100

Elevation (ft)	Outflow (ft³/s)	Storage (ac-ft)	Area (ft²)	Infiltration (ft³/s)	Flow (Total) (ft³/s)	2S/t + O (ft³/s)
227.30	16.42	1.128	19,853.689	0.00	16.42	1,654.39
227.40	17.30	1.174	20,023.702	0.00	17.30	1,721.73
227.50	18.13	1.220	20,194.440	0.00	18.13	1,789.60
227.60	18.93	1.267	20,365.902	0.00	18.93	1,857.99
227.70	19.70	1.314	20,538.089	0.00	19.70	1,926.93
227.80	21.95	1.361	20,711.001	0.00	21.95	1,997.93
227.90	25.43	1.409	20,884.638	0.00	25.43	2,070.74
228.00	31.23	1.457	21,059.000	0.00	31.23	2,146.45
228.10	38.93	1.505	21,232.497	0.00	38.93	2,224.63
228.20	48.00	1.554	21,406.706	0.00	48.00	2,304.76
228.30	58.22	1.604	21,581.627	0.00	58.22	2,386.63
228.40	69.46	1.653	21,757.259	0.00	69.46	2,470.11
228.50	81.63	1.703	21,933.603	0.00	81.63	2,555.10
228.60	94.66	1.754	22,110.659	0.00	94.66	2,641.53
228.70	108.48	1.805	22,288.427	0.00	108.48	2,729.35
228.80	123.05	1.856	22,466.906	0.00	123.05	2,818.51
228.90	138.33	1.908	22,646.097	0.00	138.33	2,908.98
229.00	154.30	1.960	22,826.000	0.00	154.30	3,000.73
229.10	170.91	2.013	23,005.593	0.00	170.91	3,093.73
229.20	188.14	2.066	23,185.889	0.00	188.14	3,187.95
229.30	205.98	2.119	23,366.889	0.00	205.98	3,283.37
229.40	218.41	2.173	23,548.593	0.00	218.41	3,374.00
229.50	230.77	2.228	23,731.000	0.00	230.77	3,465.16

Basin 3D

Subsection: Level Pool Pond Routing Summary
Label: 1 (IN)
Scenario: 100

Return Event: 0 years
Storm Event:

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions	
Elevation (Water Surface, Initial)	225.25 ft
Volume (Initial)	0.274 ac-ft
Flow (Initial Outlet)	0.00 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.00 ft³/s
Time Increment	1 min

Inflow/Outflow Hydrograph Summary			
Flow (Peak In)	46.20 ft³/s	Time to Peak (Flow, In)	250 min
Flow (Peak Outlet)	19.55 ft³/s	Time to Peak (Flow, Outlet)	257 min

Elevation (Water Surface, Peak)	227.68 ft
Volume (Peak)	1.305 ac-ft

Mass Balance (ac-ft)	
Volume (Initial)	0.274 ac-ft
Volume (Total Inflow)	2.506 ac-ft
Volume (Total Infiltration)	0.000 ac-ft
Volume (Total Outlet Outflow)	2.106 ac-ft
Volume (Retained)	0.673 ac-ft
Volume (Unrouted)	0.000 ac-ft
Error (Mass Balance)	0.0 %

Basin 3D

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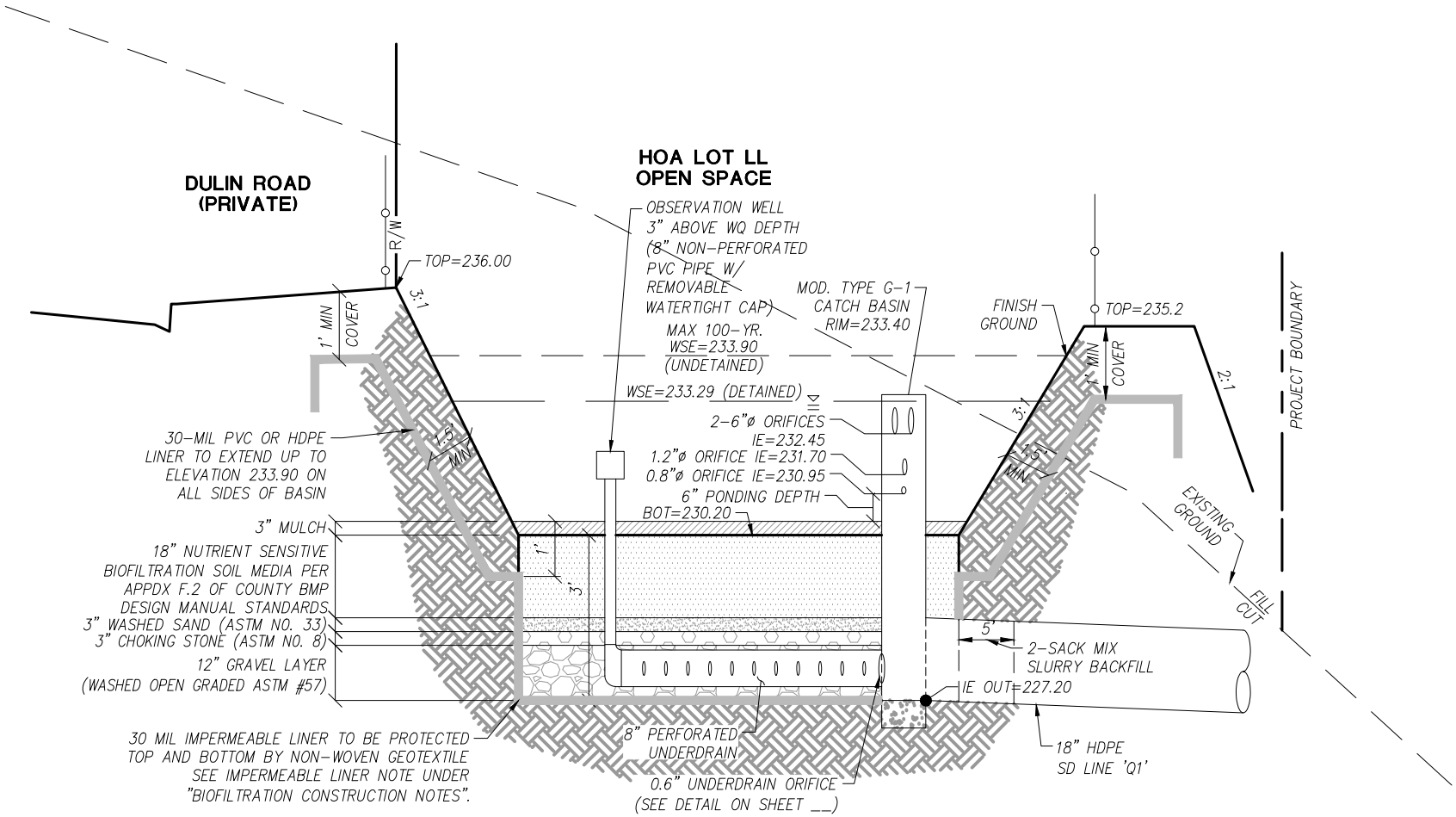
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3E



SECTION 3E-3E: BMP 3E
LINED BIOFILTRATION (PRIVATE)

NOT TO SCALE

N

SCALE:	1"=60'
JOB #:	4192.10
CREATED:	5/18/20

PREPARED BY:

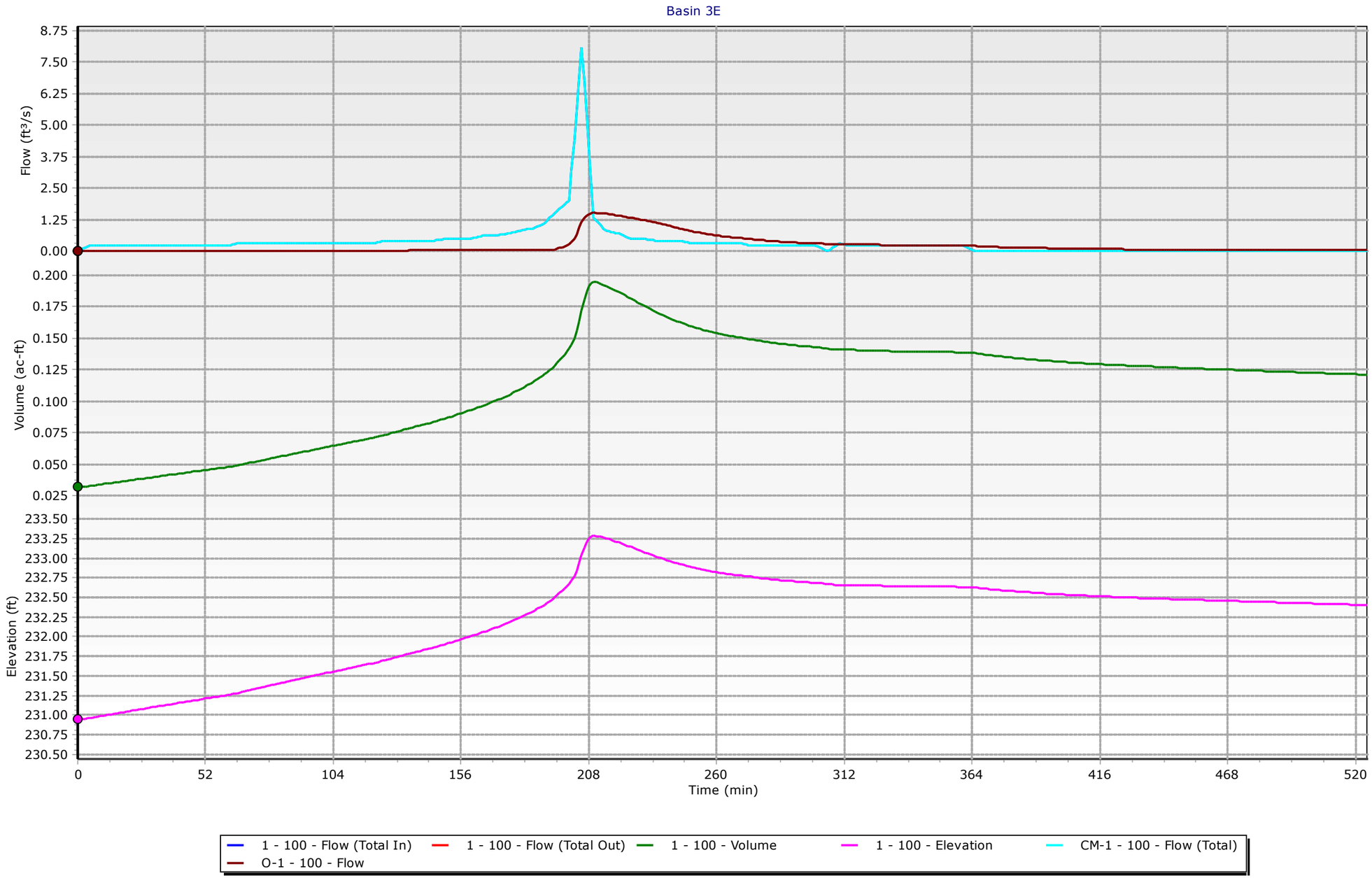
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COUNTY OF SAN DIEGO

OCEAN BREEZE RANCH

BASIN CROSS SECTIONS
EXHIBIT (8 OF 14)


Basin 3E
Flow (ft³/s)
8.75
7.50
6.25
5.00
3.75
2.50
1.25
0.00
Volume (ac-ft)
0.200
0.175
0.150
0.125
0.100
0.075
0.050
0.025
Elevation (ft)
233.50
233.25
233.00
232.75
232.50
232.25
232.00
231.75
231.50
231.25
231.00
230.75
230.50
0
52
104
156
208
260
312
364
416
468
520
Time (min)
1 - 100 - Flow (Total In)
1 - 100 - Flow (Total Out)
1 - 100 - Volume
1 - 100 - Elevation
CM-1 - 100 - Flow (Total)
O-1 - 100 - Flow

RATIONAL METHOD HYDROGRAPH PROGRAM
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RUN DATE 6/15/2023
HYDROGRAP FILE NAME Basin 3E
TIME OF CONCENTRATION 6 MIN.
6 HOUR RAINFALL 3.3 INCHES
BASIN AREA 1.5 ACRES
RUNOFF COEFFICIENT 0.68
PEAK DISCHARGE 8.1 CFS

TIME	(MIN)	=	0	DISCHARGE	(CFS)	=	0
TIME	(MIN)	=	6	DISCHARGE	(CFS)	=	0.2
TIME	(MIN)	=	12	DISCHARGE	(CFS)	=	0.2
TIME	(MIN)	=	18	DISCHARGE	(CFS)	=	0.2
TIME	(MIN)	=	24	DISCHARGE	(CFS)	=	0.2
TIME	(MIN)	=	30	DISCHARGE	(CFS)	=	0.2
TIME	(MIN)	=	36	DISCHARGE	(CFS)	=	0.2
TIME	(MIN)	=	42	DISCHARGE	(CFS)	=	0.2
TIME	(MIN)	=	48	DISCHARGE	(CFS)	=	0.2
TIME	(MIN)	=	54	DISCHARGE	(CFS)	=	0.2
TIME	(MIN)	=	60	DISCHARGE	(CFS)	=	0.2
TIME	(MIN)	=	66	DISCHARGE	(CFS)	=	0.2
TIME	(MIN)	=	72	DISCHARGE	(CFS)	=	0.2
TIME	(MIN)	=	78	DISCHARGE	(CFS)	=	0.3
TIME	(MIN)	=	84	DISCHARGE	(CFS)	=	0.3
TIME	(MIN)	=	90	DISCHARGE	(CFS)	=	0.3
TIME	(MIN)	=	96	DISCHARGE	(CFS)	=	0.3
TIME	(MIN)	=	102	DISCHARGE	(CFS)	=	0.3
TIME	(MIN)	=	108	DISCHARGE	(CFS)	=	0.3
TIME	(MIN)	=	114	DISCHARGE	(CFS)	=	0.3
TIME	(MIN)	=	120	DISCHARGE	(CFS)	=	0.3
TIME	(MIN)	=	126	DISCHARGE	(CFS)	=	0.3
TIME	(MIN)	=	132	DISCHARGE	(CFS)	=	0.3
TIME	(MIN)	=	138	DISCHARGE	(CFS)	=	0.3
TIME	(MIN)	=	144	DISCHARGE	(CFS)	=	0.3
TIME	(MIN)	=	150	DISCHARGE	(CFS)	=	0.4
TIME	(MIN)	=	156	DISCHARGE	(CFS)	=	0.4
TIME	(MIN)	=	162	DISCHARGE	(CFS)	=	0.4
TIME	(MIN)	=	168	DISCHARGE	(CFS)	=	0.4
TIME	(MIN)	=	174	DISCHARGE	(CFS)	=	0.4
TIME	(MIN)	=	180	DISCHARGE	(CFS)	=	0.5
TIME	(MIN)	=	186	DISCHARGE	(CFS)	=	0.5
TIME	(MIN)	=	192	DISCHARGE	(CFS)	=	0.5
TIME	(MIN)	=	198	DISCHARGE	(CFS)	=	0.6
TIME	(MIN)	=	204	DISCHARGE	(CFS)	=	0.6
TIME	(MIN)	=	210	DISCHARGE	(CFS)	=	0.7
TIME	(MIN)	=	216	DISCHARGE	(CFS)	=	0.8
TIME	(MIN)	=	222	DISCHARGE	(CFS)	=	0.9
TIME	(MIN)	=	228	DISCHARGE	(CFS)	=	1.1
TIME	(MIN)	=	234	DISCHARGE	(CFS)	=	1.6
TIME	(MIN)	=	240	DISCHARGE	(CFS)	=	2
TIME	(MIN)	=	246	DISCHARGE	(CFS)	=	8.1
TIME	(MIN)	=	252	DISCHARGE	(CFS)	=	1.3
TIME	(MIN)	=	258	DISCHARGE	(CFS)	=	0.8
TIME	(MIN)	=	264	DISCHARGE	(CFS)	=	0.7
TIME	(MIN)	=	270	DISCHARGE	(CFS)	=	0.5
TIME	(MIN)	=	276	DISCHARGE	(CFS)	=	0.5
TIME	(MIN)	=	282	DISCHARGE	(CFS)	=	0.4
TIME	(MIN)	=	288	DISCHARGE	(CFS)	=	0.4
TIME	(MIN)	=	294	DISCHARGE	(CFS)	=	0.4
TIME	(MIN)	=	300	DISCHARGE	(CFS)	=	0.3
TIME	(MIN)	=	306	DISCHARGE	(CFS)	=	0.3
TIME	(MIN)	=	312	DISCHARGE	(CFS)	=	0.3
TIME	(MIN)	=	318	DISCHARGE	(CFS)	=	0.3
TIME	(MIN)	=	324	DISCHARGE	(CFS)	=	0.3
TIME	(MIN)	=	330	DISCHARGE	(CFS)	=	0.2
TIME	(MIN)	=	336	DISCHARGE	(CFS)	=	0.2
TIME	(MIN)	=	342	DISCHARGE	(CFS)	=	0.2
TIME	(MIN)	=	348	DISCHARGE	(CFS)	=	0.2
TIME	(MIN)	=	354	DISCHARGE	(CFS)	=	0.2
TIME	(MIN)	=	360	DISCHARGE	(CFS)	=	0.2
TIME	(MIN)	=	366	DISCHARGE	(CFS)	=	0

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Basin 3E

Subsection: Master Network Summary

Catchments Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (min)	Peak Flow (ft^3/s)
CM-1	100	0	0.247	205	8.10

Node Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (min)	Peak Flow (ft^3/s)
O-1	100	0	0.158	210	1.52

Pond Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (min)	Peak Flow (ft^3/s)	Maximum Water Surface Elevation (ft)	Maximum Pond Storage (ac-ft)
1 (IN)	100	0	0.247	205	8.10	(N/A)	(N/A)
1 (OUT)	100	0	0.158	210	1.52	233.29	0.195

Basin 3E

Subsection: Read Hydrograph
Label: CM-1
Scenario: 100

Return Event: 100 years
Storm Event:

Peak Discharge	8.10 ft³/s
Time to Peak	205 min
Hydrograph Volume	0.247 ac-ft

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 5 min
Time on left represents time for first value in each row.

Time (min)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
0	0.00	0.20	0.20	0.20	0.20
25	0.20	0.20	0.20	0.20	0.20
50	0.20	0.20	0.20	0.30	0.30
75	0.30	0.30	0.30	0.30	0.30
100	0.30	0.30	0.30	0.30	0.30
125	0.40	0.40	0.40	0.40	0.40
150	0.50	0.50	0.50	0.60	0.60
175	0.70	0.80	0.90	1.10	1.60
200	2.00	8.10	1.30	0.80	0.70
225	0.50	0.50	0.40	0.40	0.40
250	0.30	0.30	0.30	0.30	0.30
275	0.20	0.20	0.20	0.20	0.20
300	0.20	0.00	0.30	0.20	0.20
325	0.20	0.20	0.20	0.20	0.20
350	0.20	0.20	0.20	0.00	(N/A)

Basin 3E

Subsection: Time vs. Volume
Label: 1
Scenario: 100

Return Event: 100 years
Storm Event:

Time vs. Volume (ac-ft)

Output Time increment = 1 min
Time on left represents time for first value in each row.

Time (min)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)
0	0.032	0.032	0.032	0.032	0.032
5	0.033	0.033	0.033	0.033	0.034
10	0.034	0.034	0.035	0.035	0.035
15	0.035	0.036	0.036	0.036	0.036
20	0.037	0.037	0.037	0.038	0.038
25	0.038	0.038	0.039	0.039	0.039
30	0.039	0.040	0.040	0.040	0.040
35	0.041	0.041	0.041	0.042	0.042
40	0.042	0.042	0.043	0.043	0.043
45	0.043	0.044	0.044	0.044	0.044
50	0.045	0.045	0.045	0.046	0.046
55	0.046	0.046	0.047	0.047	0.047
60	0.047	0.048	0.048	0.048	0.049
65	0.049	0.049	0.050	0.050	0.051
70	0.051	0.051	0.052	0.052	0.053
75	0.053	0.053	0.054	0.054	0.055
80	0.055	0.055	0.056	0.056	0.057
85	0.057	0.057	0.058	0.058	0.059
90	0.059	0.059	0.060	0.060	0.061
95	0.061	0.061	0.062	0.062	0.063
100	0.063	0.063	0.064	0.064	0.065
105	0.065	0.065	0.066	0.066	0.067
110	0.067	0.067	0.068	0.068	0.069
115	0.069	0.069	0.070	0.070	0.070
120	0.071	0.071	0.072	0.072	0.073
125	0.073	0.074	0.074	0.075	0.075
130	0.076	0.076	0.077	0.077	0.078
135	0.078	0.079	0.079	0.080	0.081
140	0.081	0.082	0.082	0.083	0.083
145	0.084	0.084	0.085	0.085	0.086
150	0.087	0.087	0.088	0.088	0.089
155	0.090	0.090	0.091	0.092	0.092
160	0.093	0.094	0.094	0.095	0.096
165	0.096	0.097	0.098	0.099	0.100
170	0.100	0.101	0.102	0.103	0.104
175	0.104	0.105	0.106	0.107	0.108
180	0.109	0.110	0.112	0.113	0.114
185	0.115	0.116	0.117	0.119	0.120
190	0.121	0.123	0.125	0.126	0.128
195	0.130	0.132	0.135	0.137	0.139

Basin 3E

Subsection: Time vs. Volume
Label: 1
Scenario: 100

Return Event: 100 years
Storm Event:

Time vs. Volume (ac-ft)

Output Time increment = 1 min
Time on left represents time for first value in each row.

Time (min)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)
200	0.142	0.145	0.149	0.156	0.163
205	0.172	0.181	0.187	0.192	0.194
210	0.195	0.194	0.194	0.193	0.192
215	0.192	0.191	0.190	0.189	0.188
220	0.187	0.186	0.185	0.184	0.183
225	0.182	0.180	0.179	0.178	0.177
230	0.176	0.175	0.174	0.173	0.172
235	0.171	0.170	0.169	0.168	0.167
240	0.166	0.166	0.165	0.164	0.163
245	0.163	0.162	0.161	0.161	0.160
250	0.159	0.159	0.158	0.157	0.157
255	0.156	0.156	0.155	0.155	0.154
260	0.154	0.153	0.153	0.153	0.152
265	0.152	0.152	0.151	0.151	0.151
270	0.150	0.150	0.150	0.149	0.149
275	0.149	0.148	0.148	0.148	0.147
280	0.147	0.147	0.147	0.146	0.146
285	0.146	0.146	0.145	0.145	0.145
290	0.145	0.144	0.144	0.144	0.144
295	0.144	0.144	0.143	0.143	0.143
300	0.143	0.143	0.143	0.142	0.142
305	0.142	0.141	0.141	0.141	0.141
310	0.141	0.141	0.141	0.141	0.141
315	0.141	0.141	0.141	0.141	0.140
320	0.140	0.140	0.140	0.140	0.140
325	0.140	0.140	0.140	0.140	0.140
330	0.140	0.140	0.140	0.140	0.140
335	0.140	0.140	0.139	0.139	0.139
340	0.139	0.139	0.139	0.139	0.139
345	0.139	0.139	0.139	0.139	0.139
350	0.139	0.139	0.139	0.139	0.139
355	0.139	0.139	0.139	0.139	0.139
360	0.139	0.139	0.139	0.138	0.138
365	0.138	0.138	0.138	0.137	0.137
370	0.137	0.137	0.136	0.136	0.136
375	0.136	0.135	0.135	0.135	0.135
380	0.135	0.134	0.134	0.134	0.134
385	0.134	0.134	0.133	0.133	0.133
390	0.133	0.133	0.133	0.132	0.132
395	0.132	0.132	0.132	0.132	0.131
400	0.131	0.131	0.131	0.131	0.131

Basin 3E

Subsection: Time vs. Volume
Label: 1
Scenario: 100

Return Event: 100 years
Storm Event:

Time vs. Volume (ac-ft)

Output Time increment = 1 min
Time on left represents time for first value in each row.

Time (min)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)
405	0.131	0.131	0.130	0.130	0.130
410	0.130	0.130	0.130	0.130	0.130
415	0.129	0.129	0.129	0.129	0.129
420	0.129	0.129	0.129	0.129	0.129
425	0.129	0.128	0.128	0.128	0.128
430	0.128	0.128	0.128	0.128	0.128
435	0.128	0.128	0.127	0.127	0.127
440	0.127	0.127	0.127	0.127	0.127
445	0.127	0.127	0.127	0.127	0.126
450	0.126	0.126	0.126	0.126	0.126
455	0.126	0.126	0.126	0.126	0.126
460	0.126	0.126	0.125	0.125	0.125
465	0.125	0.125	0.125	0.125	0.125
470	0.125	0.125	0.125	0.125	0.125
475	0.124	0.124	0.124	0.124	0.124
480	0.124	0.124	0.124	0.124	0.124
485	0.124	0.124	0.124	0.124	0.123
490	0.123	0.123	0.123	0.123	0.123
495	0.123	0.123	0.123	0.123	0.123
500	0.123	0.123	0.123	0.122	0.122
505	0.122	0.122	0.122	0.122	0.122
510	0.122	0.122	0.122	0.122	0.122
515	0.122	0.122	0.122	0.121	0.121
520	0.121	0.121	0.121	0.121	0.121
525	0.121	(N/A)	(N/A)	(N/A)	(N/A)

Basin 3E

Subsection: Elevation-Area Volume Curve
Return Event: 100 years
Label: 1
Storm Event:
Scenario: 100

Elevation (ft)	Planimeter (ft²)	Area (ft²)	A1+A2+sqr (A1*A2) (ft²)	Volume (ac-ft)	Volume (Total) (ac-ft)
230.20	0.0	1,600.000	0.000	0.000	0.000
231.00	0.0	2,161.000	5,620.462	0.034	0.034
232.00	0.0	2,923.000	7,597.285	0.058	0.093
233.00	0.0	3,770.000	10,012.595	0.077	0.169
234.00	0.0	4,728.000	12,719.914	0.097	0.267
235.00	0.0	5,751.000	15,693.473	0.120	0.387
235.20	0.0	6,450.000	18,291.480	0.028	0.415

Basin 3E

Subsection: Volume Equations
Label: 1
Scenario: 100

Return Event: 100 years
Storm Event:

Pond Volume Equations
* Incremental volume computed by the Conic Method for Reservoir Volumes.

Volume = (1/3) * (EL2 - El1) * (Area1 + Area2 + sqr(Area1 * Area2))

where:	EL1, EL2	Lower and upper elevations of the increment
	Area1, Area2	Areas computed for EL1, EL2, respectively
	Volume	Incremental volume between EL1 and EL2

Basin 3E

Subsection: Outlet Input Data
Label: Outlet#1
Scenario: 100

Return Event: 100 years
Storm Event:

Requested Pond Water Surface Elevations	
Minimum (Headwater)	230.20 ft
Increment (Headwater)	0.10 ft
Maximum (Headwater)	235.20 ft

Outlet Connectivity

Structure Type	Outlet ID	Direction	Outfall	E1 (ft)	E2 (ft)
Orifice-Circular	Orifice - MF	Forward	TW	231.70	235.20
Orifice-Circular	Orifice - HF	Forward	TW	232.45	235.20
Inlet Box	Riser - 1	Forward	TW	233.40	235.20
Orifice-Circular	Orifice - LF	Forward	TW	230.95	235.20
Tailwater Settings	Tailwater			(N/A)	(N/A)

Basin 3E

Subsection: Outlet Input Data
Label: Outlet#1
Scenario: 100

Return Event: 100 years
Storm Event:

Structure ID: Orifice - LF Structure Type: Orifice-Circular	
Number of Openings	1
Elevation	230.95 ft
Orifice Diameter	0.8 in
Orifice Coefficient	0.600

Structure ID: Riser - 1 Structure Type: Inlet Box	
Number of Openings	1
Elevation	233.40 ft
Orifice Area	4.7 ft²
Orifice Coefficient	0.600
Weir Length	9.20 ft
Weir Coefficient	3.00 (ft^0.5)/s
K Reverse	1.000
Manning's n	0.000
Kev, Charged Riser	0.000
Weir Submergence	False
Orifice H to crest	True

Structure ID: Orifice - HF Structure Type: Orifice-Circular	
Number of Openings	2
Elevation	232.45 ft
Orifice Diameter	6.0 in
Orifice Coefficient	0.600

Structure ID: Orifice - MF Structure Type: Orifice-Circular	
Number of Openings	1
Elevation	231.70 ft
Orifice Diameter	1.2 in
Orifice Coefficient	0.600

Structure ID: TW Structure Type: TW Setup, DS Channel	
Tailwater Type	Free Outfall

Convergence Tolerances	
Maximum Iterations	80

Basin 3E

Subsection: Outlet Input Data
Label: Outlet#1
Scenario: 100

Return Event: 100 years
Storm Event:

Convergence Tolerances	
Tailwater Tolerance (Minimum)	0.01 ft
Tailwater Tolerance (Maximum)	0.10 ft
Headwater Tolerance (Minimum)	0.01 ft
Headwater Tolerance (Maximum)	0.10 ft
Flow Tolerance (Minimum)	0.001 ft³/s
Flow Tolerance (Maximum)	10.000 ft³/s

Basin 3E

Subsection: Composite Rating Curve
Label: Outlet#1
Scenario: 100

Return Event: 100 years
Storm Event:

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft^3/s)	Tailwater Elevation (ft)	Convergence Error (ft)
230.20	0.00	(N/A)	0.00
230.30	0.00	(N/A)	0.00
230.40	0.00	(N/A)	0.00
230.50	0.00	(N/A)	0.00
230.60	0.00	(N/A)	0.00
230.70	0.00	(N/A)	0.00
230.80	0.00	(N/A)	0.00
230.90	0.00	(N/A)	0.00
230.95	0.00	(N/A)	0.00
231.00	0.00	(N/A)	0.00
231.10	0.01	(N/A)	0.00
231.20	0.01	(N/A)	0.00
231.30	0.01	(N/A)	0.00
231.40	0.01	(N/A)	0.00
231.50	0.01	(N/A)	0.00
231.60	0.01	(N/A)	0.00
231.70	0.01	(N/A)	0.00
231.80	0.02	(N/A)	0.00
231.90	0.03	(N/A)	0.00
232.00	0.04	(N/A)	0.00
232.10	0.04	(N/A)	0.00
232.20	0.04	(N/A)	0.00
232.30	0.05	(N/A)	0.00
232.40	0.05	(N/A)	0.00
232.45	0.05	(N/A)	0.00
232.50	0.07	(N/A)	0.00
232.60	0.16	(N/A)	0.00
232.70	0.33	(N/A)	0.00
232.80	0.56	(N/A)	0.00
232.90	0.83	(N/A)	0.00
233.00	1.10	(N/A)	0.00
233.10	1.26	(N/A)	0.00
233.20	1.41	(N/A)	0.00
233.30	1.54	(N/A)	0.00
233.40	1.66	(N/A)	0.00
233.50	2.64	(N/A)	0.00
233.60	4.34	(N/A)	0.00
233.70	6.51	(N/A)	0.00
233.80	9.05	(N/A)	0.00
233.90	11.91	(N/A)	0.00
234.00	15.07	(N/A)	0.00
234.10	18.49	(N/A)	0.00

Basin 3E

Subsection: Composite Rating Curve
Label: Outlet#1
Scenario: 100

Return Event: 100 years
Storm Event:

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft^3/s)	Tailwater Elevation (ft)	Convergence Error (ft)
234.20	22.15	(N/A)	0.00
234.30	23.94	(N/A)	0.00
234.40	25.18	(N/A)	0.00
234.50	26.36	(N/A)	0.00
234.60	27.48	(N/A)	0.00
234.70	28.56	(N/A)	0.00
234.80	29.60	(N/A)	0.00
234.90	30.61	(N/A)	0.00
235.00	31.58	(N/A)	0.00
235.10	32.53	(N/A)	0.00
235.20	33.44	(N/A)	0.00

Contributing Structures
None Contributing
None Contributing
None Contributing
None Contributing
None Contributing
None Contributing
None Contributing
None Contributing
None Contributing
Orifice - LF
Orifice - LF
Orifice - LF
Orifice - LF
Orifice - LF
Orifice - LF
Orifice - LF
Orifice - LF
Orifice - MF + Orifice - LF
Orifice - MF + Orifice - LF
Orifice - MF + Orifice - LF
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Orifice - MF + Orifice - LF
Orifice - MF + Orifice - LF
Orifice - MF + Orifice - LF
Orifice - MF + Orifice - LF
Orifice - MF + Orifice - HF + Orifice - LF
Orifice - MF + Orifice - HF + Orifice - LF

Basin 3E

Subsection: Composite Rating Curve
Label: Outlet#1
Scenario: 100

Return Event: 100 years
Storm Event:

Composite Outflow Summary

Contributing Structures
Orifice - MF + Orifice - HF + Orifice - LF
Orifice - MF + Orifice - HF + Orifice - LF
Orifice - MF + Orifice - HF + Orifice - LF
Orifice - MF + Orifice - HF + Orifice - LF
Orifice - MF + Orifice - HF + Orifice - LF
Orifice - MF + Orifice - HF + Orifice - LF
Orifice - MF + Orifice - HF + Orifice - LF
Orifice - MF + Orifice - HF + Orifice - LF
Orifice - MF + Orifice - HF + Riser - 1 + Orifice - LF
Orifice - MF + Orifice - HF + Riser - 1 + Orifice - LF
Orifice - MF + Orifice - HF + Riser - 1 + Orifice - LF
Orifice - MF + Orifice - HF + Riser - 1 + Orifice - LF
Orifice - MF + Orifice - HF + Riser - 1 + Orifice - LF
Orifice - MF + Orifice - HF + Riser - 1 + Orifice - LF
Orifice - MF + Orifice - HF + Riser - 1 + Orifice - LF
Orifice - MF + Orifice - HF + Riser - 1 + Orifice - LF
Orifice - MF + Orifice - HF + Riser - 1 + Orifice - LF
Orifice - MF + Orifice - HF + Riser - 1 + Orifice - LF
Orifice - MF + Orifice - HF + Riser - 1 + Orifice - LF
Orifice - MF + Orifice - HF + Riser - 1 + Orifice - LF
Orifice - MF + Orifice - HF + Riser - 1 + Orifice - LF
Orifice - MF + Orifice - HF + Riser - 1 + Orifice - LF
Orifice - MF + Orifice - HF + Riser - 1 + Orifice - LF
Orifice - MF + Orifice - HF + Riser - 1 + Orifice - LF
Orifice - MF + Orifice - HF + Riser - 1 + Orifice - LF

Basin 3E

Subsection: Composite Rating Curve
Label: Outlet#1
Scenario: 100

Return Event: 100 years
Storm Event:

Composite Outflow Summary

Contributing Structures
Orifice - MF + Orifice - HF + Riser - 1 + Orifice - LF
Orifice - MF + Orifice - HF + Riser - 1 + Orifice - LF
Orifice - MF + Orifice - HF + Riser - 1 + Orifice - LF

Basin 3E

Subsection: Elevation-Volume-Flow Table (Pond)
Label: 1
Scenario: 100

Return Event: 100 years
Storm Event:

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions	
Elevation (Water Surface, Initial)	230.95 ft
Volume (Initial)	0.032 ac-ft
Flow (Initial Outlet)	0.00 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.00 ft³/s
Time Increment	1 min

Elevation (ft)	Outflow (ft³/s)	Storage (ac-ft)	Area (ft²)	Infiltration (ft³/s)	Flow (Total) (ft³/s)	2S/t + O (ft³/s)
230.20	0.00	0.000	1,600.000	0.00	0.00	0.00
230.30	0.00	0.004	1,665.523	0.00	0.00	5.44
230.40	0.00	0.008	1,732.361	0.00	0.00	11.10
230.50	0.00	0.012	1,800.514	0.00	0.00	16.99
230.60	0.00	0.016	1,869.981	0.00	0.00	23.11
230.70	0.00	0.020	1,940.764	0.00	0.00	29.46
230.80	0.00	0.025	2,012.861	0.00	0.00	36.05
230.90	0.00	0.030	2,086.273	0.00	0.00	42.88
230.95	0.00	0.032	2,123.472	0.00	0.00	46.39
231.00	0.00	0.034	2,161.000	0.00	0.00	49.96
231.10	0.01	0.039	2,232.031	0.00	0.01	57.29
231.20	0.01	0.045	2,304.211	0.00	0.01	64.85
231.30	0.01	0.050	2,377.540	0.00	0.01	72.65
231.40	0.01	0.056	2,452.017	0.00	0.01	80.70
231.50	0.01	0.061	2,527.643	0.00	0.01	89.00
231.60	0.01	0.067	2,604.417	0.00	0.01	97.56
231.70	0.01	0.073	2,682.340	0.00	0.01	106.37
231.80	0.02	0.079	2,761.411	0.00	0.02	115.45
231.90	0.03	0.086	2,841.631	0.00	0.03	124.80
232.00	0.04	0.093	2,923.000	0.00	0.04	134.41
232.10	0.04	0.099	3,002.857	0.00	0.04	144.29
232.20	0.04	0.106	3,083.790	0.00	0.04	154.44
232.30	0.05	0.114	3,165.800	0.00	0.05	164.86
232.40	0.05	0.121	3,248.886	0.00	0.05	175.55
232.45	0.05	0.125	3,290.832	0.00	0.05	181.00
232.50	0.07	0.128	3,333.047	0.00	0.07	186.54
232.60	0.16	0.136	3,418.286	0.00	0.16	197.88
232.70	0.33	0.144	3,504.600	0.00	0.33	209.59
232.80	0.56	0.152	3,591.990	0.00	0.56	221.65

Basin 3E

Subsection: Elevation-Volume-Flow Table (Pond) Return Event: 100 years
Label: 1 Storm Event:
Scenario: 100

Elevation (ft)	Outflow (ft³/s)	Storage (ac-ft)	Area (ft²)	Infiltration (ft³/s)	Flow (Total) (ft³/s)	2S/t + O (ft³/s)
232.90	0.83	0.161	3,680.457	0.00	0.83	234.04
233.00	1.10	0.169	3,770.000	0.00	1.10	246.73
233.10	1.26	0.178	3,860.925	0.00	1.26	259.61
233.20	1.41	0.187	3,952.933	0.00	1.41	272.77
233.30	1.54	0.196	4,046.024	0.00	1.54	286.23
233.40	1.66	0.205	4,140.199	0.00	1.66	300.00
233.50	2.64	0.215	4,235.457	0.00	2.64	314.94
233.60	4.34	0.225	4,331.799	0.00	4.34	330.92
233.70	6.51	0.235	4,429.224	0.00	6.51	347.69
233.80	9.05	0.245	4,527.733	0.00	9.05	365.15
233.90	11.91	0.256	4,627.325	0.00	11.91	383.28
234.00	15.07	0.266	4,728.000	0.00	15.07	402.03
234.10	18.49	0.277	4,825.795	0.00	18.49	421.37
234.20	22.15	0.289	4,924.591	0.00	22.15	441.28
234.30	23.94	0.300	5,024.389	0.00	23.94	459.65
234.40	25.18	0.312	5,125.187	0.00	25.18	477.81
234.50	26.36	0.324	5,226.986	0.00	26.36	496.24
234.60	27.48	0.336	5,329.787	0.00	27.48	514.96
234.70	28.56	0.348	5,433.589	0.00	28.56	533.98
234.80	29.60	0.361	5,538.391	0.00	29.60	553.30
234.90	30.61	0.374	5,644.195	0.00	30.61	572.95
235.00	31.58	0.387	5,751.000	0.00	31.58	592.91
235.10	32.53	0.400	6,095.490	0.00	32.53	613.60
235.20	33.44	0.415	6,450.000	0.00	33.44	635.42

Basin 3E

Subsection: Level Pool Pond Routing Summary
Label: 1 (IN)
Scenario: 100

Return Event: 100 years
Storm Event:

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions	
Elevation (Water Surface, Initial)	230.95 ft
Volume (Initial)	0.032 ac-ft
Flow (Initial Outlet)	0.00 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.00 ft³/s
Time Increment	1 min

Inflow/Outflow Hydrograph Summary			
Flow (Peak In)	8.10 ft³/s	Time to Peak (Flow, In)	205 min
Flow (Peak Outlet)	1.52 ft³/s	Time to Peak (Flow, Outlet)	210 min

Elevation (Water Surface, Peak)	233.29 ft
Volume (Peak)	0.195 ac-ft

Mass Balance (ac-ft)	
Volume (Initial)	0.032 ac-ft
Volume (Total Inflow)	0.247 ac-ft
Volume (Total Infiltration)	0.000 ac-ft
Volume (Total Outlet Outflow)	0.158 ac-ft
Volume (Retained)	0.121 ac-ft
Volume (Unrouted)	0.000 ac-ft
Error (Mass Balance)	0.0 %

Basin 3E

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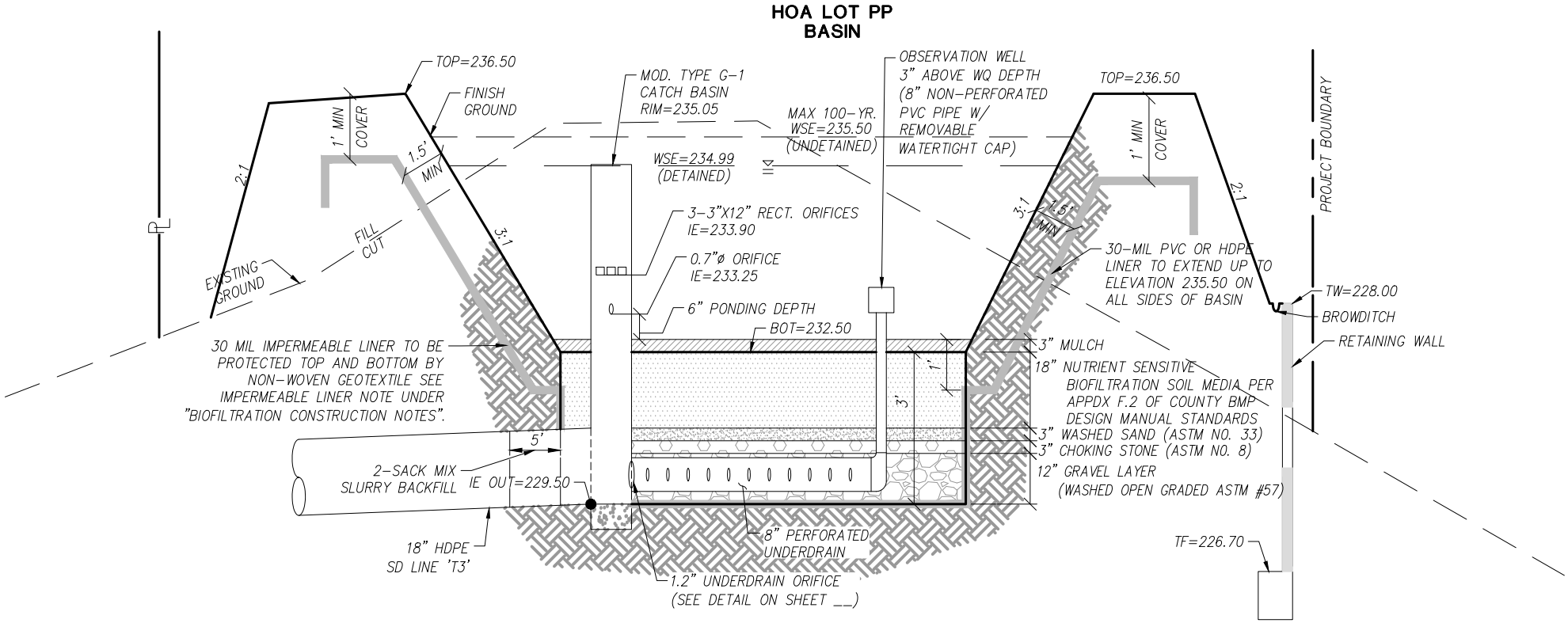
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3G



SECTION 3G-3G: BMP 3G
LINED BIOFILTRATION (PRIVATE)

NOT TO SCALE

N

SCALE:	1"=60'
JOB #:	4192.10
CREATED:	5/18/20

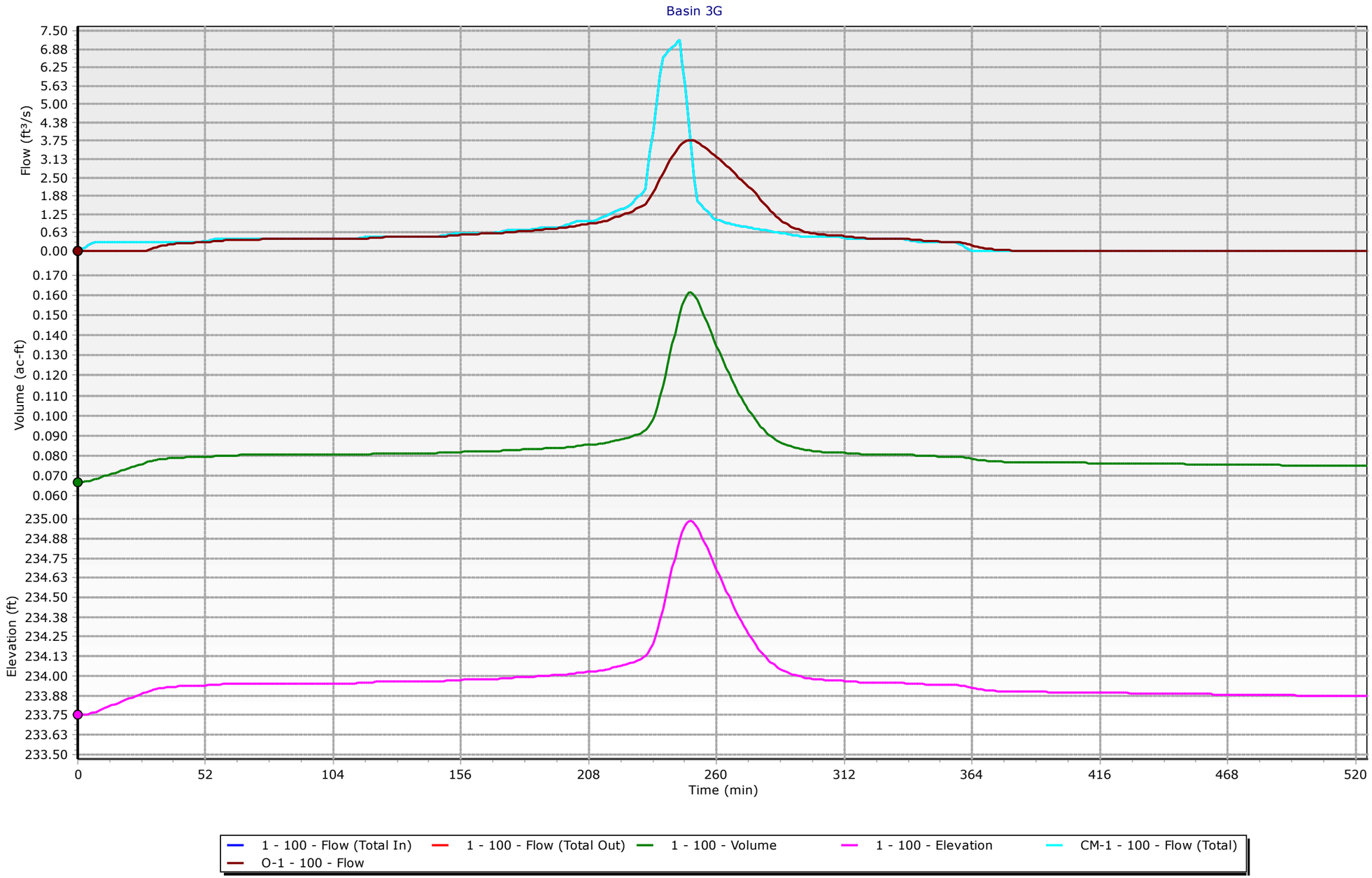
PREPARED BY:

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COUNTY OF SAN DIEGO

OCEAN BREEZE RANCH

BASIN CROSS SECTIONS
EXHIBIT (10 OF 14)


Basin 3G
Flow (ft³/s)
7.50
6.88
6.25
5.63
5.00
4.38
3.75
3.13
2.50
1.88
1.25
0.63
0.00
Volume (ac-ft)
0.170
0.160
0.150
0.140
0.130
0.120
0.110
0.100
0.090
0.080
0.070
0.060
Elevation (ft)
235.00
234.88
234.75
234.63
234.50
234.38
234.25
234.13
234.00
233.88
233.75
233.63
233.50
0
52
104
156
208
260
312
364
416
468
520
Time (min)
1 - 100 - Flow (Total In)
1 - 100 - Flow (Total Out)
1 - 100 - Volume
1 - 100 - Elevation
CM-1 - 100 - Flow (Total)
O-1 - 100 - Flow

RATIONAL METHOD HYDROGRAPH PROGRAM
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RUN DATE 6/15/2023
HYDROGRAPH FILE NAME Basin 3G
TIME OF CONCENTRATION 7 MIN.
6 HOUR RAINFALL 3.3 INCHES
BASIN AREA 2.2 ACRES
RUNOFF COEFFICIENT 0.7
PEAK DISCHARGE 7.2 CFS

TIME	(MIN)	=	0	DISCHARGE	(CFS)	=	0
TIME	(MIN)	=	7	DISCHARGE	(CFS)	=	0.3
TIME	(MIN)	=	14	DISCHARGE	(CFS)	=	0.3
TIME	(MIN)	=	21	DISCHARGE	(CFS)	=	0.3
TIME	(MIN)	=	28	DISCHARGE	(CFS)	=	0.3
TIME	(MIN)	=	35	DISCHARGE	(CFS)	=	0.3
TIME	(MIN)	=	42	DISCHARGE	(CFS)	=	0.3
TIME	(MIN)	=	49	DISCHARGE	(CFS)	=	0.3
TIME	(MIN)	=	56	DISCHARGE	(CFS)	=	0.4
TIME	(MIN)	=	63	DISCHARGE	(CFS)	=	0.4
TIME	(MIN)	=	70	DISCHARGE	(CFS)	=	0.4
TIME	(MIN)	=	77	DISCHARGE	(CFS)	=	0.4
TIME	(MIN)	=	84	DISCHARGE	(CFS)	=	0.4
TIME	(MIN)	=	91	DISCHARGE	(CFS)	=	0.4
TIME	(MIN)	=	98	DISCHARGE	(CFS)	=	0.4
TIME	(MIN)	=	105	DISCHARGE	(CFS)	=	0.4
TIME	(MIN)	=	112	DISCHARGE	(CFS)	=	0.4
TIME	(MIN)	=	119	DISCHARGE	(CFS)	=	0.5
TIME	(MIN)	=	126	DISCHARGE	(CFS)	=	0.5
TIME	(MIN)	=	133	DISCHARGE	(CFS)	=	0.5
TIME	(MIN)	=	140	DISCHARGE	(CFS)	=	0.5
TIME	(MIN)	=	147	DISCHARGE	(CFS)	=	0.5
TIME	(MIN)	=	154	DISCHARGE	(CFS)	=	0.6
TIME	(MIN)	=	161	DISCHARGE	(CFS)	=	0.6
TIME	(MIN)	=	168	DISCHARGE	(CFS)	=	0.6
TIME	(MIN)	=	175	DISCHARGE	(CFS)	=	0.7
TIME	(MIN)	=	182	DISCHARGE	(CFS)	=	0.7
TIME	(MIN)	=	189	DISCHARGE	(CFS)	=	0.8
TIME	(MIN)	=	196	DISCHARGE	(CFS)	=	0.8
TIME	(MIN)	=	203	DISCHARGE	(CFS)	=	1
TIME	(MIN)	=	210	DISCHARGE	(CFS)	=	1
TIME	(MIN)	=	217	DISCHARGE	(CFS)	=	1.3
TIME	(MIN)	=	224	DISCHARGE	(CFS)	=	1.5
TIME	(MIN)	=	231	DISCHARGE	(CFS)	=	2.1
TIME	(MIN)	=	238	DISCHARGE	(CFS)	=	6.6
TIME	(MIN)	=	245	DISCHARGE	(CFS)	=	7.2
TIME	(MIN)	=	252	DISCHARGE	(CFS)	=	1.7
TIME	(MIN)	=	259	DISCHARGE	(CFS)	=	1.1
TIME	(MIN)	=	266	DISCHARGE	(CFS)	=	0.9
TIME	(MIN)	=	273	DISCHARGE	(CFS)	=	0.8
TIME	(MIN)	=	280	DISCHARGE	(CFS)	=	0.7
TIME	(MIN)	=	287	DISCHARGE	(CFS)	=	0.6
TIME	(MIN)	=	294	DISCHARGE	(CFS)	=	0.5
TIME	(MIN)	=	301	DISCHARGE	(CFS)	=	0.5
TIME	(MIN)	=	308	DISCHARGE	(CFS)	=	0.5
TIME	(MIN)	=	315	DISCHARGE	(CFS)	=	0.4
TIME	(MIN)	=	322	DISCHARGE	(CFS)	=	0.4
TIME	(MIN)	=	329	DISCHARGE	(CFS)	=	0.4
TIME	(MIN)	=	336	DISCHARGE	(CFS)	=	0.4
TIME	(MIN)	=	343	DISCHARGE	(CFS)	=	0.3
TIME	(MIN)	=	350	DISCHARGE	(CFS)	=	0.3
TIME	(MIN)	=	357	DISCHARGE	(CFS)	=	0.3
TIME	(MIN)	=	364	DISCHARGE	(CFS)	=	0

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Basin 3G

Subsection: Master Network Summary

Catchments Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (min)	Peak Flow (ft^3/s)
CM-1	100	0	0.419	245	7.20

Node Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (min)	Peak Flow (ft^3/s)
O-1	100	0	0.411	249	3.78

Pond Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (min)	Peak Flow (ft^3/s)	Maximum Water Surface Elevation (ft)	Maximum Pond Storage (ac-ft)
1 (IN)	100	0	0.419	245	7.20	(N/A)	(N/A)
1 (OUT)	100	0	0.411	249	3.78	234.99	0.161

Basin 3G

Subsection: Read Hydrograph
Label: CM-1
Scenario: 100

Return Event: 0 years
Storm Event:

Peak Discharge	7.20 ft³/s
Time to Peak	245 min
Hydrograph Volume	0.419 ac-ft

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 7 min
Time on left represents time for first value in each row.

Time (min)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
0	0.00	0.30	0.30	0.30	0.30
35	0.30	0.30	0.30	0.40	0.40
70	0.40	0.40	0.40	0.40	0.40
105	0.40	0.40	0.50	0.50	0.50
140	0.50	0.50	0.60	0.60	0.60
175	0.70	0.70	0.80	0.80	1.00
210	1.00	1.30	1.50	2.10	6.60
245	7.20	1.70	1.10	0.90	0.80
280	0.70	0.60	0.50	0.50	0.50
315	0.40	0.40	0.40	0.40	0.30
350	0.30	0.30	0.00	(N/A)	(N/A)

Basin 3G

Subsection: Time vs. Volume
Label: 1
Scenario: 100

Return Event: 0 years
Storm Event:

Time vs. Volume (ac-ft)

Output Time increment = 1 min
Time on left represents time for first value in each row.

Time (min)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)
0	0.067	0.067	0.067	0.067	0.067
5	0.067	0.068	0.068	0.069	0.069
10	0.069	0.070	0.070	0.071	0.071
15	0.071	0.072	0.072	0.072	0.073
20	0.073	0.074	0.074	0.074	0.075
25	0.075	0.076	0.076	0.077	0.077
30	0.077	0.078	0.078	0.078	0.078
35	0.078	0.078	0.079	0.079	0.079
40	0.079	0.079	0.079	0.079	0.079
45	0.079	0.079	0.079	0.079	0.079
50	0.079	0.079	0.079	0.079	0.080
55	0.080	0.080	0.080	0.080	0.080
60	0.080	0.080	0.080	0.080	0.080
65	0.080	0.080	0.080	0.080	0.080
70	0.080	0.080	0.080	0.080	0.080
75	0.080	0.080	0.080	0.080	0.080
80	0.080	0.080	0.080	0.080	0.080
85	0.080	0.080	0.080	0.080	0.080
90	0.080	0.080	0.080	0.080	0.080
95	0.080	0.080	0.080	0.080	0.080
100	0.080	0.080	0.080	0.080	0.080
105	0.080	0.080	0.080	0.080	0.080
110	0.080	0.080	0.080	0.080	0.080
115	0.080	0.080	0.081	0.081	0.081
120	0.081	0.081	0.081	0.081	0.081
125	0.081	0.081	0.081	0.081	0.081
130	0.081	0.081	0.081	0.081	0.081
135	0.081	0.081	0.081	0.081	0.081
140	0.081	0.081	0.081	0.081	0.081
145	0.081	0.081	0.081	0.081	0.081
150	0.081	0.081	0.081	0.082	0.082
155	0.082	0.082	0.082	0.082	0.082
160	0.082	0.082	0.082	0.082	0.082
165	0.082	0.082	0.082	0.082	0.082
170	0.082	0.082	0.082	0.082	0.082
175	0.083	0.083	0.083	0.083	0.083
180	0.083	0.083	0.083	0.083	0.083
185	0.083	0.083	0.083	0.083	0.083
190	0.084	0.084	0.084	0.084	0.084
195	0.084	0.084	0.084	0.084	0.084

Basin 3G

Subsection: Time vs. Volume
Label: 1
Scenario: 100

Return Event: 0 years
Storm Event:

Time vs. Volume (ac-ft)

Output Time increment = 1 min
Time on left represents time for first value in each row.

Time (min)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)
200	0.084	0.084	0.085	0.085	0.085
205	0.085	0.085	0.085	0.085	0.086
210	0.086	0.086	0.086	0.086	0.086
215	0.086	0.087	0.087	0.087	0.088
220	0.088	0.088	0.088	0.089	0.089
225	0.089	0.090	0.090	0.091	0.091
230	0.092	0.092	0.094	0.095	0.098
235	0.101	0.105	0.109	0.115	0.120
240	0.125	0.130	0.136	0.141	0.146
245	0.151	0.155	0.158	0.161	0.161
250	0.161	0.160	0.158	0.155	0.152
255	0.149	0.146	0.144	0.141	0.138
260	0.135	0.132	0.129	0.126	0.123
265	0.121	0.118	0.116	0.113	0.111
270	0.109	0.107	0.105	0.103	0.101
275	0.099	0.097	0.096	0.094	0.093
280	0.092	0.091	0.090	0.089	0.088
285	0.087	0.087	0.086	0.085	0.085
290	0.085	0.084	0.084	0.084	0.083
295	0.083	0.083	0.083	0.082	0.082
300	0.082	0.082	0.082	0.082	0.082
305	0.082	0.082	0.082	0.082	0.081
310	0.081	0.081	0.081	0.081	0.081
315	0.081	0.081	0.081	0.081	0.081
320	0.081	0.081	0.081	0.081	0.081
325	0.081	0.080	0.080	0.080	0.080
330	0.080	0.080	0.080	0.080	0.080
335	0.080	0.080	0.080	0.080	0.080
340	0.080	0.080	0.080	0.080	0.080
345	0.080	0.080	0.080	0.080	0.080
350	0.080	0.080	0.080	0.080	0.080
355	0.079	0.079	0.079	0.079	0.079
360	0.079	0.079	0.079	0.079	0.078
365	0.078	0.078	0.078	0.078	0.077
370	0.077	0.077	0.077	0.077	0.077
375	0.077	0.077	0.077	0.077	0.077
380	0.077	0.077	0.077	0.077	0.077
385	0.077	0.077	0.077	0.077	0.077
390	0.077	0.077	0.077	0.077	0.077
395	0.077	0.077	0.076	0.076	0.076
400	0.076	0.076	0.076	0.076	0.076

Basin 3G

Subsection: Time vs. Volume
Label: 1
Scenario: 100

Return Event: 0 years
Storm Event:

Time vs. Volume (ac-ft)

Output Time increment = 1 min
Time on left represents time for first value in each row.

Time (min)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)
405	0.076	0.076	0.076	0.076	0.076
410	0.076	0.076	0.076	0.076	0.076
415	0.076	0.076	0.076	0.076	0.076
420	0.076	0.076	0.076	0.076	0.076
425	0.076	0.076	0.076	0.076	0.076
430	0.076	0.076	0.076	0.076	0.076
435	0.076	0.076	0.076	0.076	0.076
440	0.076	0.076	0.076	0.076	0.076
445	0.076	0.076	0.076	0.076	0.076
450	0.076	0.076	0.076	0.076	0.076
455	0.076	0.076	0.076	0.076	0.076
460	0.076	0.076	0.076	0.076	0.076
465	0.076	0.076	0.076	0.076	0.075
470	0.075	0.075	0.075	0.075	0.075
475	0.075	0.075	0.075	0.075	0.075
480	0.075	0.075	0.075	0.075	0.075
485	0.075	0.075	0.075	0.075	0.075
490	0.075	0.075	0.075	0.075	0.075
495	0.075	0.075	0.075	0.075	0.075
500	0.075	0.075	0.075	0.075	0.075
505	0.075	0.075	0.075	0.075	0.075
510	0.075	0.075	0.075	0.075	0.075
515	0.075	0.075	0.075	0.075	0.075
520	0.075	0.075	0.075	0.075	0.075
525	0.075	(N/A)	(N/A)	(N/A)	(N/A)

Basin 3G

Subsection: Elevation-Area Volume Curve
Label: 1
Scenario: 100

Return Event: 0 years
Storm Event:

Elevation (ft)	Planimeter (ft²)	Area (ft²)	A1+A2+sqr (A1*A2) (ft²)	Volume (ac-ft)	Volume (Total) (ac-ft)
232.50	0.0	1,852.000	0.000	0.000	0.000
233.25	0.0	2,425.000	6,396.222	0.037	0.037
234.00	0.0	3,023.000	8,155.540	0.047	0.084
235.00	0.0	3,874.000	10,319.149	0.079	0.162
236.00	0.0	4,781.000	12,958.672	0.099	0.262
236.50	0.0	5,256.000	15,049.877	0.058	0.319

Basin 3G

Subsection: Volume Equations
Label: 1
Scenario: 100

Return Event: 0 years
Storm Event:

Pond Volume Equations
* Incremental volume computed by the Conic Method for Reservoir Volumes.

Volume = (1/3) * (EL2 - El1) * (Area1 + Area2 + sqr(Area1 * Area2))

where:	EL1, EL2	Lower and upper elevations of the increment
	Area1, Area2	Areas computed for EL1, EL2, respectively
	Volume	Incremental volume between EL1 and EL2

Basin 3G

Subsection: Outlet Input Data
Label: Outlet#1
Scenario: 100

Return Event: 0 years
Storm Event:

Requested Pond Water Surface Elevations	
Minimum (Headwater)	232.50 ft
Increment (Headwater)	0.10 ft
Maximum (Headwater)	236.50 ft

Outlet Connectivity

Structure Type	Outlet ID	Direction	Outfall	E1 (ft)	E2 (ft)
Orifice-Area	Orifice - MF	Forward	TW	233.90	236.50
Inlet Box	Riser - 1	Forward	TW	235.05	236.50
Orifice-Circular	Orifice - LF	Forward	TW	233.25	236.50
Tailwater Settings	Tailwater			(N/A)	(N/A)

Basin 3G

Subsection: Outlet Input Data
Label: Outlet#1
Scenario: 100

Return Event: 0 years
Storm Event:

Structure ID: Orifice - LF Structure Type: Orifice-Circular	
Number of Openings	1
Elevation	233.25 ft
Orifice Diameter	0.7 in
Orifice Coefficient	0.600

Structure ID: Riser - 1 Structure Type: Inlet Box	
Number of Openings	1
Elevation	235.05 ft
Orifice Area	4.7 ft²
Orifice Coefficient	0.600
Weir Length	9.20 ft
Weir Coefficient	3.00 (ft^0.5)/s
K Reverse	1.000
Manning's n	0.000
Kev, Charged Riser	0.000
Weir Submergence	False
Orifice H to crest	True

Structure ID: Orifice - MF Structure Type: Orifice-Area	
Number of Openings	3
Elevation	233.90 ft
Orifice Area	0.3 ft²
Top Elevation	234.15 ft
Datum Elevation	233.90 ft
Orifice Coefficient	0.600

Structure ID: TW Structure Type: TW Setup, DS Channel	
Tailwater Type	Free Outfall

Convergence Tolerances	
Maximum Iterations	80
Tailwater Tolerance (Minimum)	0.01 ft
Tailwater Tolerance (Maximum)	0.10 ft
Headwater Tolerance (Minimum)	0.01 ft

Basin 3G

Subsection: Outlet Input Data
Label: Outlet#1
Scenario: 100

Return Event: 0 years
Storm Event:

Convergence Tolerances	
Headwater Tolerance (Maximum)	0.10 ft
Flow Tolerance (Minimum)	0.001 ft³/s
Flow Tolerance (Maximum)	10.000 ft³/s

Basin 3G

Subsection: Composite Rating Curve
Label: Outlet#1
Scenario: 100

Return Event: 0 years
Storm Event:

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft^3/s)	Tailwater Elevation (ft)	Convergence Error (ft)
232.50	0.00	(N/A)	0.00
232.60	0.00	(N/A)	0.00
232.70	0.00	(N/A)	0.00
232.80	0.00	(N/A)	0.00
232.90	0.00	(N/A)	0.00
233.00	0.00	(N/A)	0.00
233.10	0.00	(N/A)	0.00
233.20	0.00	(N/A)	0.00
233.25	0.00	(N/A)	0.00
233.30	0.00	(N/A)	0.00
233.40	0.00	(N/A)	0.00
233.50	0.01	(N/A)	0.00
233.60	0.01	(N/A)	0.00
233.70	0.01	(N/A)	0.00
233.80	0.01	(N/A)	0.00
233.90	0.01	(N/A)	0.00
234.00	0.73	(N/A)	0.00
234.10	1.46	(N/A)	0.00
234.20	1.99	(N/A)	0.00
234.30	2.30	(N/A)	0.00
234.40	2.57	(N/A)	0.00
234.50	2.81	(N/A)	0.00
234.60	3.03	(N/A)	0.00
234.70	3.24	(N/A)	0.00
234.80	3.44	(N/A)	0.00
234.90	3.63	(N/A)	0.00
235.00	3.80	(N/A)	0.00
235.05	3.89	(N/A)	0.00
235.10	4.28	(N/A)	0.00
235.20	5.74	(N/A)	0.00
235.30	7.74	(N/A)	0.00
235.40	10.15	(N/A)	0.00
235.50	12.92	(N/A)	0.00
235.60	15.98	(N/A)	0.00
235.70	19.33	(N/A)	0.00
235.80	22.92	(N/A)	0.00
235.90	25.98	(N/A)	0.00
236.00	27.30	(N/A)	0.00
236.10	28.56	(N/A)	0.00
236.20	29.76	(N/A)	0.00
236.30	30.91	(N/A)	0.00
236.40	32.01	(N/A)	0.00

Basin 3G

Subsection: Composite Rating Curve
Label: Outlet#1
Scenario: 100

Return Event: 0 years
Storm Event:

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft^3/s)	Tailwater Elevation (ft)	Convergence Error (ft)
236.50	33.08	(N/A)	0.00

Contributing Structures
None Contributing
None Contributing
None Contributing
None Contributing
None Contributing
None Contributing
None Contributing
None Contributing
None Contributing
Orifice - LF
Orifice - LF
Orifice - LF
Orifice - LF
Orifice - LF
Orifice - LF
Orifice - MF + Orifice - LF
Orifice - MF + Orifice - LF
Orifice - MF + Orifice - LF
Orifice - MF + Orifice - LF
Orifice - MF + Orifice - LF
Orifice - MF + Orifice - LF
Orifice - MF + Orifice - LF
Orifice - MF + Orifice - LF
Orifice - MF + Orifice - LF
Orifice - MF + Orifice - LF
Orifice - MF + Orifice - LF
Orifice - MF + Orifice - LF
Orifice - MF + Riser - 1 + Orifice - LF
Orifice - MF + Riser - 1 + Orifice - LF
Orifice - MF + Riser - 1 + Orifice - LF
Orifice - MF + Riser - 1 + Orifice - LF
Orifice - MF + Riser - 1 + Orifice - LF
Orifice - MF + Riser - 1 + Orifice - LF
Orifice - MF + Riser - 1 + Orifice - LF

Basin 3G

Subsection: Composite Rating Curve
Label: Outlet#1
Scenario: 100

Return Event: 0 years
Storm Event:

Composite Outflow Summary

Contributing Structures
Orifice - MF + Riser - 1 + Orifice - LF
Orifice - MF + Riser - 1 + Orifice - LF
Orifice - MF + Riser - 1 + Orifice - LF
Orifice - MF + Riser - 1 + Orifice - LF
Orifice - MF + Riser - 1 + Orifice - LF
Orifice - MF + Riser - 1 + Orifice - LF
Orifice - MF + Riser - 1 + Orifice - LF
Orifice - MF + Riser - 1 + Orifice - LF
Orifice - MF + Riser - 1 + Orifice - LF

Basin 3G

Subsection: Elevation-Volume-Flow Table (Pond)
Label: 1
Scenario: 100

Return Event: 0 years
Storm Event:

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions	
Elevation (Water Surface, Initial)	233.75 ft
Volume (Initial)	0.067 ac-ft
Flow (Initial Outlet)	0.01 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.01 ft³/s
Time Increment	1 min

Elevation (ft)	Outflow (ft³/s)	Storage (ac-ft)	Area (ft²)	Infiltration (ft³/s)	Flow (Total) (ft³/s)	2S/t + O (ft³/s)
232.50	0.00	0.000	1,852.000	0.00	0.00	0.00
232.60	0.00	0.004	1,923.945	0.00	0.00	6.29
232.70	0.00	0.009	1,997.260	0.00	0.00	12.83
232.80	0.00	0.014	2,071.946	0.00	0.00	19.61
232.90	0.00	0.018	2,148.004	0.00	0.00	26.64
233.00	0.00	0.023	2,225.432	0.00	0.00	33.93
233.10	0.00	0.029	2,304.231	0.00	0.00	41.48
233.20	0.00	0.034	2,384.401	0.00	0.00	49.29
233.25	0.00	0.037	2,425.000	0.00	0.00	53.30
233.30	0.00	0.040	2,462.818	0.00	0.00	57.38
233.40	0.00	0.045	2,539.333	0.00	0.00	65.72
233.50	0.01	0.051	2,617.018	0.00	0.01	74.31
233.60	0.01	0.057	2,695.873	0.00	0.01	83.17
233.70	0.01	0.064	2,775.899	0.00	0.01	92.29
233.80	0.01	0.070	2,857.096	0.00	0.01	101.68
233.90	0.01	0.077	2,939.463	0.00	0.01	111.34
234.00	0.73	0.084	3,023.000	0.00	0.73	122.00
234.10	1.46	0.091	3,103.357	0.00	1.46	132.93
234.20	1.99	0.098	3,184.768	0.00	1.99	143.94
234.30	2.30	0.105	3,267.232	0.00	2.30	155.00
234.40	2.57	0.113	3,350.751	0.00	2.57	166.30
234.50	2.81	0.121	3,435.324	0.00	2.81	177.86
234.60	3.03	0.129	3,520.951	0.00	3.03	189.68
234.70	3.24	0.137	3,607.632	0.00	3.24	201.77
234.80	3.44	0.145	3,695.368	0.00	3.44	214.13
234.90	3.63	0.154	3,784.157	0.00	3.63	226.78
235.00	3.80	0.162	3,874.000	0.00	3.80	239.72
235.05	3.89	0.167	3,917.086	0.00	3.89	246.30
235.10	4.28	0.171	3,960.411	0.00	4.28	253.26

Basin 3G

Subsection: Elevation-Volume-Flow Table (Pond) Return Event: 0 years
Label: 1 Storm Event:
Scenario: 100

Elevation (ft)	Outflow (ft^3/s)	Storage (ac-ft)	Area (ft^2)	Infiltration (ft^3/s)	Flow (Total) (ft^3/s)	2S/t + O (ft^3/s)
235.20	5.74	0.181	4,047.775	0.00	5.74	268.06
235.30	7.74	0.190	4,136.092	0.00	7.74	283.70
235.40	10.15	0.200	4,225.363	0.00	10.15	300.06
235.50	12.92	0.209	4,315.586	0.00	12.92	317.05
235.60	15.98	0.219	4,406.763	0.00	15.98	334.66
235.70	19.33	0.230	4,498.892	0.00	19.33	352.84
235.80	22.92	0.240	4,591.975	0.00	22.92	371.59
235.90	25.98	0.251	4,686.011	0.00	25.98	390.11
236.00	27.30	0.262	4,781.000	0.00	27.30	407.21
236.10	28.56	0.273	4,874.201	0.00	28.56	424.55
236.20	29.76	0.284	4,968.301	0.00	29.76	442.16
236.30	30.91	0.296	5,063.301	0.00	30.91	460.03
236.40	32.01	0.307	5,159.201	0.00	32.01	478.17
236.50	33.08	0.319	5,256.000	0.00	33.08	496.60

Basin 3G

Subsection: Level Pool Pond Routing Summary
Label: 1 (IN)
Scenario: 100

Return Event: 0 years
Storm Event:

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions	
Elevation (Water Surface, Initial)	233.75 ft
Volume (Initial)	0.067 ac-ft
Flow (Initial Outlet)	0.01 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.01 ft³/s
Time Increment	1 min

Inflow/Outflow Hydrograph Summary			
Flow (Peak In)	7.20 ft³/s	Time to Peak (Flow, In)	245 min
Flow (Peak Outlet)	3.78 ft³/s	Time to Peak (Flow, Outlet)	249 min

Elevation (Water Surface, Peak)	234.99 ft
Volume (Peak)	0.161 ac-ft

Mass Balance (ac-ft)	
Volume (Initial)	0.067 ac-ft
Volume (Total Inflow)	0.419 ac-ft
Volume (Total Infiltration)	0.000 ac-ft
Volume (Total Outlet Outflow)	0.411 ac-ft
Volume (Retained)	0.075 ac-ft
Volume (Unrouted)	0.000 ac-ft
Error (Mass Balance)	0.0 %

Basin 3G

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1

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APPENDIX 5

Unit Hydrograph Hydrology Calculations and Results

HEC-HMS HYDROLOGY INPUT SUMMARY FOR REGIONAL DRAINAGE BASIN

Area draining to SD Line P (Representing Systems 3600P and 3650P)

Project:	Ocean Breeze Ranch		
Storm frequency:	100	year	
6-Hour Storm Duration Precipitation:	3.3	inches	(From rainfall isopluvials, County of S.D. Hydrology Manual)
24-Hour Storm Duration Precipitation:	5.8	inches	(From rainfall isopluvials, County of S.D. Hydrology Manual)
Precipitation Zone Number (PZN)=	1.7		(From Figure C-1, County of S.D. Hydrology Manual)
PZN Adjustment Factor for return period=	2.7		(From Table 4-6, County of S.D. Hydrology Manual)

HYDROLOGIC BASIN VARIABLES:

	Basin	
Unadjusted Curve Number=	77.8	(From soil and landcover analysis)
PZN Adjusted Curve Number=	**86.76**	(Interpolated from Table 4-10 in the County Drainage Manual)

WATERSHED VARIABLES:

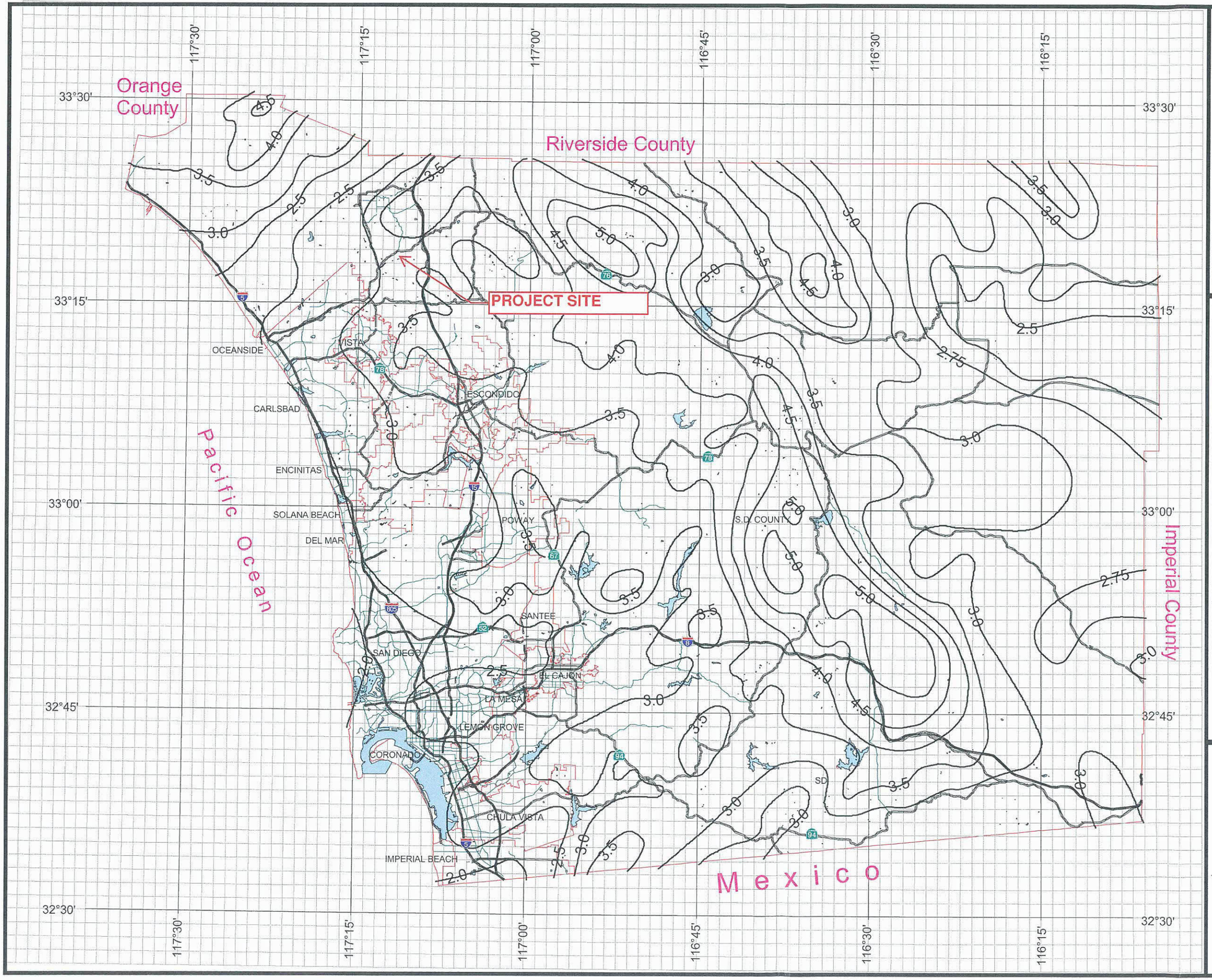
Area in square miles=	**1.186**			
Watershed Length (L)=	1.850	miles		
Length to Centroid (L_c)=	0.72	miles		
Watershed highest elevation =	1000	feet		
Watershed lowest elevation =	226	feet		
Slope (s)=	418.4	feet/mile		
Basin n factor=	0.08	(Estimate from site visit)		
Corps lag (T_L)=24n((L*L_c)/$s^{0.5}$)^m=	0.68	hours (m=0.38 from County of S.D. manual)		
Time to peak = 0.862*Corps lag=	0.59	hours		
Computation Interval (D) (min)=	5	minutes	<=0.2Tp=	7.0 OK
NRCS Lag = 0.862*Corps lag - D/2=	0.544	hours	=	**32.7** min

County of San Diego Hydrology Manual

Rainfall Isopluvials

100 Year Rainfall Event - 6 Hours

Isopluvial (inches)



DPW GIS
Department of Public Works
Geographic Information Services

SanGIS
We Have San Diego Covered!

N
W E
S

3 0 3 Miles

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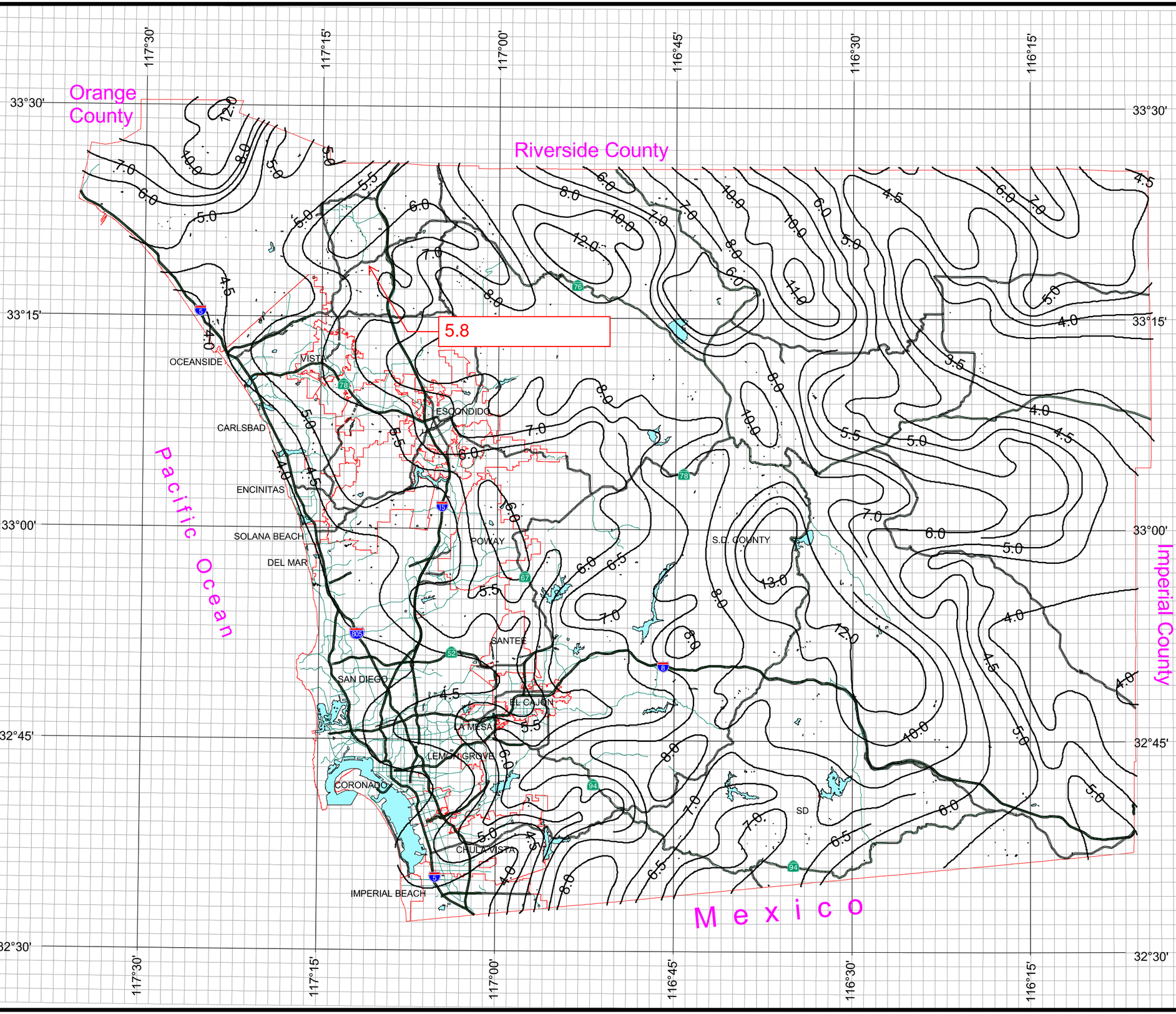
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County of San Diego Hydrology Manual

Rainfall Isopluvials

100 Year Rainfall Event - 24 Hours

Isopluvial (inches)



DPW GIS
Department of Public Works
Geographic Information Services

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N
W E
S

3 0 3 Miles

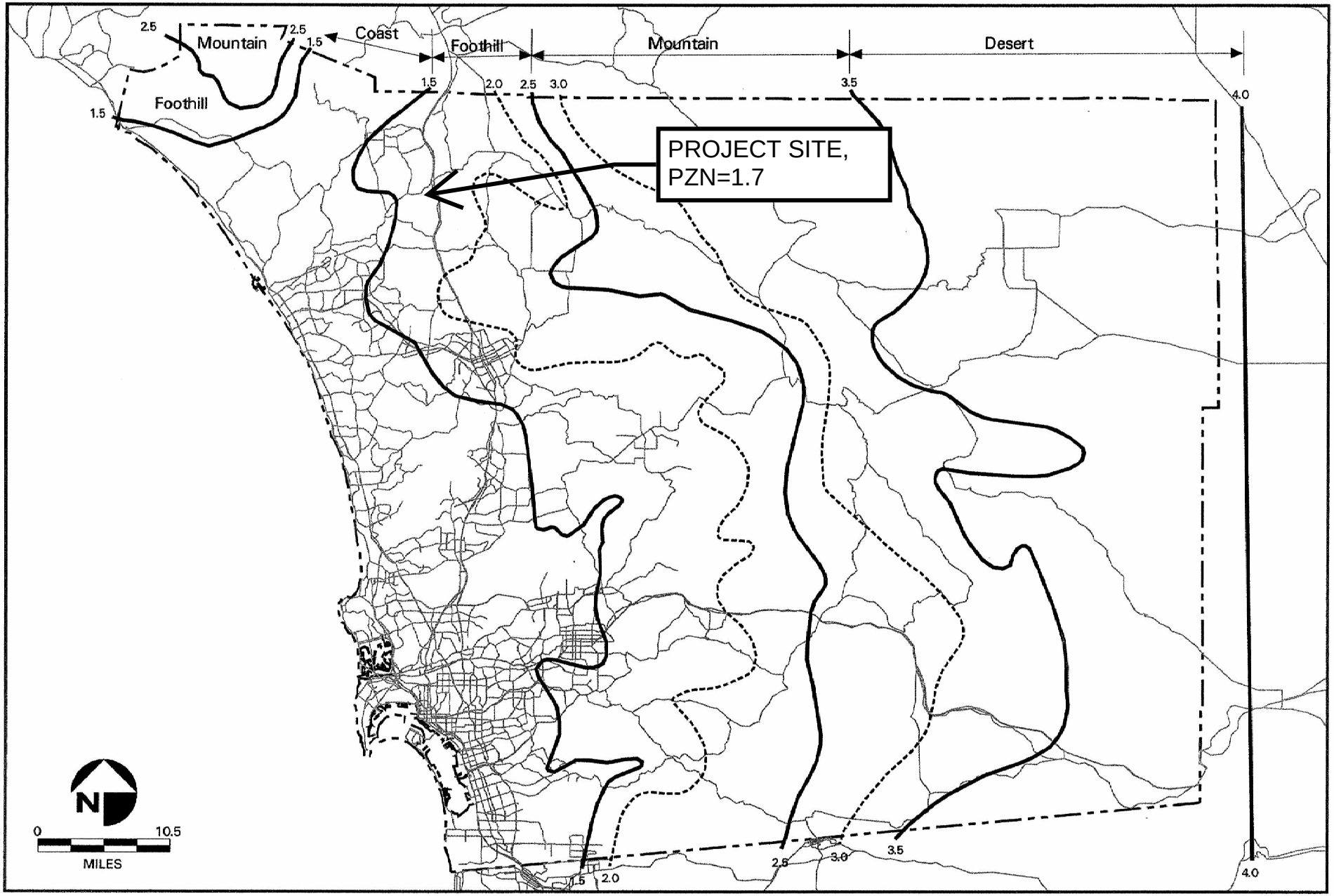
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Summary Calculations to Determine Proposed Condition Unadjusted Composite Curve Numbers for Watershed

Land Use / Land Cover	Soil A (acres)	Soil B (acres)	Soil C (acres)	Soil D (acres)	Total (acres)	Soil A CN	Soil B CN	Soil C CN	Soil D CN	Soil A A*CN	Soil B A*CN	Soil C A*CN	Soil D A*CN	Unadjusted Average CN
Low Density Residential (assume 1ac lots)	13.70	136.17	419.59	189.52	758.98	51	68	79	84	698.7	9259.6	33147.6	15919.7	
Total					**758.98**									**77.8**



County of San Diego Hydrology Manual

Precipitation Zone Numbers (PZN)

FIGURE

C-1

The adjustment for PZN Condition may be made to the composite CN for the watershed. It is not necessary to make the PZN Condition adjustment to each of the CNs for the different combinations of ground cover and soil group within the watershed before calculating the composite CN.

PZN=1.7

Table 4-6

PZN ADJUSTMENT FACTORS FOR FLOW COMPUTATIONS (San Diego County)

Storm Frequency	Coast (PZN = 1.0)	Foothills (PZN = 2.0)	Mountains (PZN = 3.0)	Desert (PZN = 4.0)
Less than 35-year return period	1.5	2.5	2.0	1.5
Greater than or equal to 35-year return period	2.0	3.0	3.0	2.0

Notes: PZN is the precipitation zone number (see Map, Appendix C). The PZN adjustment factor represents the PZN Condition that the CN for the watershed should be adjusted to.

4.1.3 Rainfall-Runoff Relationship

A relationship between accumulated rainfall and accumulated runoff was derived by NRCS from experimental plots for numerous soils and vegetative cover conditions. The following NRCS runoff equation is used to estimate direct runoff from 24-hour or 6-hour storm rainfall. The equation is:

$$Q_a = \frac{(P - I_a)^2}{(P - I_a) + S} \qquad \text{(Eq. 4-1)}$$

where: Q_a = accumulated direct runoff (in)

P = accumulated rainfall (potential maximum runoff) (in)

I_a = initial abstraction including surface storage, interception, evaporation, and infiltration prior to runoff (in)

S = potential maximum soil retention (in)

PZN=2.8

Table 4-10

RUNOFF CURVE NUMBERS FOR PZN CONDITIONS 1.0, 2.0, AND 3.0

CN For:			CN For:		
PZN Condition = 1.0	PZN Condition = 2.0	PZN Condition = 3.0	PZN Condition = 1.0	PZN Condition = 2.0	PZN Condition = 3.0
100	100	100	40	60	78
97	99	100	39	59	77
94	98	99	38	58	76
91	97	99	37	57	75
89	96	99	37	56	75
87	95	98	34	55	73
85	94	98	34	54	73
83	93	98	33	53	72
81	92	97	32	52	71
80	91	97	31	51	70
78	90	96	31	50	70
76	89	96	30	49	69
75	88	95	29	48	68
73	87	95	28	47	67
72	86	94	27	46	66
70	85	94	26	45	65
68	84	93	25	44	64
67	83	93	25	43	63
Interpolate	82	92	24	42	62
64	81	92	23	41	61
63	80	91	22	40	60
62	79	91	21	39	59
60	78	90	21	38	58
59	77	89	20	37	57
58	76	89	19	36	56
57	75	88	18	35	55
55	74	88	18	34	54
54	73	87	17	33	53
53	72	86	16	32	52
52	71	86	16	31	51
51	70	85	15	30	50
50	69	84			
48	68	84	12	25	43
47	67	83	9	20	37
46	66	82	6	15	30
45	65	82	4	10	22
44	64	81	2	5	13
43	63	80	0	0	0
42	62	79			
41	61	78			

Global Summary Results for Run "Run 1"

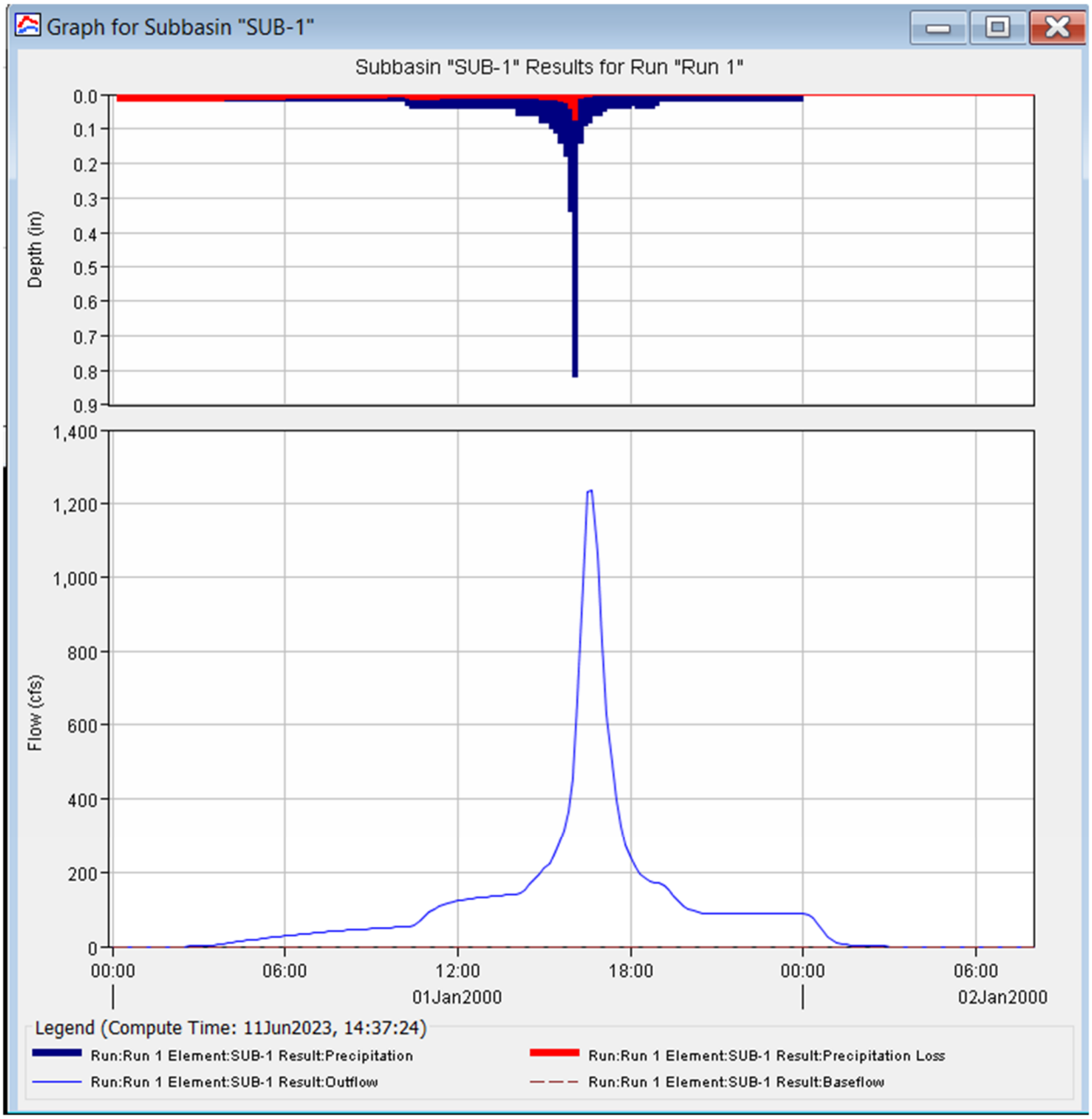
Project: OBR Simulation Run: Run 1

Start of Run: 01Jan2000, 00:00
End of Run: 02Jan2000, 08:00
Compute Time: 11Jun2023, 14:37:24

Basin Model: Basin 2
Meteorologic Model: Met 1
Control Specifications: Control 2

Show Elements: All Elements | Volume Units: (•) IN ( ) AC-FT | Sorting: Hydrologic

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
SUB-1	1.186	1237.5	01Jan2000, 16:40	4.27



APPENDIX 6

Exhibits

N

200 100 0 200 400 600

SCALE: 1"=200'

REY RIVER

LUIS

SAN

SYSTEM 100
TOTAL Q100= 538.1 CFS
TOTAL AREA= 400.3 AC
Tc=21.4 MIN

SYSTEM 200
TOTAL Q100= 167.5 CFS
TOTAL AREA= 197.7 AC
Tc=33.7 MIN

SYSTEM 300
TOTAL Q100 = 108.1 CFS
TOTAL AREA = 109.2 AC
Tc=20.6 MIN

SYSTEM 4000
TOTAL Q100 = 41.6 CFS
TOTAL AREA = 29.6 AC
Tc=14.0 MIN

SYSTEM 4080
TOTAL Q100 = 11.3 CFS
TOTAL AREA = 3.7 AC
Tc=4.8 MIN

SYSTEM 4060
TOTAL Q100 = 14.7 CFS
TOTAL AREA = 5.8 AC
Tc=8.5 MIN

SYSTEM 4050
TOTAL Q100 = 4.0 CFS
TOTAL AREA = 1.8 AC
Tc=10.1 MIN

SYSTEM 4040
TOTAL Q100 = 10.5 CFS
TOTAL AREA = 5.1 AC
Tc=8.5 MIN

SYSTEM 4030
TOTAL Q100 = 31.8 CFS
TOTAL AREA = 19.3 AC
Tc=11.7 MIN

EXISTING FLOODPLAIN PER PROJECT SAN LUIS REY FLOODPLAIN STUDY

VESSELS INCH RD

W LILAC RD

CAMINO DEL CIELO

REDONDO DR

FOR CONTINUATION, SEE EXHIBIT A-2

LEGEND:

- DRAINAGE SUBAREA
- DRAINAGE FLOWPATH
- HYDROLOGY NODE (XXXX)
- DRAINAGE SUBAREA ACREAGE (XX.XX AC)
- LOT LINE
- WATERS OF THE US AND/OR STATE
- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- 100' LIMITED BLDG ZONE BUFFER
- 100' BIO BUFFER ZONE
- BIOLOGICAL RESOURCE PROTECTION ORDINANCE (RPO)
- EXISTING FLOODPLAIN

SOIL TYPE A
SOIL TYPE B
SOIL TYPE C (NO HATCH)
SOIL TYPE D

PREPARED BY:

PROJECT DESIGN CONSULTANTS
Planning | Landscape Architecture | Engineering | Survey

701 B Street, Suite 800
San Diego, CA 92101
619.235.6470 Tel
619.234.0349 Fax

SCALE:	1"=200'
JOB #:	4192
CREATED:	9/2/16

COUNTY OF SAN DIEGO

OCEAN BREEZE RANCH

DRAINAGE MAP
EXISTING CONDITIONS
EXHIBIT A-1

\\Cbr-sand-gis-ws1\Gistools\1ALONFAST_CORE\1ALONFAST-SRV\acquisitions\CA-SAND-PD\Projects\4192.10\Engr\Reports\Drainage-PE\DR\4192.10
EX HYD FIG.mxd 11/6/2024 4:40:46 PM

FOR CONTINUATION, SEE EXHIBIT A-3

FOR CONTINUATION, SEE EXHIBIT A-1

SYSTEM 3400
TOTAL Q100 = 35.0 CFS
TOTAL AREA = 18.8 AC
Tc=9.3 MIN

SYSTEM 400
TOTAL Q100 = 216.6 CFS
TOTAL AREA = 146.7 AC
Tc=14.8 MIN

SYSTEM 550
TOTAL Q100 = 198.0 CFS
TOTAL AREA = 171.2 AC
Tc=19.5 MIN

SYSTEM 500
TOTAL Q100 = 836.7 CFS
TOTAL AREA = 587.7 AC
Tc=17.1 MIN

SYSTEM 1100
TOTAL Q100 = 40.5 CFS
TOTAL AREA = 23.9 AC
Tc=10.2 MIN

SYSTEM 1800
TOTAL Q100 = 5.6 CFS
TOTAL AREA = 1.6 AC
Tc=9.1 MIN

EXISTING FLOODPLAIN PER PROJECT SAN LUIS REY FLOODPLAIN STUDY

EXISTING FLOODPLAIN PER PROJECT SAN LUIS REY FLOODPLAIN STUDY

NORMAN L. SULLIVAN MIDDLE SCHOOL

W LILAC RD

W LILAC RD

W LILAC RD

VIA ARARAT DR

SCALE: 1"=200'

LEGEND:

- DRAINAGE SUBAREA
- DRAINAGE FLOWPATH
- XXXX HYDROLOGY NODE
- XX.XX AC DRAINAGE SUBAREA ACREAGE
- LOT LINE
- WATERS OF THE US AND/OR STATE
- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- 100' LIMITED BLDG ZONE BUFFER / 100' BIO BUFFER ZONE — BIOLOGICAL RESOURCE PROTECTION ORDINANCE (RPO)
- EXISTING FLOODPLAIN
- SOIL TYPE A
- SOIL TYPE B
- SOIL TYPE C (NO HATCH)
- SOIL TYPE D

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619.234.0349 Fax

SCALE:	1"=200'
JOB #:	4192
CREATED:	9/2/16

COUNTY OF SAN DIEGO

OCEAN BREEZE RANCH

DRAINAGE MAP
EXISTING CONDITIONS
EXHIBIT A-2

\\Cor-sandi-pfile-vn1\Statistic\TALONFAST_CORE\TALONFAST~SRV\acquisitions\CA~SAND~PST\Projects\4192.101\Engr\Reports\Drainage~PE\EXH\4192.10 EX H1D PE.dwg 11/6/2024 4:40:34 PM

LEGEND:

- DRAINAGE SUBAREA
- DRAINAGE FLOWPATH
- XXXX — HYDROLOGY NODE
- XX.XX AC — DRAINAGE SUBAREA ACREAGE
- LOT LINE
- WATERS OF THE US AND/OR STATE
- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- 100' LIMITED BLDG ZONE BUFFER
- 100' BIO BUFFER ZONE
- BIOLOGICAL RESOURCE PROTECTION ORDINANCE (RPO)
- EXISTING FLOODPLAIN
- SOIL TYPE A
- SOIL TYPE B
- SOIL TYPE C (NO HATCH)
- SOIL TYPE D

N

200 100 0 200 400 600

SCALE: 1"=200'

SAN LUIS REY RIVER

SYSTEM 3130
TOTAL Q100 = 22.5 CFS
TOTAL AREA = 13.8 AC
Tc=10.0 MIN

SYSTEM 3100
TOTAL Q100 = 41.5 CFS
TOTAL AREA = 22.4 AC
Tc=9.8 MIN

SYSTEM 3050
TOTAL Q100 = 9.5 CFS
TOTAL AREA = 4.8 AC
Tc=8.0 MIN

SYSTEM 3900
TOTAL Q100 = 11.4 CFS
TOTAL AREA = 5.7 AC
Tc=9.2 MIN

SYSTEM 3800
TOTAL Q100 = 27.3 CFS
TOTAL AREA = 13.0 AC
Tc=8.2 MIN

SYSTEM 3700
TOTAL Q100 = 18.7 CFS
TOTAL AREA = 8.4 AC
Tc=7.4 MIN

SYSTEM 3400
TOTAL Q100 = 35.0 CFS
TOTAL AREA = 18.8 AC
Tc=9.3 MIN

SYSTEM 400
TOTAL Q100 = 216.6 CFS
TOTAL AREA = 146.7 AC
Tc=14.8 MIN

SYSTEM 550
TOTAL Q100 = 198.0 CFS
TOTAL AREA = 171.2 AC
Tc=19.5 MIN

EXISTING FLOODPLAIN PER PROJECT SAN LUIS REY FLOODPLAIN STUDY

EXISTING FLOODPLAIN PER PROJECT SAN LUIS REY FLOODPLAIN STUDY

3.19 AC · 10.40 AC · 4.66 AC · 22.08 AC · 0.10 AC · 5.71 AC · 12.86 AC · 8.18 AC · 0.20 AC · 0.30 AC · 0.05 AC · 0.18 AC · 0.19 AC · 0.17 AC · 18.59 AC · 0.24 AC · 46.06 AC · 0.19 AC · 17.20 AC · 24.41 AC · 11.29 AC · 1.51 AC · 5.49 AC · 6.68 AC · 50.52 AC · 7.27 AC · 64.56 AC · 38.98 AC

3132 · 3133 · 3102 · 3052 · 3902 · 3802 · 3702 · 3051 · 3050 · 3131 · 3130 · 3101 · 3100 · 3901 · 3900 · 3801 · 3800 · 3701 · 3700 · 3401 · 3400 · 3402 · 559 · 555 · 563 · 564 · 420 · 570 · 574 · 571 · 568 · 562 · 567 · 566 · 565

A · B · C · D

FOR CONTINUATION, SEE EXHIBIT A-1

FOR CONTINUATION, SEE EXHIBIT A-2

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SCALE: 1"=200'
JOB #: 4192
CREATED: 9/2/16

COUNTY OF SAN DIEGO

OCEAN BREEZE RANCH

DRAINAGE MAP
EXISTING CONDITIONS
EXHIBIT A-3

LEGEND:

- DRAINAGE SUBAREA
- DRAINAGE FLOWPATH
- XXXX — HYDROLOGY NODE
- XX.XX AC — DRAINAGE SUBAREA ACREAGE
- LOT LINE
- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- EXISTING FLOODPLAIN
- PROPOSED FLOODPLAIN
- PROPOSED STORM DRAIN
- SOIL TYPE A
- SOIL TYPE B
- SOIL TYPE C (NO HATCH)
- SOIL TYPE D

NORTHWEST QUADRANT:
SYSTEM 2000P
SYSTEM 2015P
SYSTEM 2027P
SYSTEM 2040P
SYSTEM 2058P
SYSTEM 2100P
SYSTEM 2200P
SYSTEM 2300P
SYSTEM 2400P

NORTHWEST QUADRANT:
SYSTEM 1000P
SYSTEM 1100P
SYSTEM 1200P
SYSTEM 1300P

NORTHEAST QUADRANT:
SYSTEM 3650P, SYSTEM 3400P, SYSTEM 3350P,
SYSTEM 3700P, SYSTEM 3750P, SYSTEM 3800P,
SYSTEM 3900P, SYSTEM 3950P, SYSTEM 3050P,
SYSTEM 3100P, SYSTEM 3130P

NORTHEAST QUADRANT:
SYSTEM 3450P
SYSTEM 3000P
SYSTEM 3500P
SYSTEM 3550P
SYSTEM 3150P
SYSTEM 3260P
SYSTEM 3200P
SYSTEM 3300P
SYSTEM 3270P
SYSTEM 3600P

SOUTHWEST QUADRANT:
SYSTEM 4000P
SYSTEM 4016P
SYSTEM 4030P
SYSTEM 4040P
SYSTEM 4050P
SYSTEM 4060P
SYSTEM 4070P
SYSTEM 4080P

SOUTHEAST QUADRANT:
SYSTEM 5000P
SYSTEM 5005P
SYSTEM 5050P

HILLSIDE ESTATE PARCEL

PLANNING AREA 1
PLANNING AREA 2
PLANNING AREA 3

SHEET C-1
SHEET C-2
SHEET C-3
SHEET C-4
SHEET C-5
SHEET C-6
SHEET C-7
SHEET C-8
SHEET C-9
SHEET C-10
SHEET C-11
SHEET C-12

N

600 300 0 600 1200 1800
SCALE: 1"=600'

SCALE:	1"=600'
JOB #:	4192.10
CREATED:	07/01/20

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COUNTY OF SAN DIEGO

OCEAN BREEZE RANCH

DRAINAGE MAP
PROPOSED CONDITIONS
LEGEND AND KEYMAP
EXHIBIT C-0

File Name \\Ca-sand-gfe-vm\fastdata\TALONFAST_CORE\TALONFAST-SRV\acquisitions\CA-SAND-PD\Projects\4192.10\Engr\Reports\Drainage-FE\EXH\4192.10 PROP HYD FE.dwg, Date Plotted Last 11/12/2024 7:55:11 AM

FOR CONTINUATION, SEE SHEET C-9

FOR CONTINUATION, SEE SHEET C-2

FOR CONTINUATION, SEE SHEET C-3

FOR CONTINUATION, SEE SHEET C-5

FOR CONTINUATION, SEE SHEET C-4

SYSTEM 2000
TOTAL Q100= 16.8 CFS
TOTAL AREA= 3.6 AC
Tc= 5.9 MIN.

BASIN 2G

SYSTEM 2015
TOTAL Q100= 11.8 CFS
TOTAL AREA= 3.7 AC
Tc= 7.7 MIN.

BASIN 2F

SYSTEM 1200
TOTAL Q100= 36.6 CFS
TOTAL AREA= 6.7 AC
Tc= 5.6 MIN.

SYSTEM 1000 (DETAINED)
TOTAL Q100= 39.8 CFS
TOTAL AREA= 49.2 AC
SYSTEM 1000 (UNDETAINED)
TOTAL Q100= 201.6 CFS
TOTAL AREA= 49.2 AC
Tc= 7.6 MIN.

SYSTEM 1100
TOTAL Q100= 18.4 CFS
TOTAL AREA= 3.6 AC
Tc= 9.1 MIN.

BASIN 1A

EXISTING FLOODPLAIN
PER PROJECT SAN LUIS REY FLOODPLAIN STUDY

STREET A
STREET B
STREET C
STREET D
STREET E
STREET F
STREET G
STREET H
STREET I
STREET J

SD LINE A1
SD LINE B1
SD LINE B2
SD LINE B3
SD LINE B4
SD LINE B5
SD LINE B6
SD LINE B7
SD LINE C1
SD LINE C2
SD LINE D1
SD LINE D2
SD LINE E1
SD LINE E2
SD LINE F1
SD LINE F2
SD LINE G1
SD LINE G2
SD LINE H1
SD LINE H2
SD LINE I1
SD LINE I2
SD LINE J1
SD LINE J2

2:1 SLOPE (MAX.)

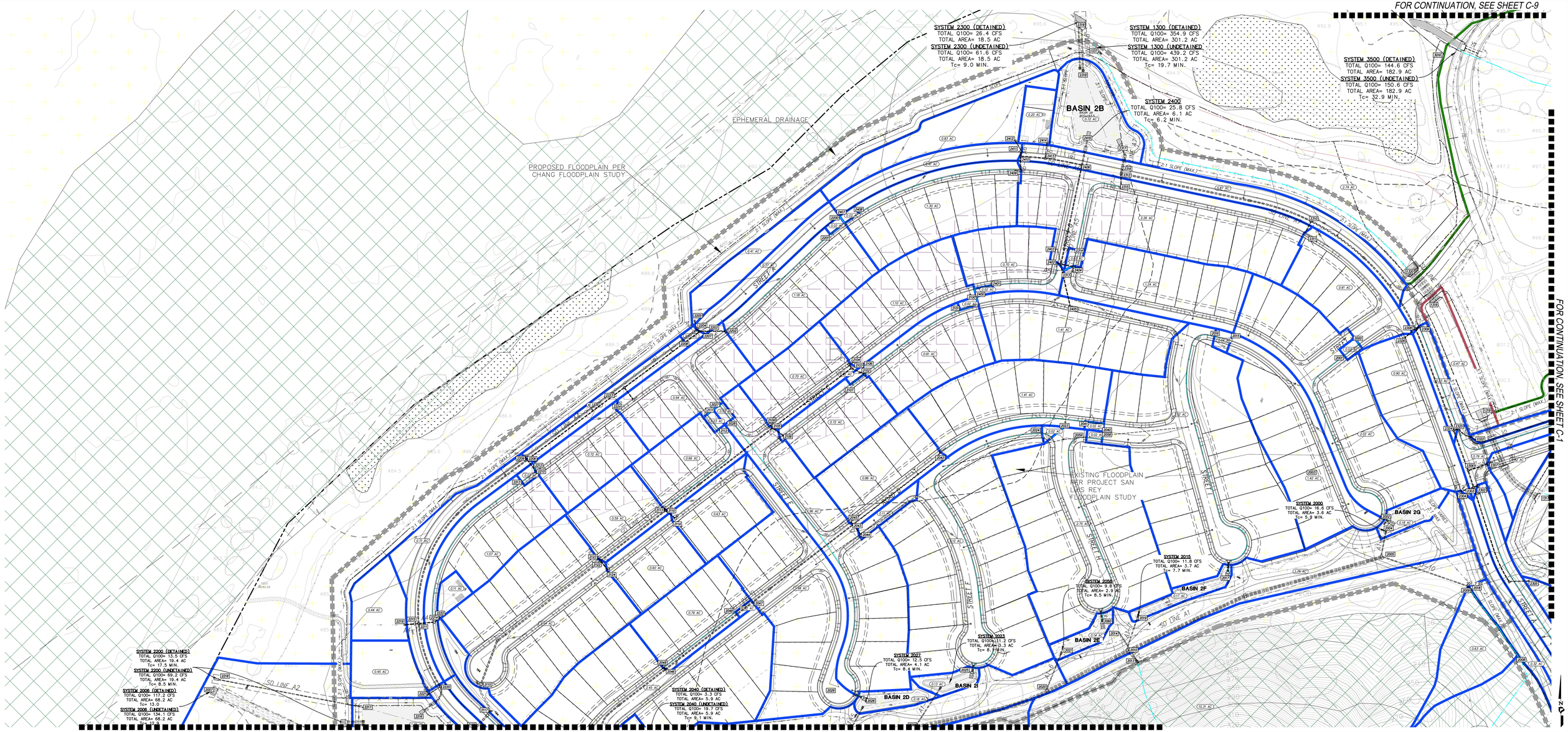
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SCALE: 1"=60'

SCALE:	1"=60'
JOB #:	4192.10
CREATED:	07/01/20

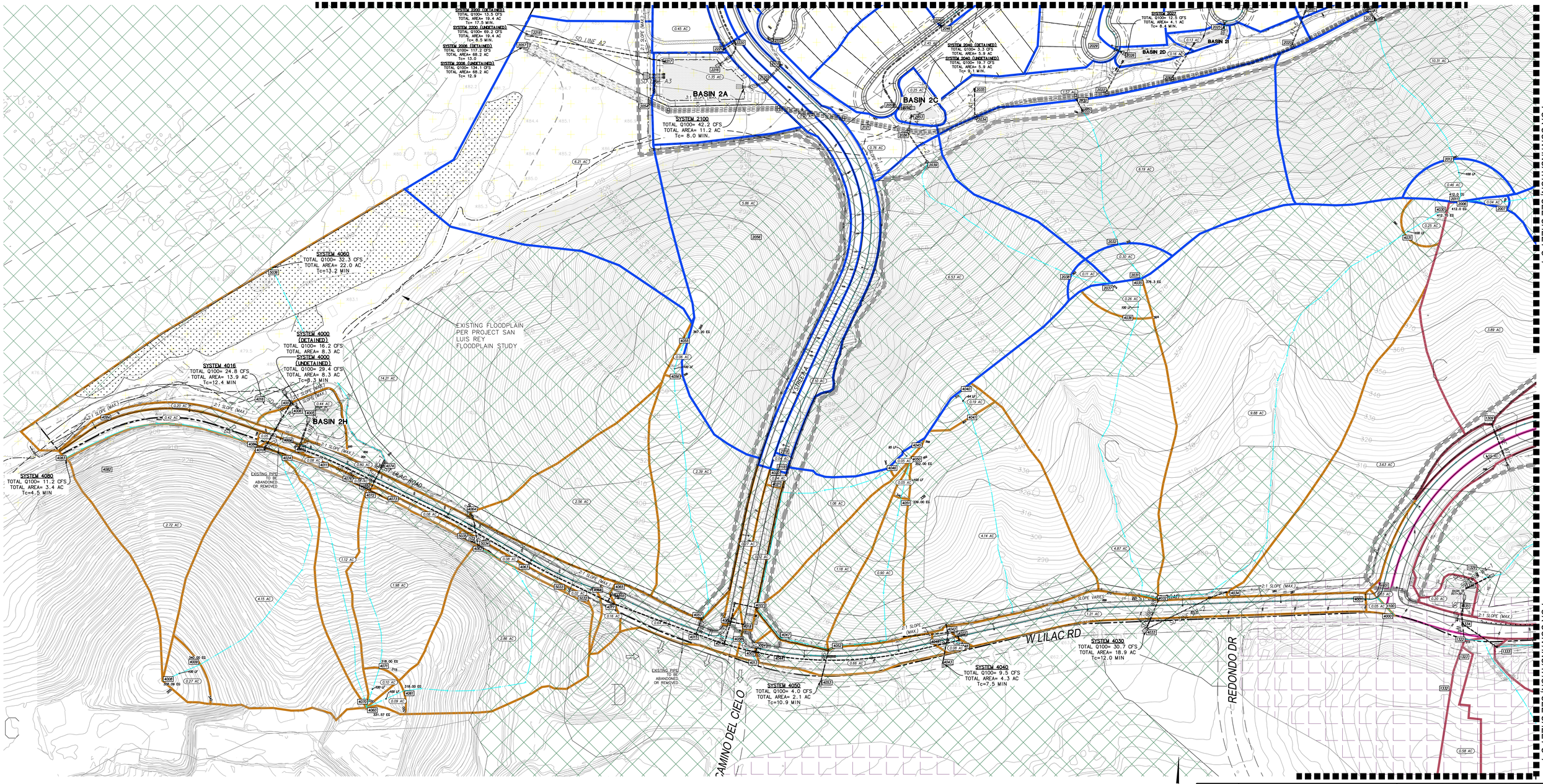
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COUNTY OF SAN DIEGO
OCEAN BREEZE RANCH
DRAINAGE MAP
PROPOSED CONDITIONS
EXHIBIT C-1

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SCALE:	1"=60'
JOB #:	4192.10
CREATED:	07/01/20

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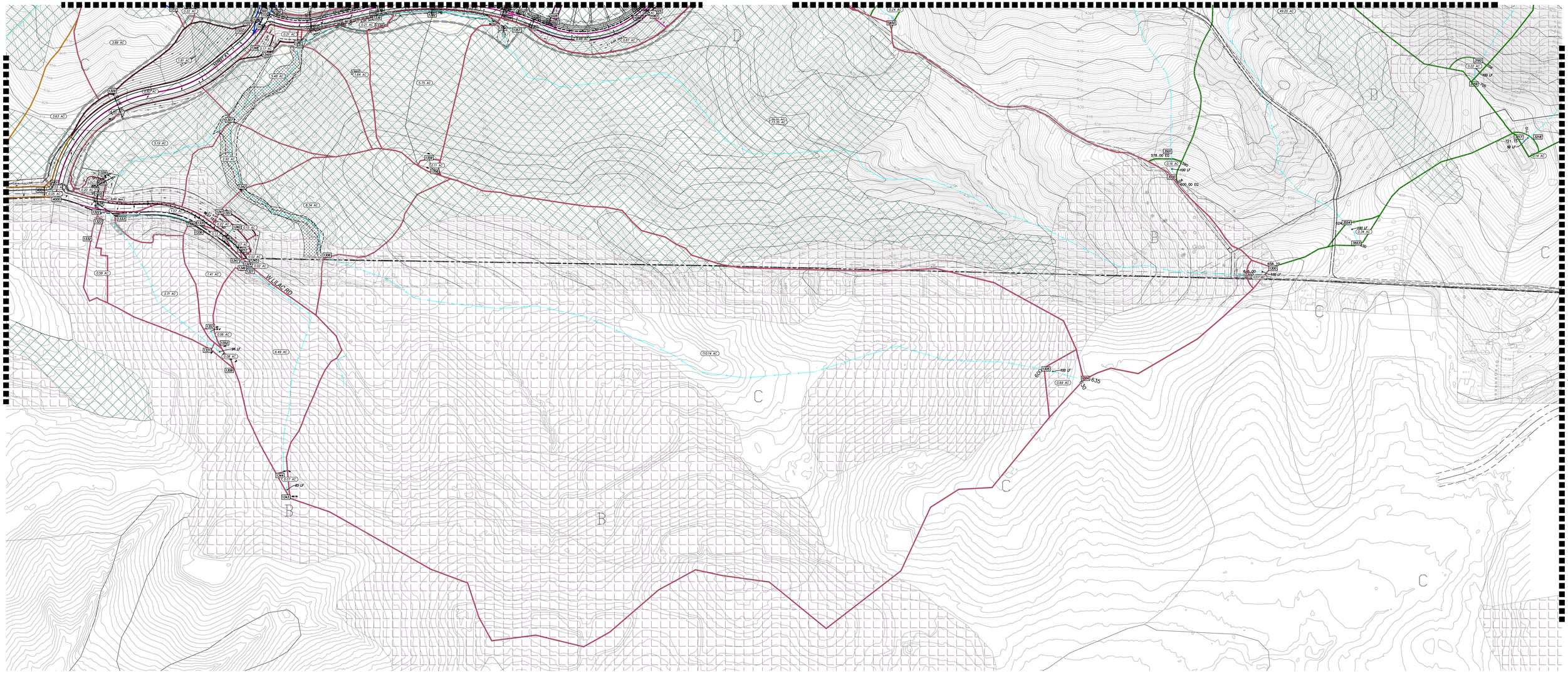
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COUNTY OF SAN DIEGO

OCEAN BREEZE RANCH

DRAINAGE MAP
PROPOSED CONDITIONS
EXHIBIT C-3

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100 50 0 100 200 300
SCALE: 1"=100'

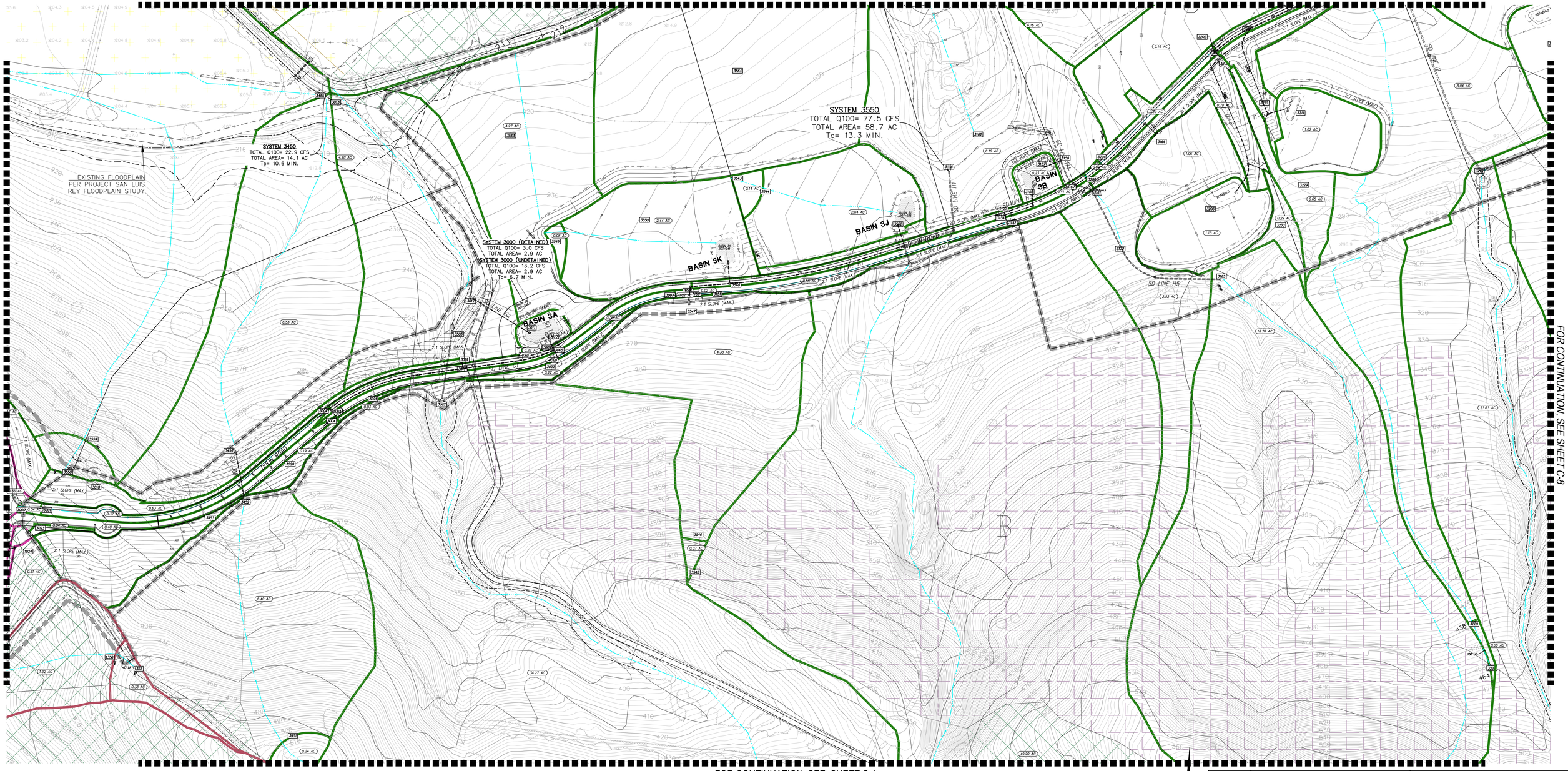
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SCALE: 1"=100'
JOB #: 4192.10
CREATED: 07/01/20

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COUNTY OF SAN DIEGO
OCEAN BREEZE RANCH
DRAINAGE MAP
PROPOSED CONDITIONS
EXHIBIT C-4

FOR CONTINUATION, SEE SHEET C-6



FOR CONTINUATION, SEE SHEET C-1

FOR CONTINUATION, SEE SHEET C-8

FOR CONTINUATION, SEE SHEET C-4

SCALE:	1"=60'
JOB #:	4192.10
CREATED:	07/01/20

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COUNTY OF SAN DIEGO

OCEAN BREEZE RANCH

DRAINAGE MAP
PROPOSED CONDITIONS
EXHIBIT C-5

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SYSTEM 3300 (DETAINED)
TOTAL Q100= 19.6 CFS
TOTAL AREA= 15.8 AC
SYSTEM 3300 (UNDETAINED)
TOTAL Q100= 46.2 CFS
TOTAL AREA= 15.8 AC
Tc= 10.0 MIN.

EXISTING FLOODPLAIN PER PROJECT SAN LUIS REY FLOODPLAIN STUDY

SYSTEM 3200 (DETAINED)
TOTAL Q100= 3.9 CFS
TOTAL AREA= 8.9 AC
SYSTEM 3200 (UNDETAINED)
TOTAL Q100= 21.3 CFS
TOTAL AREA= 8.9 AC
Tc= 9.5 MIN.

BASIN 3D
BASIN 3C
BASIN 3B
OLIVIN ROAD
STREET F
SD LINE K1
SD LINE K2
SD LINE H
SD LINE H1
SD LINE H2
SD LINE H3
SD LINE H4
SD LINE 12
2:1 SLOPE (MAX.)
3:1 SLOPE (MAX.)

FOR CONTINUATION, SEE SHEET C-7
FOR CONTINUATION, SEE SHEET C-9
FOR CONTINUATION, SEE SHEET C-5
FOR CONTINUATION, SEE SHEET C-8

50 25 0 50 100 150
SCALE: 1"=50'

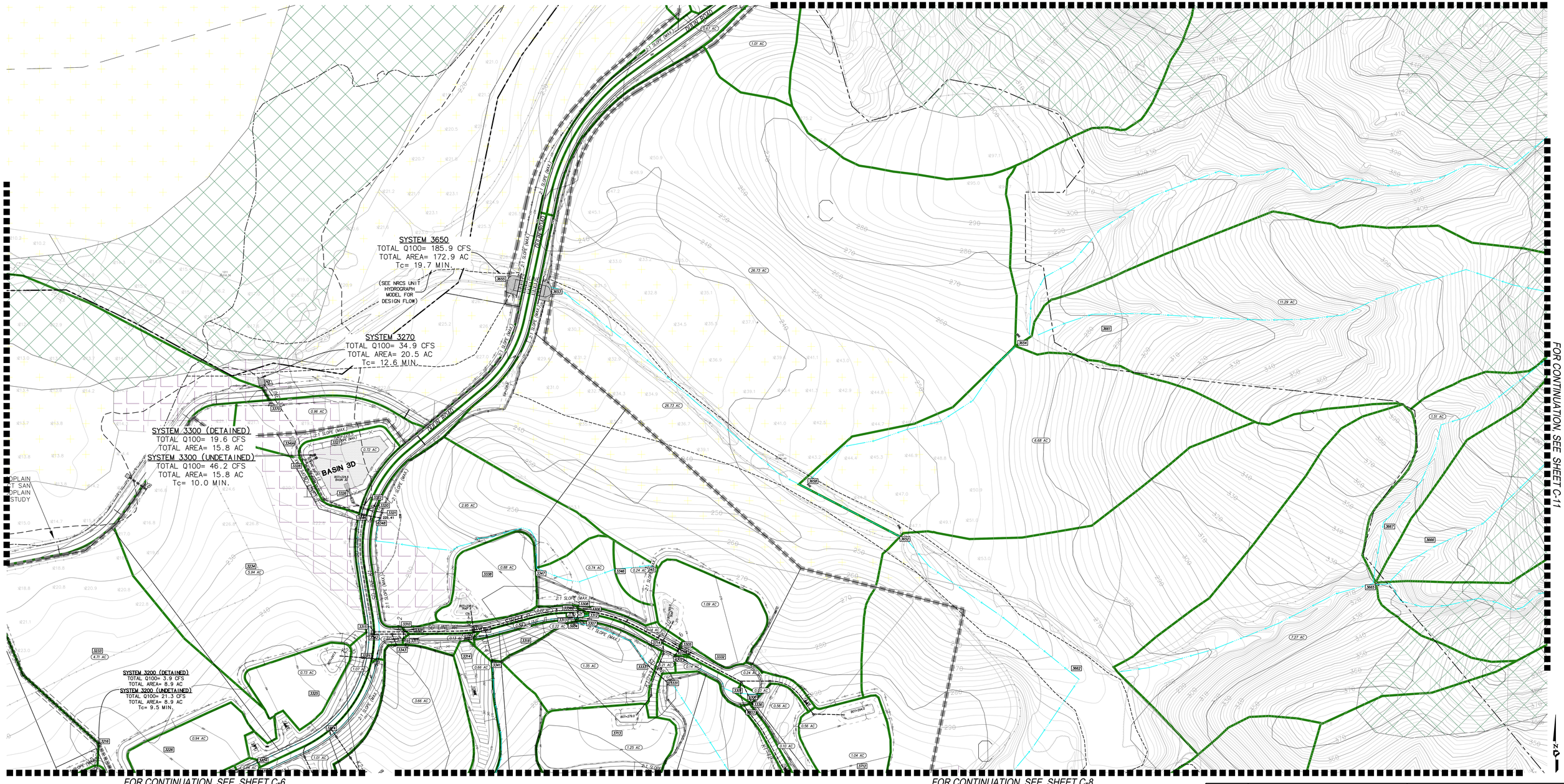
N

SCALE:	1"=50'
JOB #:	4192.10
CREATED:	07/01/20

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COUNTY OF SAN DIEGO
OCEAN BREEZE RANCH
DRAINAGE MAP
PROPOSED CONDITIONS
EXHIBIT C-6

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SCALE:	1"=60'
JOB #:	4192.10
CREATED:	07/01/20

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COUNTY OF SAN DIEGO

OCEAN BREEZE RANCH

DRAINAGE MAP
PROPOSED CONDITIONS
EXHIBIT C-7

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FOR CONTINUATION, SEE SHEET C-7

FOR CONTINUATION, SEE SHEET C-11

FOR CONTINUATION, SEE SHEET C-5

FOR CONTINUATION, SEE SHEET C-4

SYSTEM 3600
TOTAL Q100= 835.6 CFS
TOTAL AREA= 586.6 AC
Tc= 17.1 MIN.

SYSTEM 5000
TOTAL Q100= 41.5 CFS
TOTAL AREA= 26.1 AC
Tc=15.0 MIN

SYSTEM 5050
TOTAL Q100= 3.0 CFS
TOTAL AREA= 0.9 AC
Tc=9.2 MIN

SYSTEM 5005
TOTAL Q100= 9.1 CFS
TOTAL AREA= 4.6 AC
Tc=13.7 MIN

W LILAC RD

VIA ARGUAT DR

SCALE: 1"=150'

SCALE:	1"=150'
JOB #:	4192.10
CREATED:	07/01/20

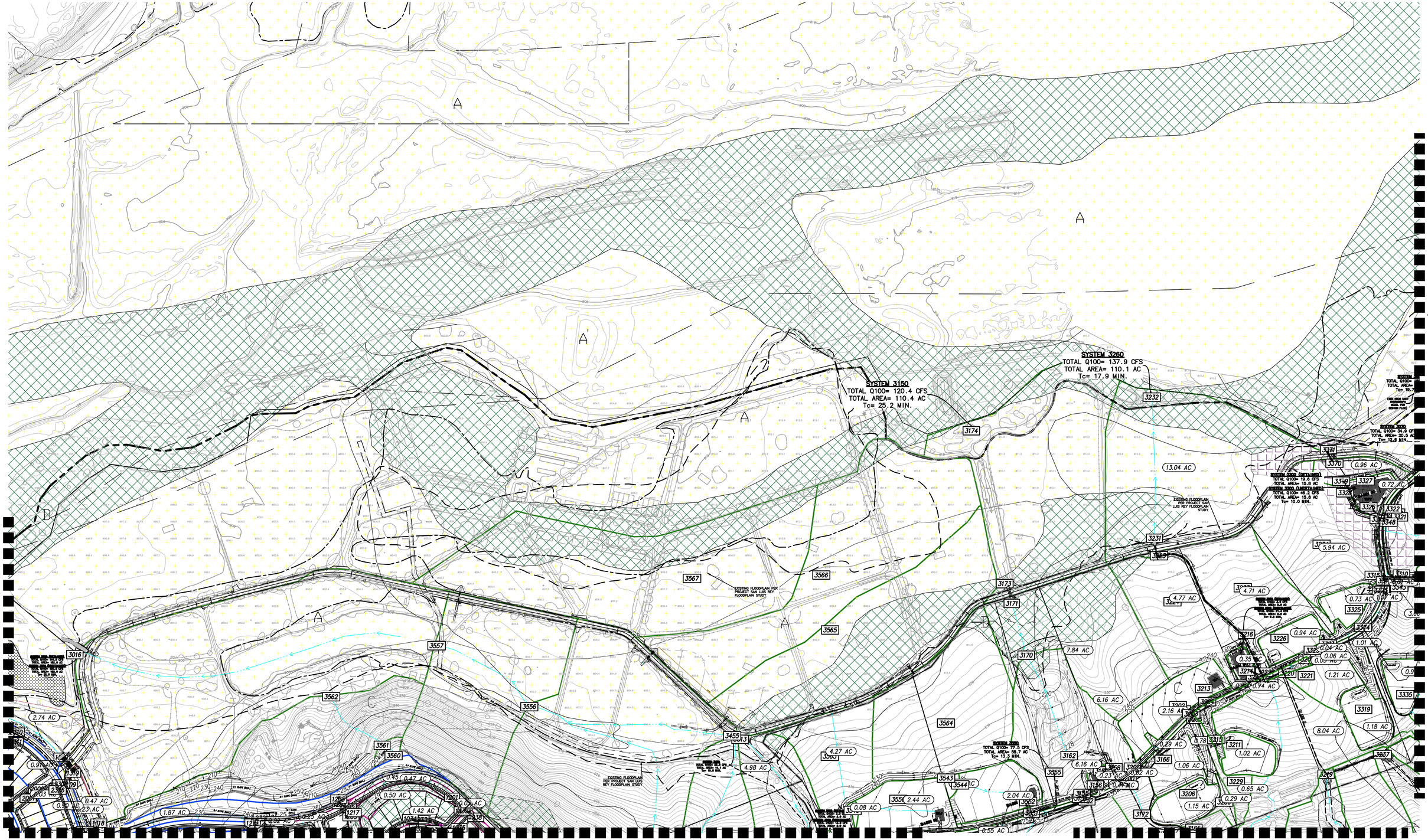
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COUNTY OF SAN DIEGO
OCEAN BREEZE RANCH
DRAINAGE MAP
PROPOSED CONDITIONS
EXHIBIT C-8

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200 100 0 200 400 600

SCALE: 1"=200'

SCALE:	1"=200'
JOB #:	4192.10
CREATED:	07/01/20

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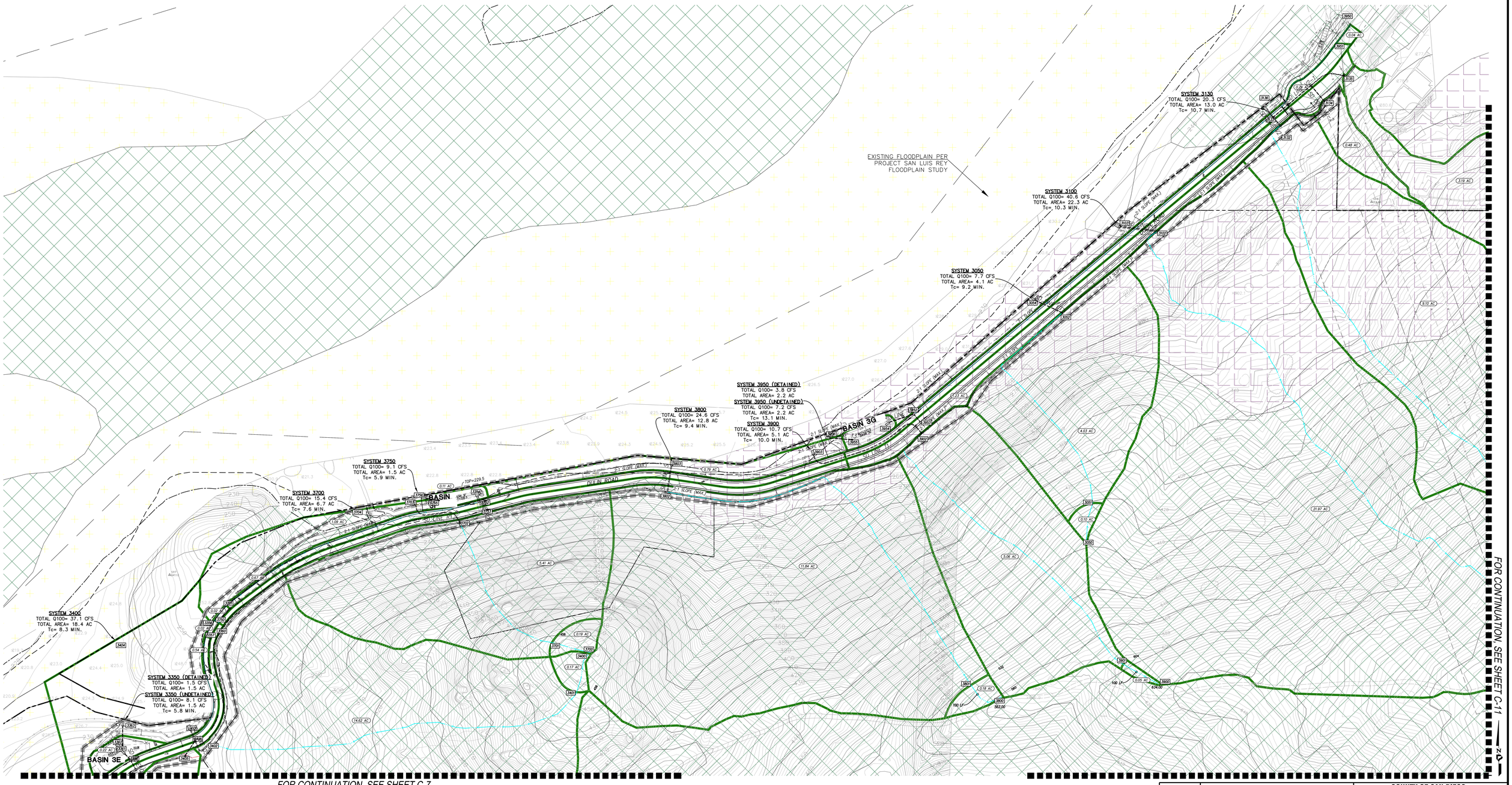
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COUNTY OF SAN DIEGO

OCEAN BREEZE RANCH

DRAINAGE MAP
PROPOSED CONDITIONS
EXHIBIT C-9

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SCALE:	1"=60'
JOB #:	4192.10
CREATED:	07/01/20

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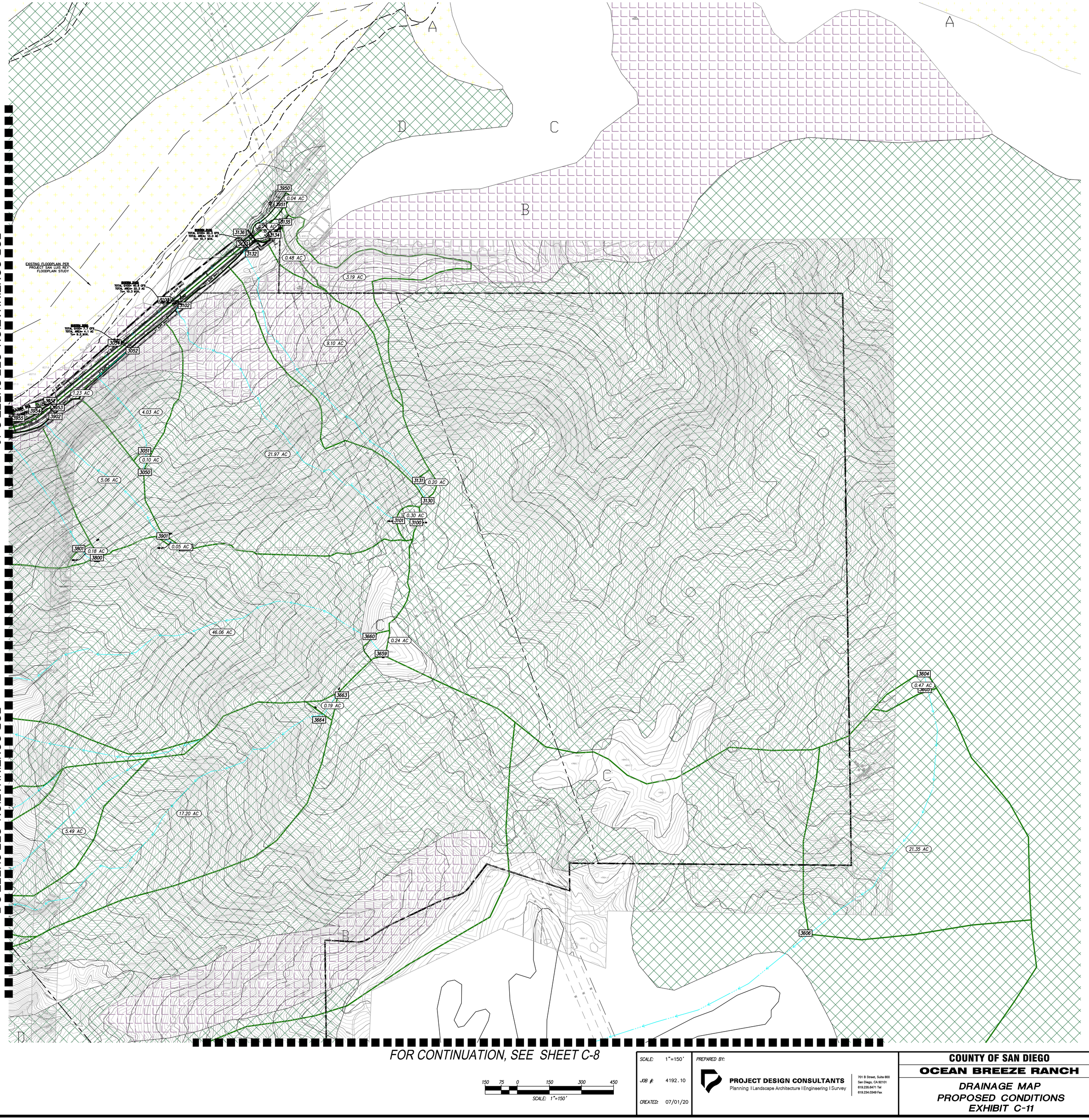
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COUNTY OF SAN DIEGO

OCEAN BREEZE RANCH

DRAINAGE MAP
PROPOSED CONDITIONS
EXHIBIT C-10

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FOR CONTINUATION, SEE SHEET C-10

FOR CONTINUATION, SEE SHEET C-7

FOR CONTINUATION, SEE SHEET C-8

150 75 0 150 300 450

SCALE: 1"=150'

SCALE:	1"=150'
JOB #:	4192.10
CREATED:	07/01/20

PREPARED BY:

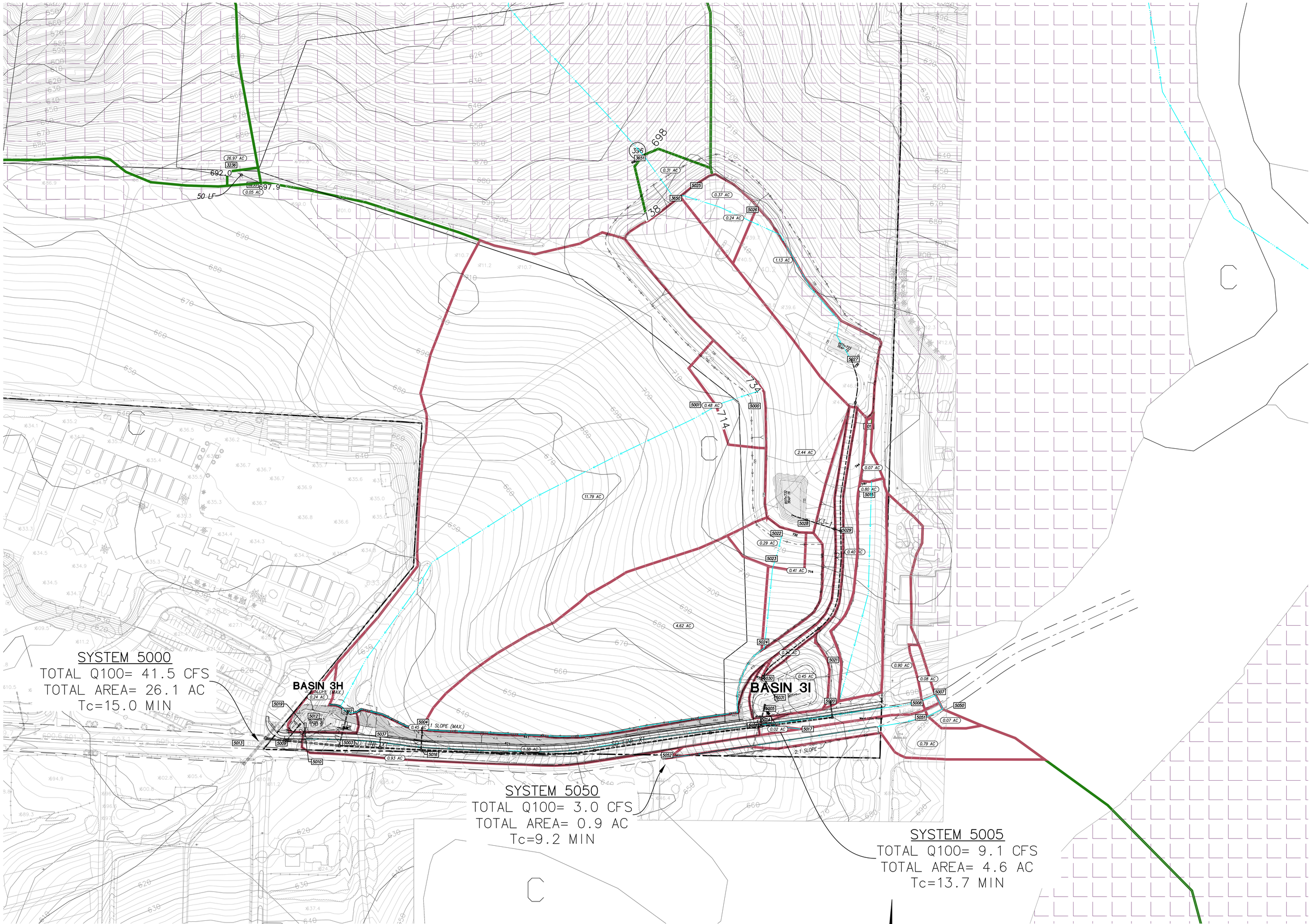
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COUNTY OF SAN DIEGO

OCEAN BREEZE RANCH

DRAINAGE MAP
PROPOSED CONDITIONS
EXHIBIT C-11



SCALE: 1"= 60'

JOB #: 4192.10

CREATED: 07/01/20

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COUNTY OF SAN DIEGO

OCEAN BREEZE RANCH

DRAINAGE MAP
PROPOSED CONDITIONS
EXHIBIT C-12

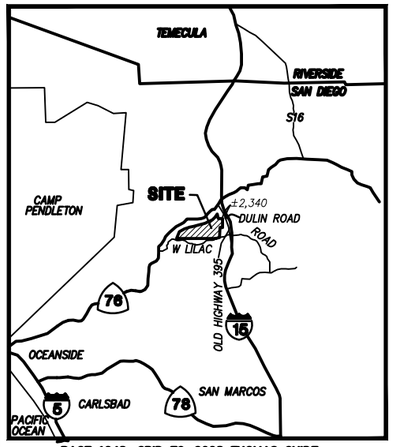
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STORM DRAIN & BASIN MAINTENANCE TABLE

COLOR LEGEND	DRAINAGE DESCRIPTION	MAINTENANCE RESPONSIBILITY	INSIDE R/W?	MAINTENANCE FUNDING SOURCE	QUANTITY
	TREATMENT BASIN (PRIVATE)	HOA	NO	HOA	–
	TREATMENT BASIN (PUBLIC)	COUNTY DPW	NO*	COUNTY DPW	–
	STORM DRAIN (PRIVATE)	HOA	NO	HOA	–
	STORM DRAIN (PUBLIC)	COUNTY DPW	YES**	COUNTY DPW	–
	STORM DRAIN (PRIVATE)	EQUESTRIAN PRIVATE	NO	EQUESTRIAN PRIVATE	–

* EASEMENT TO BE PROVIDED TO COUNTY DEPARTMENT OF PUBLIC WORKS

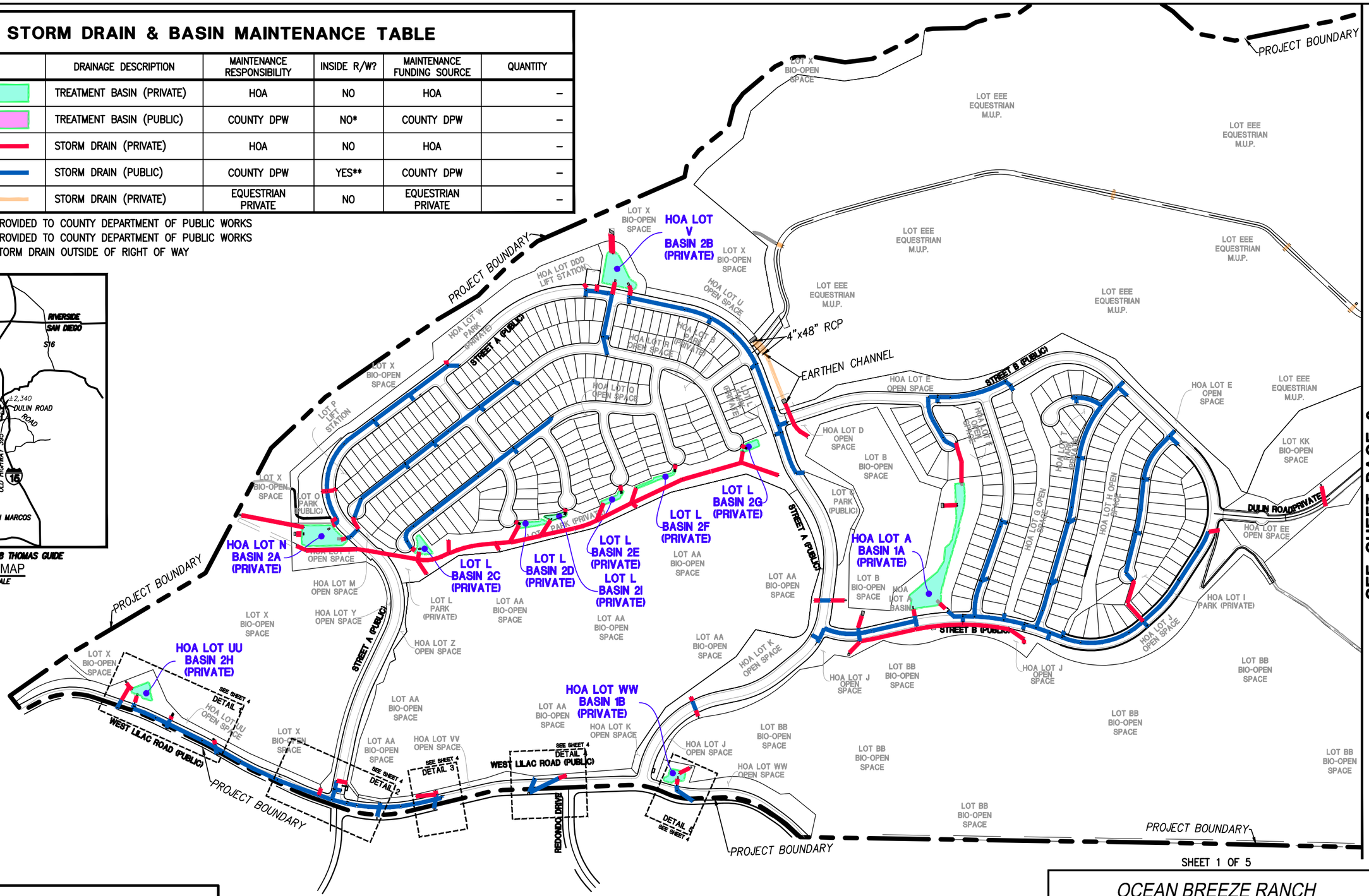
** EASEMENT TO BE PROVIDED TO COUNTY DEPARTMENT OF PUBLIC WORKS FOR PORTION OF STORM DRAIN OUTSIDE OF RIGHT OF WAY



PAGE 1048, GRID E6-2008 THOMAS GUIDE

VICINITY MAP

NOT TO SCALE



N

N.T.S.

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OCEAN BREEZE RANCH
STORM DRAIN MAINTENANCE EXHIBIT
11-2-2024

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SEE SHEET PAGE 3

SEE SHEET PAGE 1

LOT EEE EQUESTRIAN M.U.P.

LOT BB BIO-OPEN SPACE

LOT RR BIO-OPEN SPACE

LOT KK BIO-OPEN SPACE

HOA LOT EE OPEN SPACE

HOA LOT GG OPEN SPACE

HOA LOT DD OPEN SPACE

HOA LOT JJ BASIN 3D (PRIVATE)

HOA LOT II BASIN 3C (PRIVATE)

LOT 394 BASIN 3J (PRIVATE)

LOT 395 BASIN 3K (PRIVATE)

HOA LOT FF BASIN 3A (PRIVATE)

HOA LOT HH BASIN 3B (PRIVATE)

LOT 396 BASIN 3I (PRIVATE)

BASIN 3H (PUBLIC)

391 392 393 394 395 382 383 384 385 386 387 388 389 390 396

EQUESTRIAN ESTATE PARCEL

HILL SIDE ESTATE PARCEL

REMAINDER PARCEL

NORMAN L. SULLIVAN MIDDLE SHOOL ROS 8307

DULIN ROAD (PRIVATE)

WEST LILAC ROAD (PUBLIC)

PROJECT BOUNDARY

SEE SHEET 5 DETAIL 6

SEE SHEET 6 DETAIL 7

LOT XX OPEN SPACE

N

N.T.S.

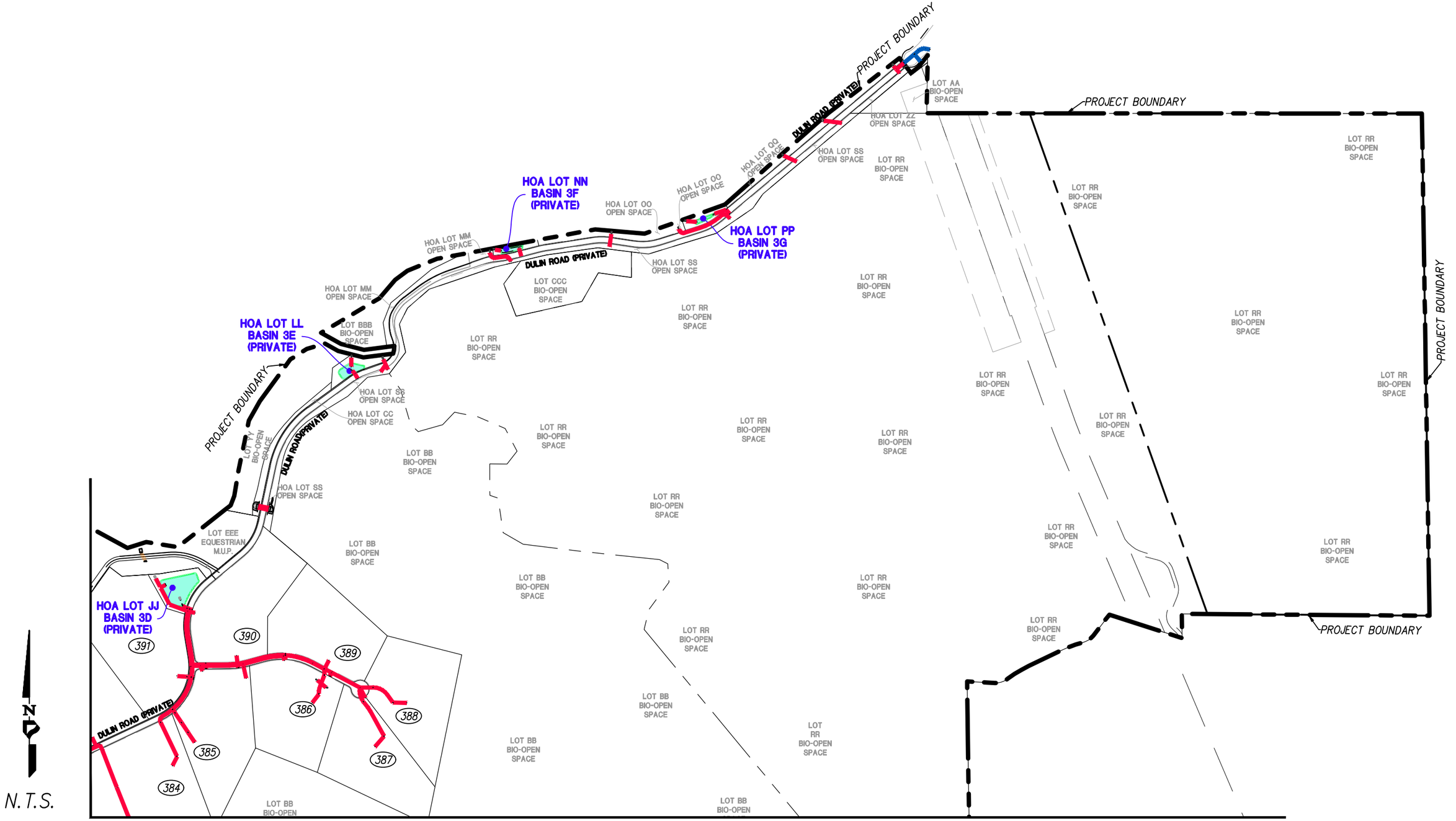
SHEET 2 OF 5

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619.234.0349 Fax

OCEAN BREEZE RANCH
STORM DRAIN MAINTENANCE EXHIBIT
11-2-2024

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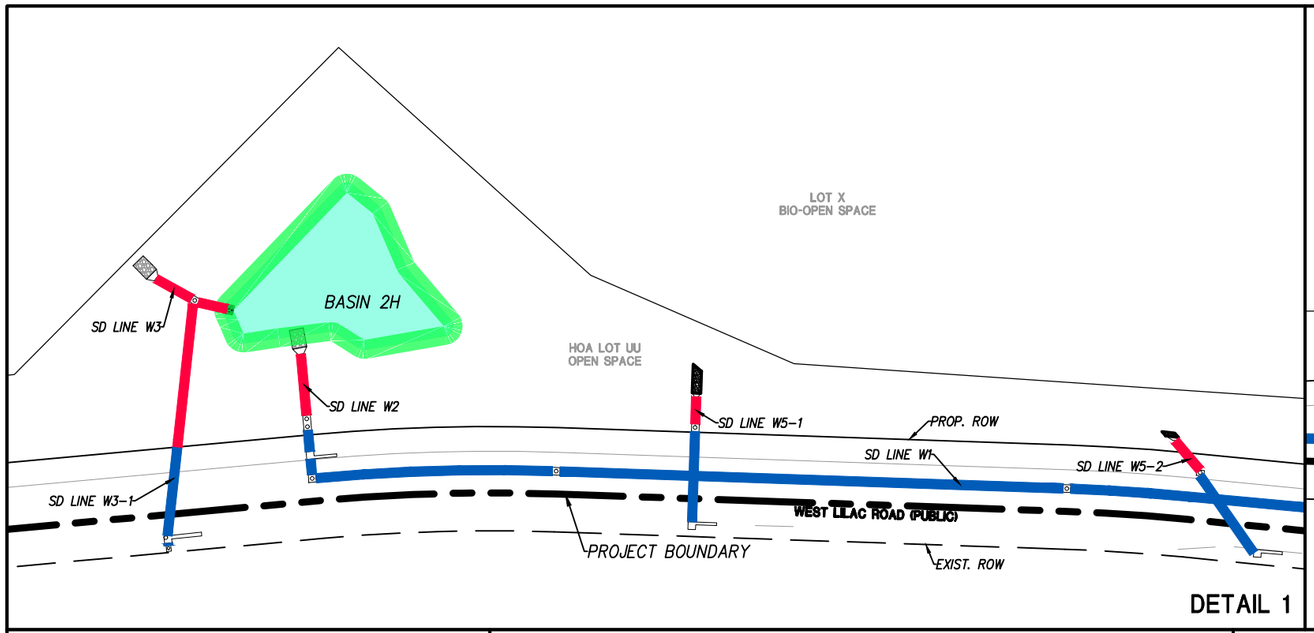


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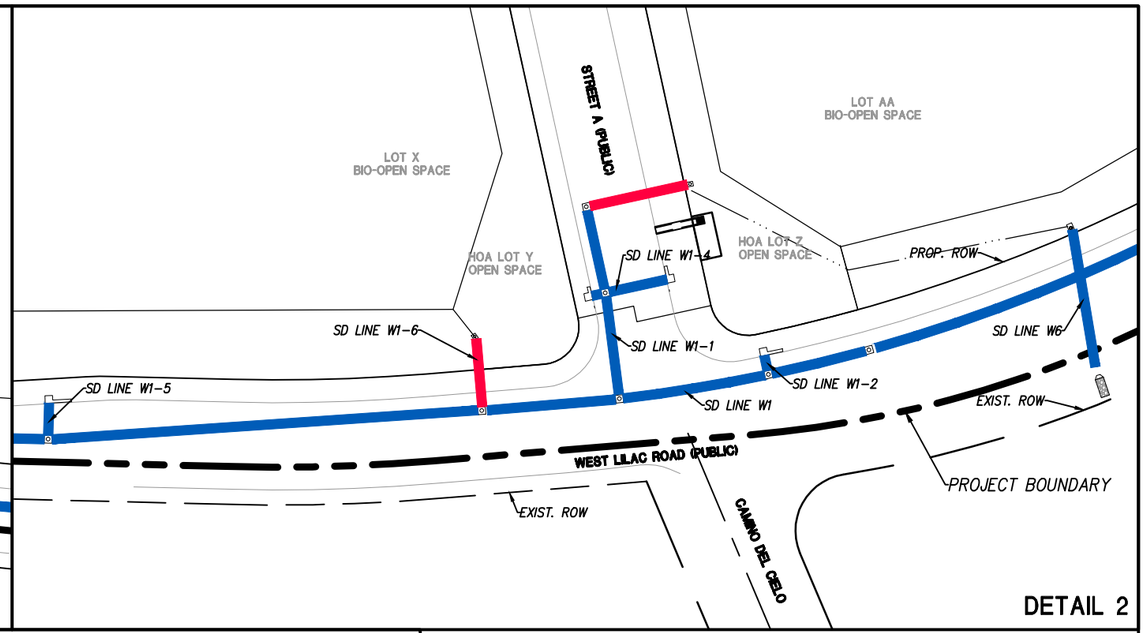
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OCEAN BREEZE RANCH
STORM DRAIN MAINTENANCE EXHIBIT
11-2-2024

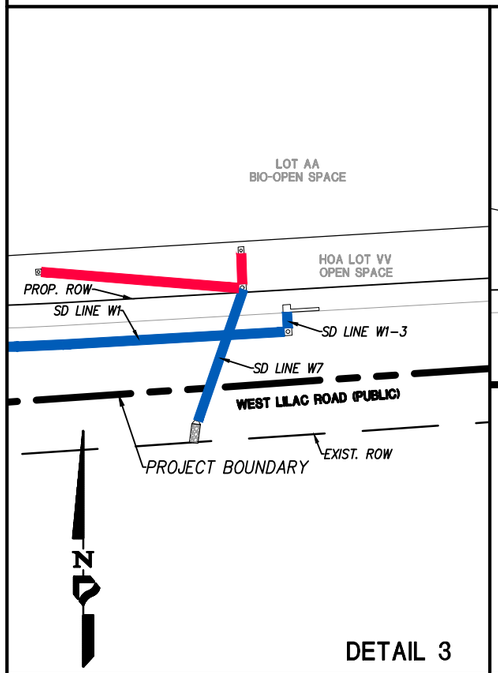
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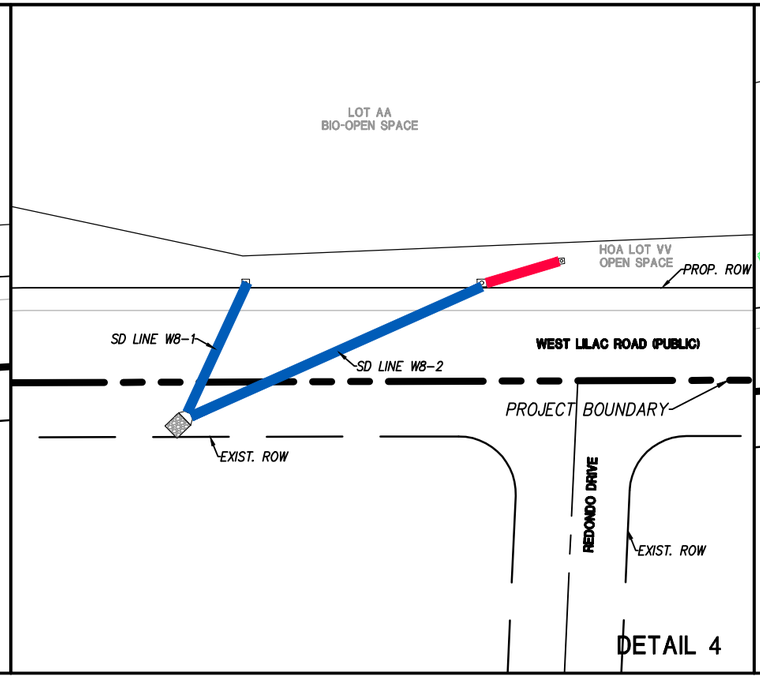
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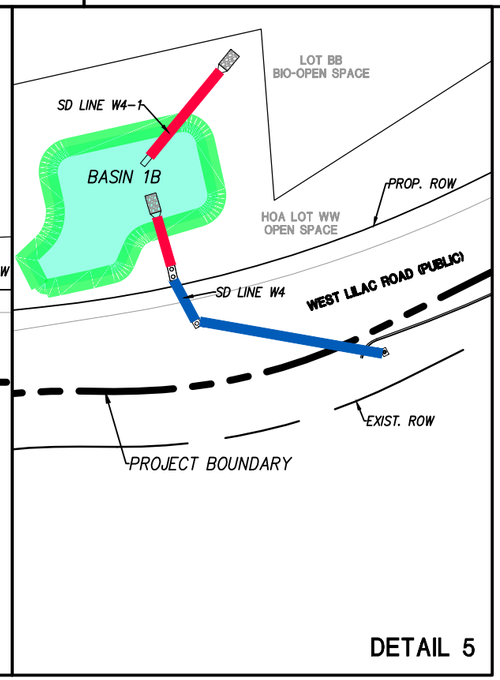
DETAIL 2



DETAIL 3



DETAIL 4



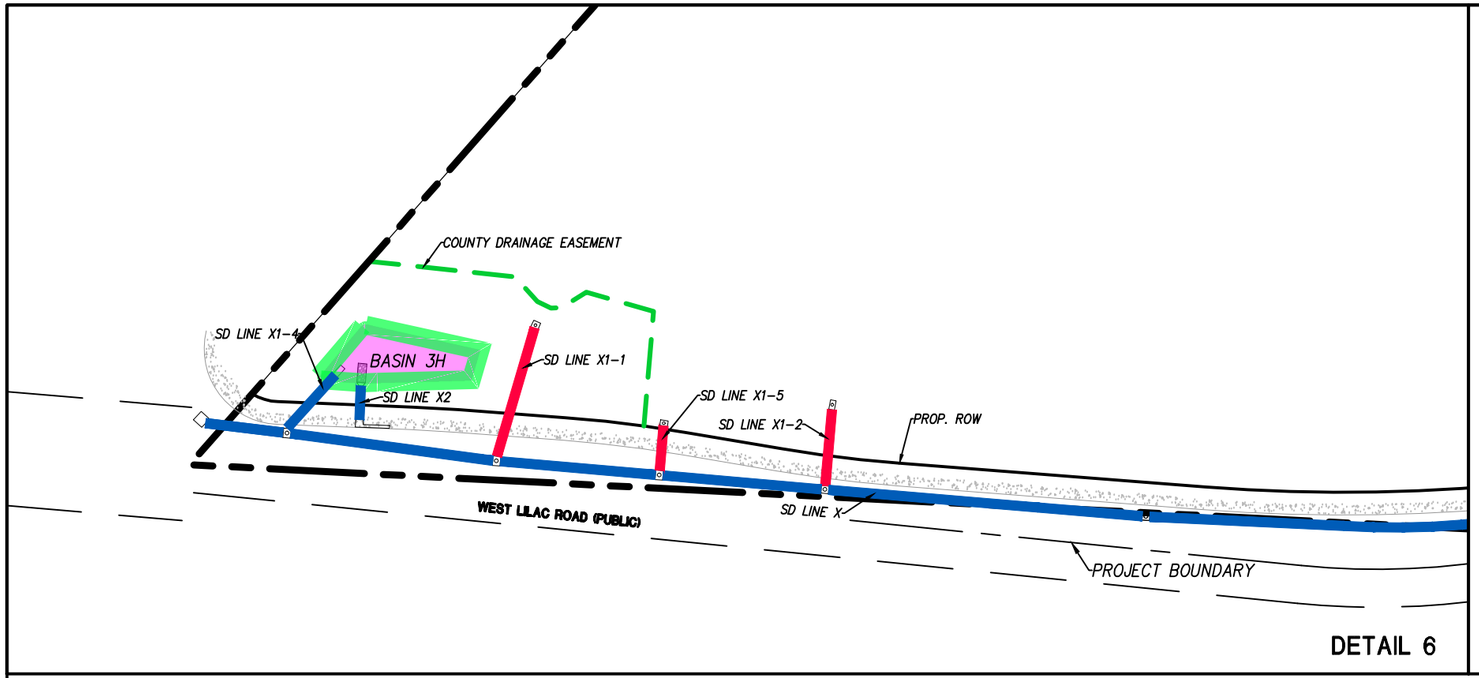
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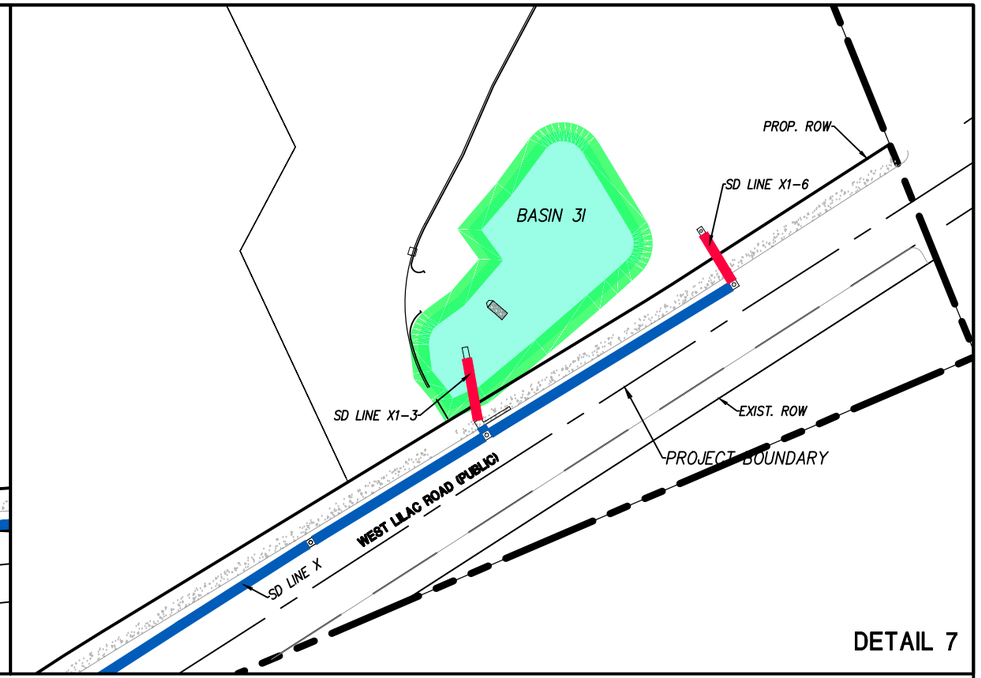
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STORM DRAIN MAINTENANCE EXHIBIT
11-2-2024

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DETAIL 6



DETAIL 7

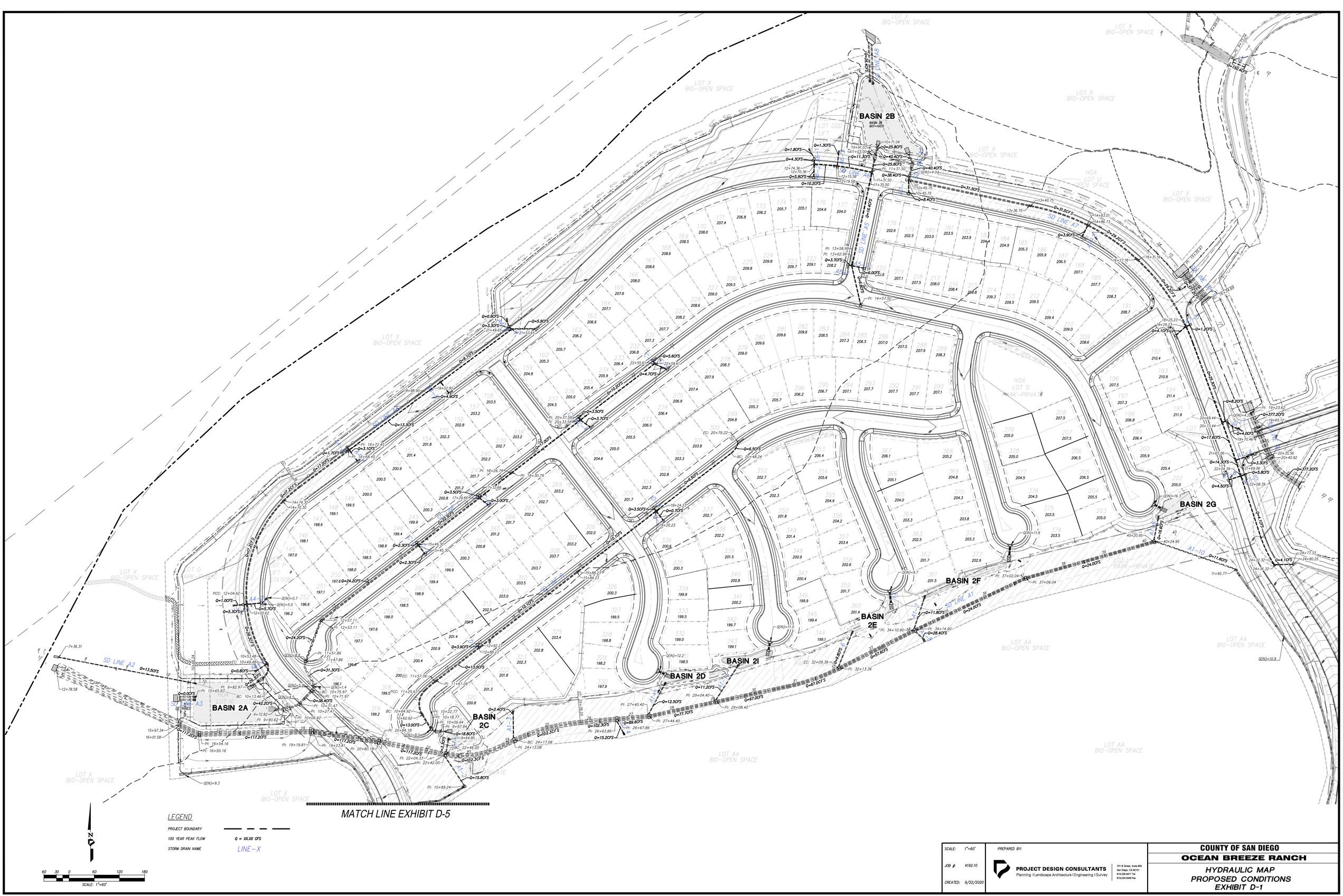
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N.T.S.

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11-2-2024

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JOB #:	4192.10
CREATED:	9/22/2020

PREPARED BY:

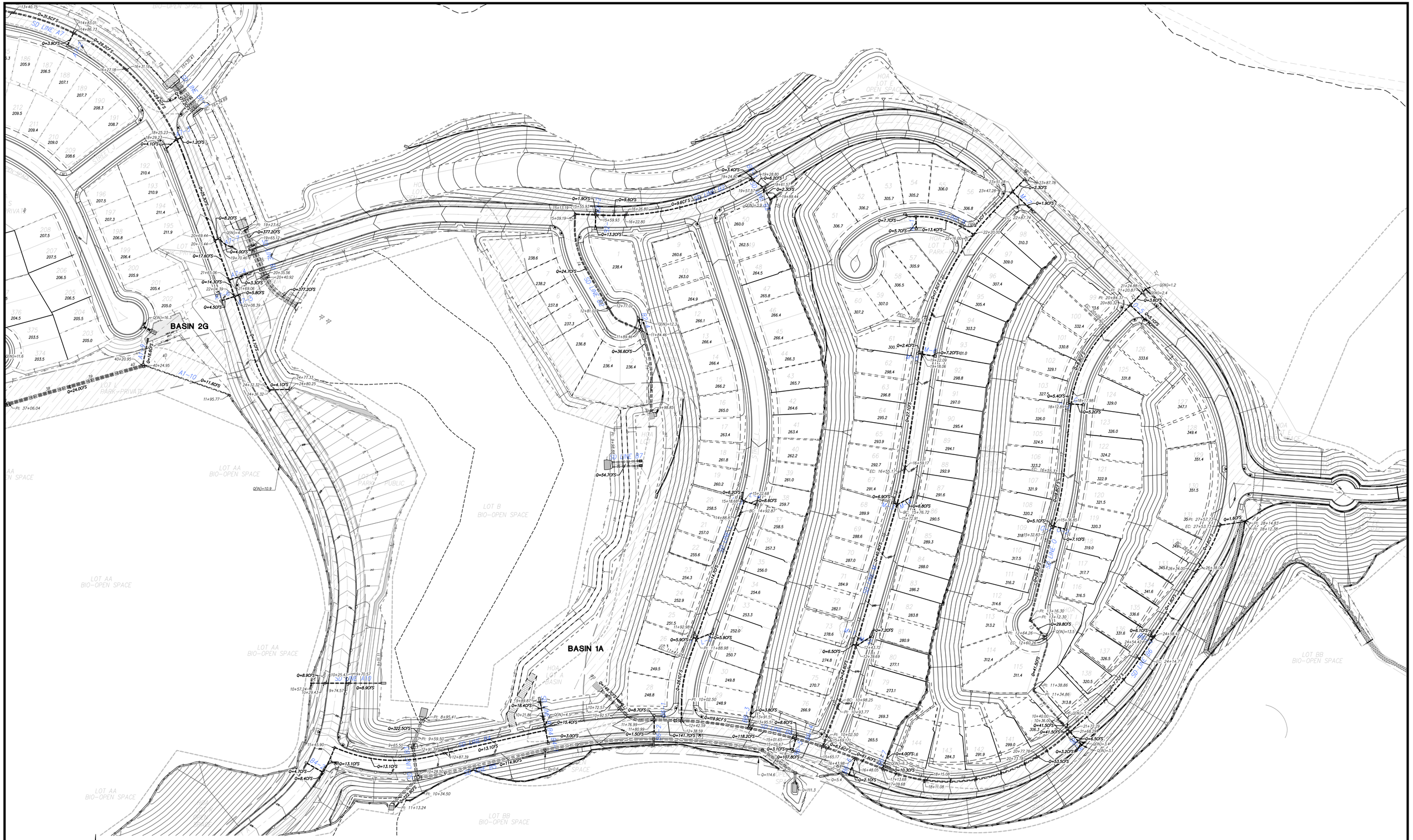
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COUNTY OF SAN DIEGO

OCEAN BREEZE RANCH

HYDRAULIC MAP
PROPOSED CONDITIONS
EXHIBIT D-1


BASIN 2G
BASIN 1A
SD LINE A7
SD LINE A8
SD LINE A9
SD LINE A10
SD LINE B2
SD LINE B3
SD LINE B4
SD LINE B5
SD LINE B6
SD LINE B7
SD LINE B8
SD LINE B9
SD LINE B10
SD LINE B11
SD LINE B12
SD LINE B13
SD LINE B14
SD LINE

MATCH LINE EXHIBIT D-4

BASIN 3C
BASIN 3B
BASIN 3J
BASIN 3K
BASIN 3A
HOA LOT GG OPEN SPACE
LOT KK BIO-OPEN SPACE
LOT BB BIO-OPEN SPACE
2:1 SLOPE (MAX.)
SD LINE H1
SD LINE H2
SD LINE H3
SD LINE H4
SD LINE H5
SD LINE G2

LEGEND

PROJECT BOUNDARY
100 YEAR PEAK FLOW — Q = XX.XX CFS
STORM DRAIN NAME — LINE-X

N

60 30 0 60 120 180
SCALE: 1"=60'

SCALE:	1"=60'
JOB #:	4192.10
CREATED:	9/22/2020

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COUNTY OF SAN DIEGO
OCEAN BREEZE RANCH
HYDRAULIC MAP
PROPOSED CONDITIONS
EXHIBIT D-3

MATCH LINE B-B

MATCH LINE A-A

MATCH LINE A-A

MATCH LINE B-B

MATCH LINE EXHIBIT D-3

LEGEND

PROJECT BOUNDARY	
100 YEAR PEAK FLOW	Q = XX.XX CFS
STORM DRAIN NAME	LINE–X

SCALE:	1"=60'
JOB #:	4192.10
CREATED:	9/22/2020

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COUNTY OF SAN DIEGO

OCEAN BREEZE RANCH

HYDRAULIC MAP
PROPOSED CONDITIONS
EXHIBIT D-4

MATCH LINE EXHIBIT D-1

BASIN 2H
BASIN 3H
BASIN 3I
BASIN 1B

WEST LILAC

LOT X BIO-OPEN SPACE
LOT AA BIO-OPEN SPACE
HOA LOT K OPEN SPACE
HOA LOT J OPEN SPACE

LEGEND

PROJECT BOUNDARY
100 YEAR PEAK FLOW — Q = XX.XX CFS
STORM DRAIN NAME — LINE-X

N

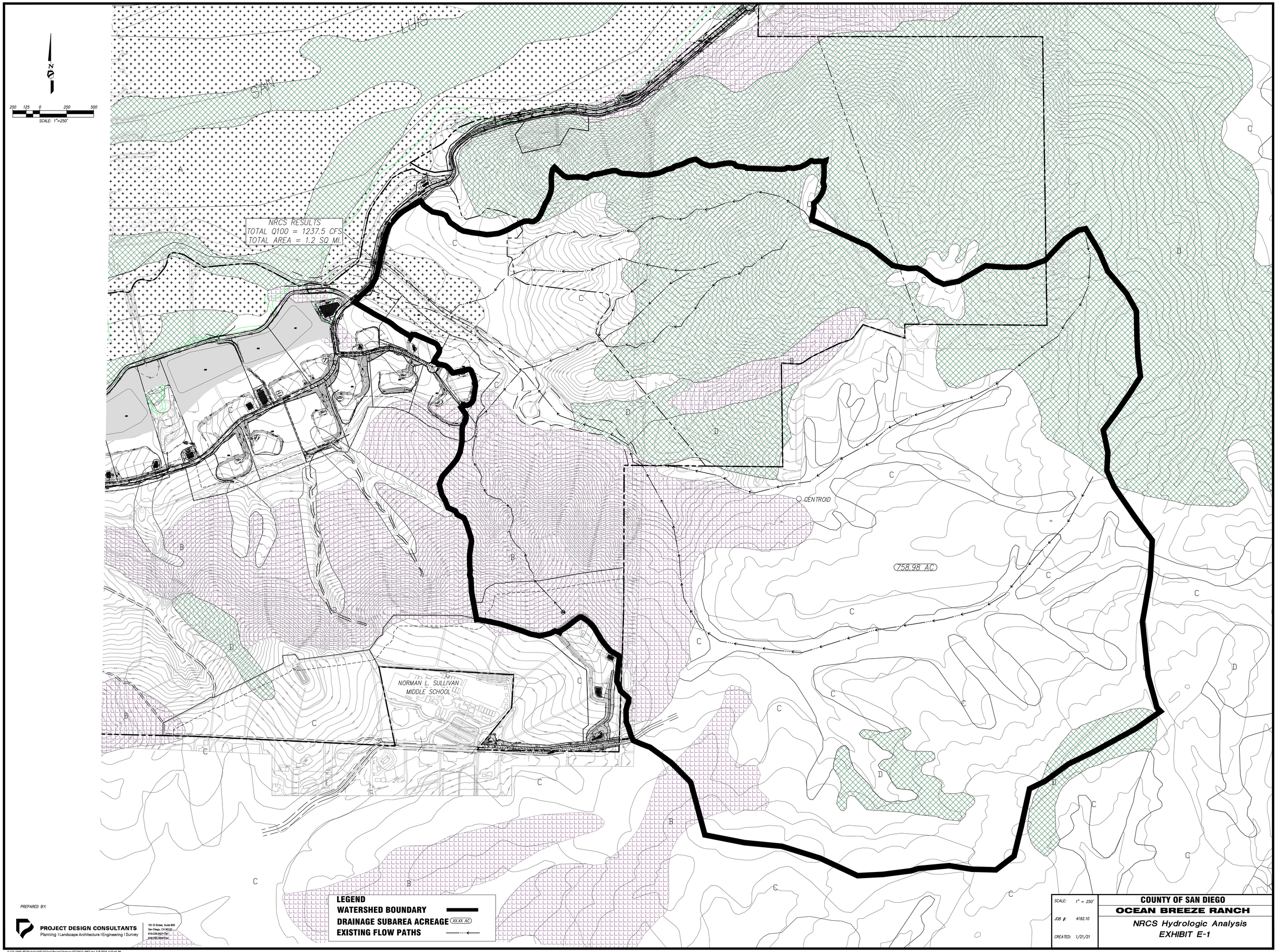
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SCALE: 1"=60'

SCALE:	1"=60'
JOB #:	4192.10
CREATED:	9/22/2020

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COUNTY OF SAN DIEGO
OCEAN BREEZE RANCH
HYDRAULIC MAP
PROPOSED CONDITIONS
EXHIBIT D-5



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SCALE:	1" = 250'
JOB #:	4192.10
CREATED:	1/21/21

COUNTY OF SAN DIEGO

OCEAN BREEZE RANCH

NRCS Hydrologic Analysis

EXHIBIT E-1

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APPENDIX 7

Onsite Floodplain for Onsite Drainage Area Over 25 Acres

HEC-RAS Exhibits

REY RIVER

EXISTING FLOODPLAIN PER PROJECT SAN LUIS REY FLOODPLAIN STUDY

4+88.45

POND
Elevation 199.4

Q_{100} INUNDATION LINE

14+93.45

POND
Elevation 187.9

20+63.50

CHANNEL #1

25+97.00

30+35.72

Q_{100} INUNDATION LINE

36+93.15

West Lilac Road

42+35.58

PL

LIMIT OF ANALYSIS

N

LEGEND

STATION ALONG CENTER OF FLOW ANALYSIS	1+00.00
INUDATION LINES FOR DRAINAGE AREAS OVER 25 ACRES (NON-FEMA)	— — — —

SCALE: 1"=150'

JOB #: 4192.10

CREATED: 9/24/20

PREPARED BY:

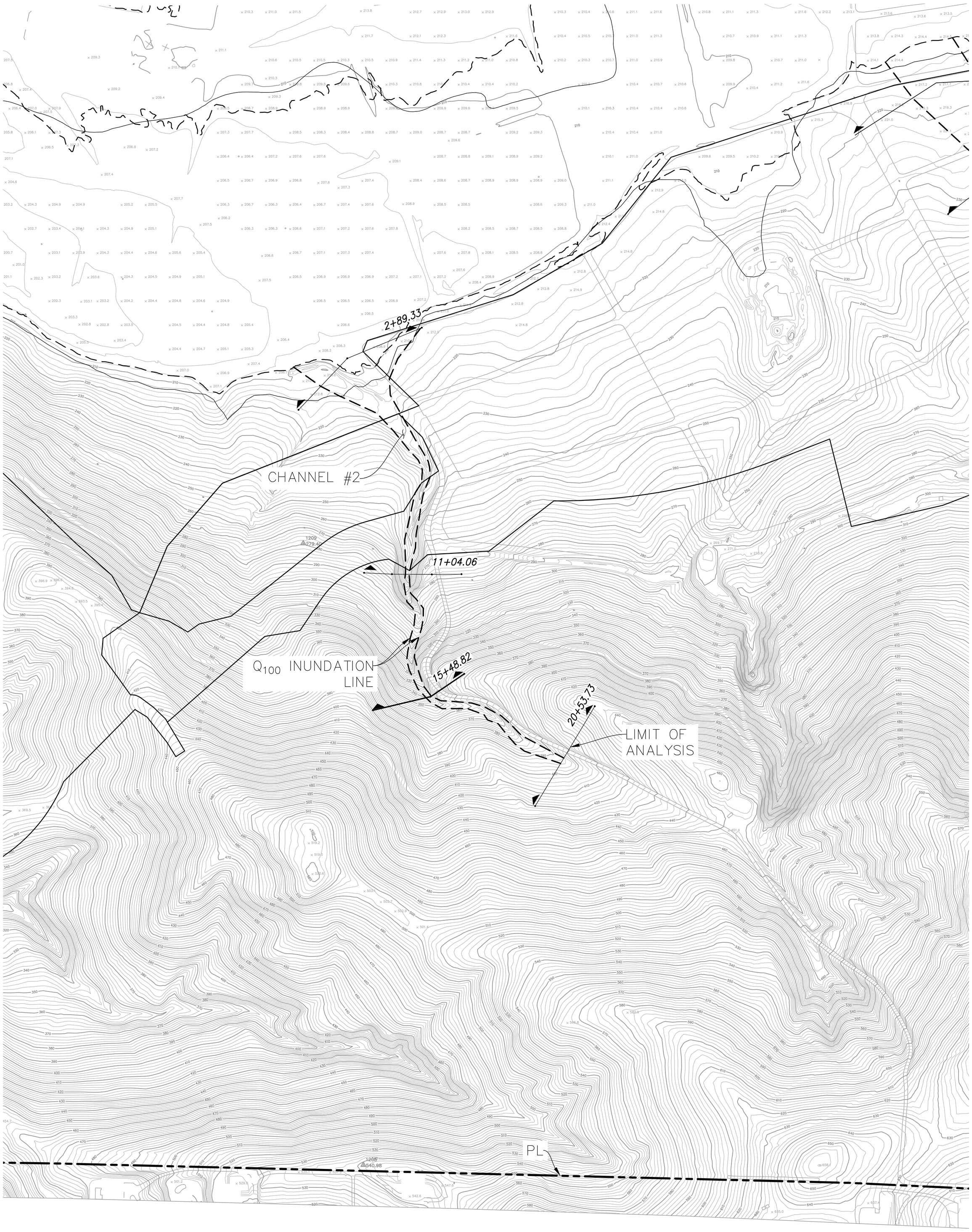
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COUNTY OF SAN DIEGO

OCEAN BREEZE RANCH

EXISTING CONDITON 100-YR FLOODPLAIN INUNDATION HEC- RAS Exhibit (1 of 4)



LEGEND

STATION ALONG CENTER OF FLOW ANALYSIS	1+00.00
INUDATION LINES FOR DRAINAGE AREAS OVER 25 ACRES (NON-FEMA)	— — — —

N

SCALE: 1"=150'

JOB #: 4192.10

CREATED: 9/24/20

PREPARED BY:

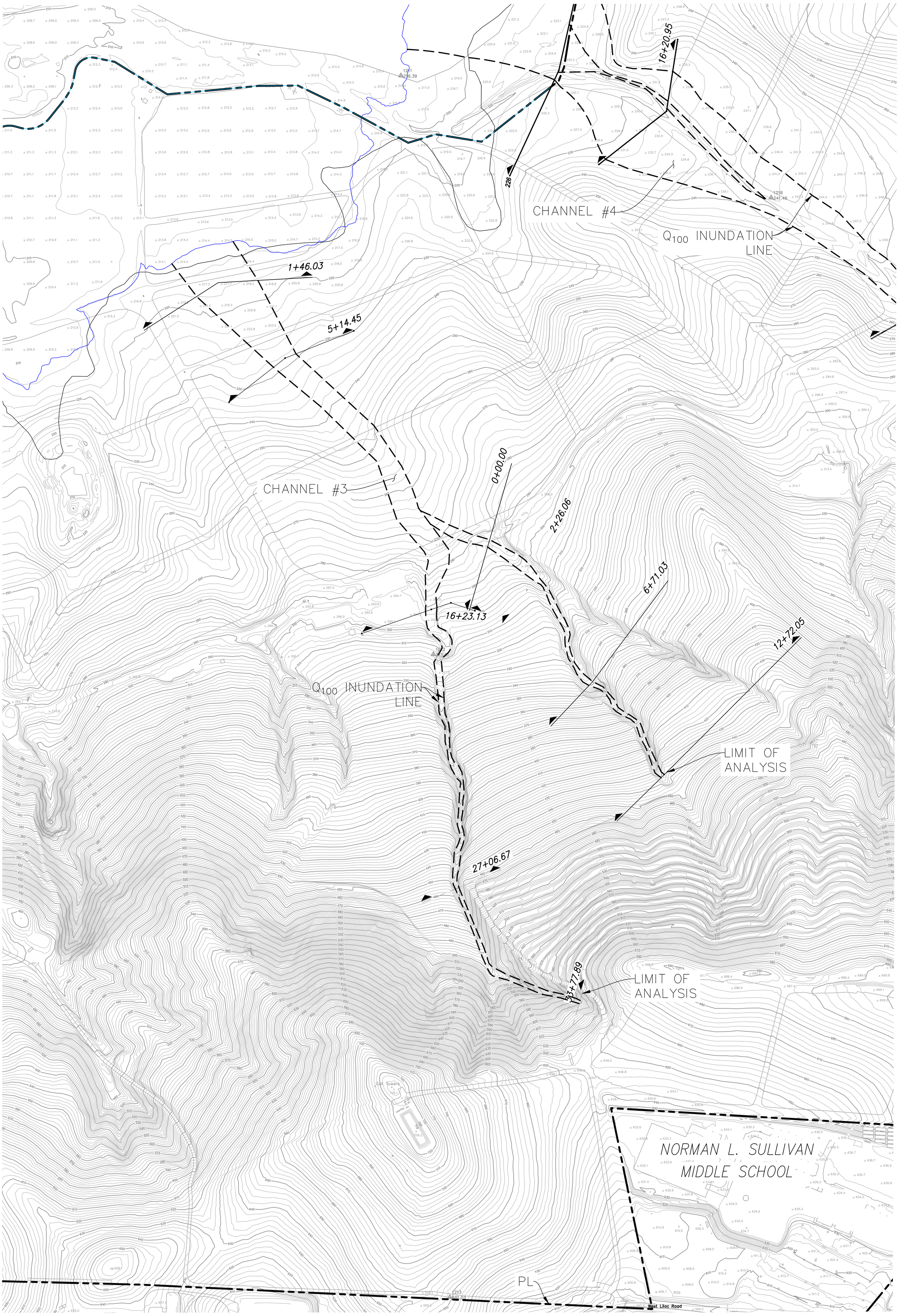
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COUNTY OF SAN DIEGO

OCEAN BREEZE RANCH

PRE PROJECT CONDITIONS 100-YR FLOODPLAIN INUNDATION HEC- RAS Exhibit (2 of 4)



LEGEND

STATION ALONG CENTER OF FLOW ANALYSIS	1+00.00
INUDATION LINES FOR DRAINAGE AREAS OVER 25 ACRES (NON-FEMA)	— — — —

SCALE: 1"=150'

JOB #: 4192.10

CREATED: 9/24/20

PREPARED BY:

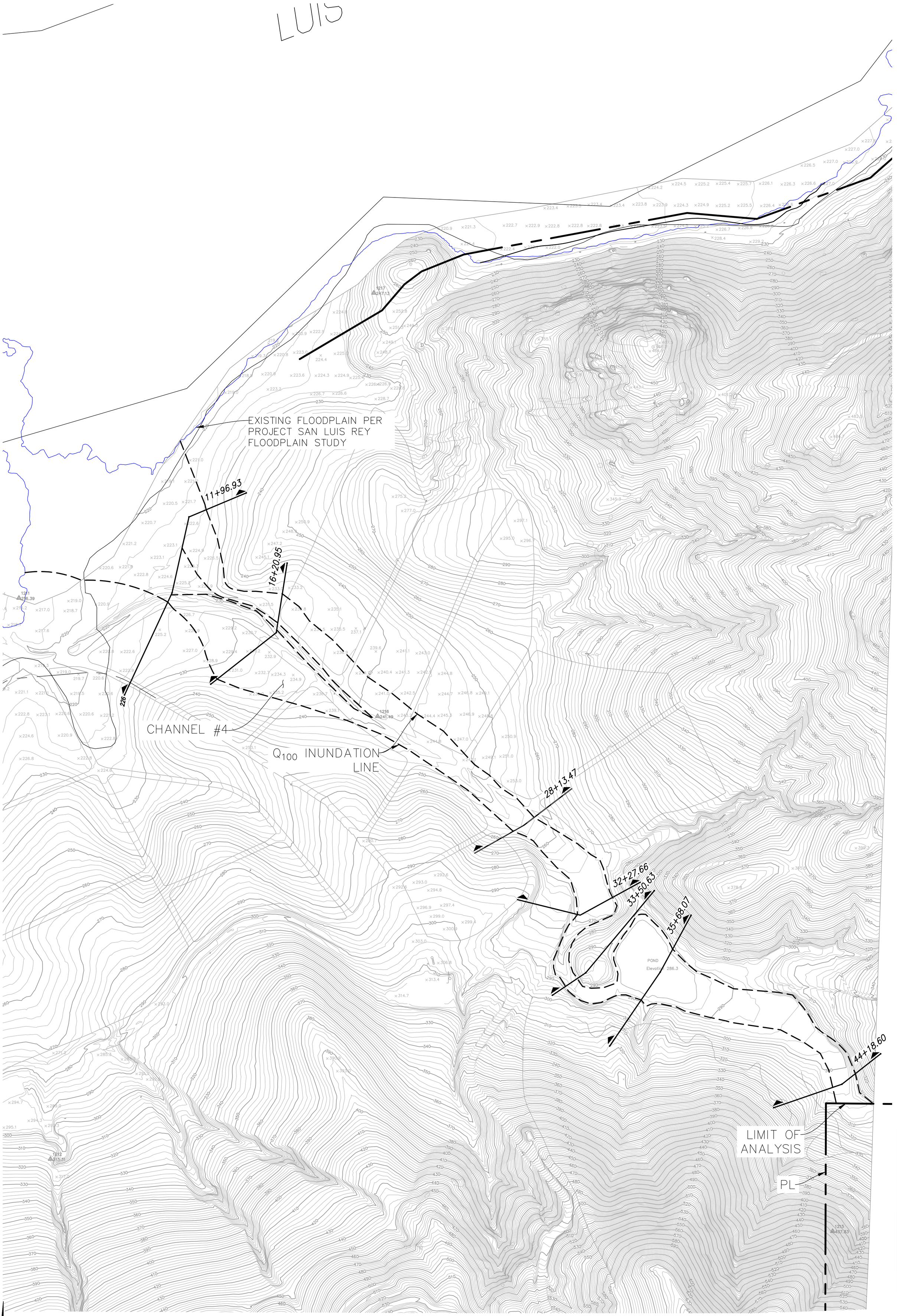
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COUNTY OF SAN DIEGO

OCEAN BREEZE RANCH

PRE PROJECT CONDITIONS 100-YR FLOODPLAIN INUNDATION HEC- RAS Exhibit (3 of 4)



LEGEND

STATION ALONG CENTER OF FLOW ANALYSIS	1+00.00
INUDATION LINES FOR DRAINAGE AREAS OVER 25 ACRES (NON-FEMA)	— — — —

SCALE: 1"=150'

JOB #: 4192.10

CREATED: 9/24/20

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OCEAN BREEZE RANCH

PRE PROJECT CONDITIONS
100-YR FLOODPLAIN INUNDATION
HEC-RAS Exhibit (4 of 4)

P:\4192.10\Engr\Reports\Drainage-TM_TE\EXH\Floodplain\4192.10 - Floodplain Exh-Existing.dwg 3/1/2024 7:24:16 AM

REY RIVER

POST 100-YR FLOODPLAIN PER CHANG STUDY

EXISTING 100-YR FLOODPLAIN PER CHANG STUDY

POND
Elevation 199.4

CHANNEL #1

Q_{100} INUNDATION LINE FOR DRAINAGE AREA >25 AC.

4+00.35
5+45.95
6+92.54
7+60.96
9+12.82
11+66.89
17+38.73
22+59.92
23+70.01
25+86.28
26+98.44
33+54.46
38+96.89

LIMIT OF ANALYSIS

PL

LEGEND

STATION ALONG CENTER OF FLOW ANALYSIS	1+00.00
INUDATION LINES FOR DRAINAGE AREAS OVER 25 ACRES (NON-FEMA)	— — — —

SCALE:	1"=150'
JOB #:	4192.10
CREATED:	9/24/20

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COUNTY OF SAN DIEGO

OCEAN BREEZE RANCH

PROPOSED CONDITIONS 100-YR FLOODPLAIN INUNDATION HEC-RAS Exhibit (1 of 4)

EQUESTRIAN MUP

LOT EEE

PROPOSED 100-YR FLOODPLAIN PER CHANG STUDY

2+89.33

CHANNEL #2

Q_{100} INUNDATION LINE FOR DRAINAGE AREA >25 AC.

1+1

FLOW CONTAINED IN PIPE

HOA LOT GG OPEN SPACE

HOA LOT HH BASIN

SD LINE H4

SD LINE H1

SD LINE H5

QUAIL ROAD

LOT EE OPEN SPACE

LOT KK BIO-OPEN SPACE

8+81.52

SD LINE G1

11+04.06

288

278

SD LINE

HOA LOT II OPEN SPACE

LOT BB BIO-OPEN SPACE

Q_{100} INUNDATION LINE FOR DRAINAGE AREA >25 AC.

15+48.82

20+53.73

LIMIT OF ANALYSIS

SD LINE B6

PL

LEGEND

STATION ALONG CENTER OF FLOW ANALYSIS	1+00.00
INUDATION LINES FOR DRAINAGE AREAS OVER 25 ACRES (NON-FEMA)	— — — —

SCALE:	1"=150'
JOB #:	4192.10
CREATED:	9/24/20

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COUNTY OF SAN DIEGO

OCEAN BREEZE RANCH

PROPOSED CONDITIONS 100-YR FLOODPLAIN INUNDATION HEC-RAS Exhibit (2 of 4)

PROPOSED 100-YR FLOODPLAIN PER CHANG STUDY

PROPOSED 100-YR FLOODPLAIN PER CHANG STUDY

Q_{100} INUNDATION LINE FOR DRAINAGE AREA >25 AC.

Q_{100} INUNDATION LINE FOR DRAINAGE AREA >25 AC.

Q_{100} INUNDATION LINE FOR DRAINAGE AREA >25 AC.

CHANNEL #4

CHANNEL #3

FLOW CONTAINED IN PIPE

1+10.53
1+83.23
2+52.59
4+49.14
6+21.55
11+90.
13+37.24
14+94.79
16+20.95
0+00.00
2+26.06
6+71.03
11+08.73
16+23.13
27+06.67
33+77.89
16+01.

DUNN ROAD
SD LINE H1
SD LINE H2
SD LINE H3
SD LINE H4
SD LINE H5
SD LINE H6
STREET F
HOA LOT II BASIN
HOA LOT JJ BASIN
HOA LOT KK BASIN
HOA LOT GG OPEN SPACE
HOA LOT DD OPEN SPACE
LOT BB BIO-OPEN SPACE
LOT FF OPEN SPACE
K2-2
K2-3
K2-4
1211 216.39
1212 651.03
1213 651.03
1216 241.49
382
383
384
385
386
387
388
389
390
391
392

LIMIT OF ANALYSIS

REMAINDER PARCEL

NORMAN L. SULLIVAN MIDDLE SCHOOL

West Lilac Road

PL

LEGEND

STATION ALONG CENTER OF FLOW ANALYSIS	1+00.00
INUDATION LINES FOR DRAINAGE AREAS OVER 25 ACRES (NON-FEMA)	— — — —

N

SCALE: 1"=150'

JOB #: 4192.10

CREATED: 9/24/20

PREPARED BY:

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COUNTY OF SAN DIEGO

OCEAN BREEZE RANCH

PROPOSED CONDITIONS 100-YR FLOODPLAIN INUNDATION HEC-RAS Exhibit (3 of 4)

PROPOSED 100-YR FLOODPLAIN PER CHANG STUDY

Q_{100} INUNDATION LINE FOR DRAINAGE AREA >25 AC.

CHANNEL #4

Q_{100} INUNDATION LINE FOR DRAINAGE AREA >25 AC.

LIMIT OF ANALYSIS

PL

11+96.93
13+37.24
14+94.79
16+20.95
16+23.13
0+00.00
2+26.06
6+71.03
11+08.73
28+13.47
32+27.66
33+50.63
35+68.07
44+18.60

LUIS REY

DULIN ROAD

LOT BBB BIO-OPEN SPACE
LOT YY BIO-OPEN SPACE
LOT CCC BIO-OPEN SPACE
LOT RR BIO-OPEN SPACE
LOT BB BIO-OPEN SPACE

HOA LOT WW OPEN SPACE
HOA LOT QQ OPEN SPACE
HOA LOT JJ BASIN
HOA LOT KK BASIN

SD LINE #2
SD LINE #3
SD LINE #4
SD LINE #5

POND
Elevation 286.3

LEGEND

STATION ALONG CENTER OF FLOW ANALYSIS	1+00.00
INUDATION LINES FOR DRAINAGE AREAS OVER 25 ACRES (NON-FEMA)	— — — —

N

SCALE: 1"=150'

JOB #: 4192.10

CREATED: 9/24/20

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OCEAN BREEZE RANCH

PROPOSED CONDITIONS 100-YR FLOODPLAIN INUNDATION HEC-RAS Exhibit (4 of 4)

Existing Conditions HEC-RAS Output

```
                    HEC-RAS HEC-RAS 6.5 February 2024
                      U.S. Army Corps of Engineers
                     Hydrologic Engineering Center
                           609 Second Street
                           Davis, California


           X     X  XXXXXX    XXXX        XXXX       XX      XXXX
           X     X  X        X    X       X   X     X  X    X
           X     X  X        X            X   X    X    X   X
           XXXXXXX  XXXX     X       XXX  XXXX     XXXXXX    XXXX
           X     X  X        X            X  X     X    X        X
           X     X  X        X    X       X   X    X    X        X
           X     X  XXXXXX    XXXX        X    X   X    X   XXXXX


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 Project File : ExistingCondChann.prj
 Run Date and Time: 10/23/2024 9:18:42 PM

 Project in English units



 PLAN DATA

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 Plan Summary Information:
 Number of:  Cross Sections =    7    Multiple Openings  =    0
             Culverts       =    0    Inline Structures  =    0
             Bridges        =    0    Lateral Structures =    0

 Computational Information
     Water surface calculation tolerance  =  0.01
     Critical depth calculation tolerance =  0.01
     Maximum number of iterations         =  20
     Maximum difference tolerance         =  0.3
     Flow tolerance factor                =  0.001

 Computation Options
     Critical depth computed only where necessary
     Conveyance Calculation Method: At breaks in n values only
     Friction Slope Method:         Average Conveyance
     Computational Flow Regime:     Subcritical Flow




 FLOW DATA

 Flow Title: Existing Flow
 Flow File :
q:\CA-SAND-PD\Projects\4192.10\Engr\Reports\Drainage-FE\HYDRA\HEC-RAS\Existing\Channel
1\ExistingCondChann.f01

 Flow Data (cfs)
```



```
  River           Reach           RS                  PF 1
  Alignment ExistiAlignment Existi4235.58              402


 Boundary Conditions

   River           Reach           Profile                      Upstream
Downstream

   Alignment ExistiAlignment ExistiPF 1                        Normal S = 0.1          Known
WS = 199



 GEOMETRY DATA

 Geometry Title: Existing Channel Update
 Geometry File :
q:\CA-SAND-PD\Projects\4192.10\Engr\Reports\Drainage-FE\HYDRA\HEC-RAS\Existing\Channel
1\ExistingCondChann.g02

 CROSS SECTION


 RIVER: Alignment Existi
 REACH: Alignment Existi   RS: 4235.58

 INPUT
 Description:
 Station Elevation Data    num=      44
      Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
        0  318.773.639999  318.5710.64999  318.31   37.06  318.05   44.06  317.27
 50.62999  316.86   55.81  316.12   59.61  315.61   61.75  314.78   64.03  313.04
 66.81999  310.72   70.22  310.5973.23999  310.42   73.56   310.4   74.92  310.52
 77.23999  310.6879.76999  312.75   81.73   314.183.81999  314.31   90.81  315.29
   100.99  316.56  103.25  316.87  104.53  316.98  106.59  317.28  112.06  317.84
   114.91  318.21  122.76  319.46  126.83  320.12  135.85  321.23  140.32  321.67
   146.64   321.9  152.81  322.45  156.12   322.7  167.45  323.19  172.68  323.48
   174.72   323.7  194.57  324.59  197.69   324.7  199.24  324.85  204.03  325.18
   234.84  327.45  236.32  327.56  237.35  327.63  248.15  328.66

 Manning's n Values        num=       3
      Sta   n Val     Sta   n Val     Sta   n Val
        0     .06       0     .06  248.15     .06

 Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0  248.15           542.43  542.43  542.43             .1       .3

 CROSS SECTION


 RIVER: Alignment Existi
 REACH: Alignment Existi   RS: 3693.15

 INPUT
 Description:
 Station Elevation Data    num=      18
      Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
        0  273.151.370003  272.689.030006  270.0712.06001  268.29   24.58  260.83
29.99001  259.78   33.58  258.43   40.67  256.72   40.84  256.68   50.64  259.38
   54.16  260.47   57.34  261.99   65.26  265.62   73.36  268.18   83.59  271.36
   88.64  271.39   95.69  271.71   96.91     272

 Manning's n Values        num=       3
      Sta   n Val     Sta   n Val     Sta   n Val
        0     .06       0     .06   96.91     .06

 Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0   96.91           657.43  657.43  657.43             .1       .3
```

CROSS SECTION

RIVER: Alignment Existi
REACH: Alignment Existi RS: 3035.72

INPUT
Description:
Station Elevation Data num= 39

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	247.914.479996	246.66	20.12	242.1420.20999		242.1320.35999		242.1	
27.63998	241.09	34.62	240.134.76999		240.0951.44998		238.0659.20999		236.95
72.00999	235.6978.99998		235.2685.65999		234.78	102.56	234.28	111.22	234.06
111.87	234.03	125.08	234.34	130.38	234.79	136.01	233.42	137.77	232.93
144.4	231.8	146.57	231.37	147.44	231.16	150.16	230.42	156.82	228.48
161.61	227.93	168.27	228.63	172.05	229.05	184.55	229.9	195.82	232.33
197.53	232.71	199.51	233.26	214.85	241.39	216.85	242.44	217.06	242.46
225.58	243.01	230.16	244.37	243.61	249.36	258.77	254.34		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.06	0	.06	258.77	.06

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	258.77	438.72	438.72	438.72	.1 .3

CROSS SECTION

RIVER: Alignment Existi
REACH: Alignment Existi RS: 2597

INPUT
Description:
Station Elevation Data num= 42

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	233.937.669983		231.758.700012		231.4511.66998		230.9121.70001		228.81
23.09	228.54	27.22	228.3830.20001		227.8536.23001		226.62	48.94	223.8
57.26001	222.73	70.22	221.3570.63998		221.382.66998		220.21	88.02	219.82
103.81	218.8	112.21	218.5	121.65	218.38	142.68	217.94	148.17	218.05
152.14	218.16	164.46	218.52	187	219.21	195.67	219.39	196.21	219.37
198.47	219.49	199.09	219.5	207.41	219.15	213.14	218.77	214.29	218.65
215.05	218.64	221.85	218.32	226.97	218.16	241.61	218.92	244.34	219.13
269.67	221.4	275.06	222.17	297.96	226.6	312.12	229.38	316.58	229.99
332.6	232	342.06	232.26						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.03	0	.03	342.06	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	342.06	533.5	533.5	533.5	.1 .3

CROSS SECTION

RIVER: Alignment Existi
REACH: Alignment Existi RS: 2063.5

INPUT
Description:
Station Elevation Data num= 60

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	242.9630.57001		242.436.45999		242.02	42	241.6250.41998		241
54.91	240.56	66.59	239.15	77.38	237.14	84.19	235.7598.20999		232.58
106.02	230.87	113.84	228.54	117.89	227.28	127.69	224.38	131.51	223.17
140.32	221.51	142.37	221.14	144.58	220.72	157.79	218.21	165.14	214.55
169.5	212.63	171.36	211.5	174.07	210.31	204.66	210.12	207.43	210.11
211.98	210.05	220.35	209.73	251.81	208.67	259.43	208.63	260.3	208.64
276.9	208.69	290.92	208.69	314.04	208.71	325.24	208.22	342	207.42
368.17	208.22	380.78	208.67	387.36	209.89	394.4	211.66	403.13	213.68
414.39	216.22	422.68	218.35	425.6	219.31	432.03	221.65	435.68	221.56
436.77	221.52	441.82	221.41	449.25	221.16	451.82	221.31	453.44	221.45

458.54	224.03	466.66	228.42	483.08	234.42	488.21	236.26	495.01	238.06
513.27	242.61	527.8	246.29	528.86	246.57	534.81	248.35	540.43	250.03

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.03	0	.03	540.43	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	540.43	570.05	570.05	570.05	.1 .3

CROSS SECTION

RIVER: Alignment Existi
REACH: Alignment Existi RS: 1493.45

INPUT
Description:
Station Elevation Data num= 118

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	226.21	15.06	222.6632.29004		218.9338.03003		217.6241.41003		216.88
67.14001	211.17	69.44	210.6669.52002		210.6486.09003		207.99	102.03	205.72
114.2	204.05	121.59	203.21	126.96	203.19	134.75	202.83	145.89	202.59
162.9	202.46	176.76	202	180.66	202.07	183.8	202.07	190.45	202.03
201.19	202.13	207.73	202.08	220.42	202.23	232.05	202.17	238.61	202.3
238.66	202.29	241.15	201.68	241.36	201.68	241.73	201.7	248.69	201.92
250.43	201.99	257.44	202.35	268.39	202.86	271.73	203.01	273.71	203.09
277.6	203.24	285.49	203.15	290.87	203.09	295.44	203.08	303.5	203.08
308.27	203.07	311.82	203.07	319.04	202.89	328.17	202.65	337.74	202.46
349.5	202.33	360.23	202.07	370.42	201.97	374.49	201.98	387.1	201.96
397.8	202.03	420.71	202.3	423.1	202.35	426.05	202.38	428.6	202.43
446.82	202.7	463.04	203.06	464.64	203.1	469.23	203.17	478.14	203.15
489.46	203.2	496.23	203.26	505.57	203.35	510.25	203.32	511.32	203.32
527.42	203.07	528.77	203.09	529.83	203.1	530.94	203.1	544.72	203.32
550.35	203.49	556.15	203.58	580.8	204.29	582.27	204.32583.5601		204.38
585.23	204.49	586.3	204.52	587.16	204.6	587.6	204.64	597.47	204.97
622.88	205.93	627.66	206.02	634.4	206.17	634.7	206.17	640.85	206.53
641.69	206.59	642.46	206.62	648.24	206.63	648.92	206.66	654.74	206.56
656.13	206.62	657.57	206.68	665.24	206.95	668.5	206.95	678.67	207
687.47	207.11	691.56	207.31	699.76	207.37	702.28	207.3	702.49	207.29
703.45	208.74	703.47	208.77	703.95	208.78	704.62	208.75	706.02	208.8
708.01	208.81	711.89	208.69	713.89	208.62	715.44	208.32	719.81	207.9
723.89	207.25	729.17	206.89	740.29	206.94	746.5	206.93	760.72	207.44
765.86	207.53	767.82	207.45	774.21	207.35				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.03	0	.03	774.21	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	774.21	1005	1005	1005	.1 .3

CROSS SECTION

RIVER: Alignment Existi
REACH: Alignment Existi RS: 488.45

INPUT
Description:
Station Elevation Data num= 157

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	202.07	5.04	199.48	6.36	198.95	6.95	198.94	9.74	198.98
22.84	199.06	23.42	199.07	24.14	199.08	33.51	199.09	44.93	199.13
47.74	199.12	57.63	198.7	68.74	198.14	84.16	197.51	93.93	197.45
102.79	197.43	115.46	197.2	143.59	196.74	148.59	196.68	170.28	196.26
182.22	196.08	184.73	195.99	189.06	195.88	225.69	195.09	248.65	195.07
266.74	195.12	295.47	195.69	307.66	195.85	348.2	196.28	348.72	196.28
348.84	196.28	349.03	196.29	389.89	196.17	415.47	196.08	430.94	196.13
448.68	196.14	471.9	196.22	482.14	196.25	513.04	196.35	526.11	196.34
554.1	196.28	582.2	196.1	595.15	196	615.85	195.92	636.2	195.84
648.91	195.81	677.25	195.78	704.02	195.87	718.3	195.92	748.98	195.76
759.35	195.62	775.94	195.58	800.4	195.42	814.62	195.27	815.53	195.26
835.45	195.35	843.82	195.35	852.67	195.41	890.5	195.54	910.9	195.56

```
  928.71  195.48  945.55  195.51     957  195.46  969.12  195.52  1000.6  195.53
 1027.34   195.6 1041.89   195.7 1055.65  195.75 1070.18  195.86 1085.56  195.91
  1110.7  196.24 1143.78  196.34 1155.07  196.31 1165.74  196.45 1183.37  196.64
    1202  196.59 1220.79  196.55 1260.22  196.92 1268.25  197.04 1275.84  197.08
 1296.55   197.2 1318.45  197.25 1330.89  197.25 1376.67  197.22 1381.43  197.27
 1385.94  197.29 1409.73   197.6 1434.89  197.48 1436.62  197.48 1437.48  197.46
 1441.68  197.53 1449.55  197.62 1455.57  198.34  1456.9   198.5  1484.6  198.37
 1494.66  198.32 1498.46  198.37 1503.26  198.42  1513.7  197.39 1521.66   196.9
 1530.12  196.36 1535.62  195.88 1548.91  194.91 1549.86  194.86 1560.36  194.34
  1560.9  194.29 1561.26  194.28 1575.66  193.43 1577.06  193.27 1579.65  192.97
 1591.63  191.64 1600.64  191.59 1603.53  191.59 1615.59  191.38 1619.58  191.65
  1627.8  192.27 1629.29  192.39 1633.78  192.79 1641.76  193.48 1642.66   193.5
 1649.45  193.44 1661.42  193.26  1664.9  193.33 1667.64  193.37 1672.25  193.39
 1676.94   193.6 1687.42  193.89 1687.57  193.89  1687.8  193.89  1704.4  194.17
 1720.48  194.08 1723.98  194.22 1733.46  194.62 1744.13  195.05 1748.26  195.22
 1759.98  196.01 1764.33  196.34 1769.11  196.78 1777.14  197.63 1785.18  198.14
 1792.06  198.61 1796.43  198.78 1799.22 198.926 1809.28  199.45 1818.11  199.44
 1821.41  199.43 1823.74  199.43  1832.6  199.43  1840.4  199.41 1862.39  199.56
  1863.9  199.56 1864.19  199.57 1885.49  199.73 1895.23  199.79 1895.49   199.8
 1920.57  200.02 1923.32  200.01

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .03       0     .03 1799.22     .03

Bank Sta: Left   Right    Coeff Contr.   Expan.
             0 1799.22             .1       .3


SUMMARY OF MANNING'S N VALUES

River:Alignment Existi

      Reach          River Sta.       n1        n2        n3

 Alignment Existi     4235.58            .06       .06       .06
 Alignment Existi     3693.15            .06       .06       .06
 Alignment Existi     3035.72            .06       .06       .06
 Alignment Existi     2597               .03       .03       .03
 Alignment Existi     2063.5             .03       .03       .03
 Alignment Existi     1493.45            .03       .03       .03
 Alignment Existi     488.45             .03       .03       .03



SUMMARY OF REACH LENGTHS

River: Alignment Existi

      Reach          River Sta.      Left     Channel    Right

 Alignment Existi     4235.58         542.43    542.43    542.43
 Alignment Existi     3693.15         657.43    657.43    657.43
 Alignment Existi     3035.72         438.72    438.72    438.72
 Alignment Existi     2597             533.5     533.5     533.5
 Alignment Existi     2063.5          570.05    570.05    570.05
 Alignment Existi     1493.45           1005      1005      1005
 Alignment Existi     488.45



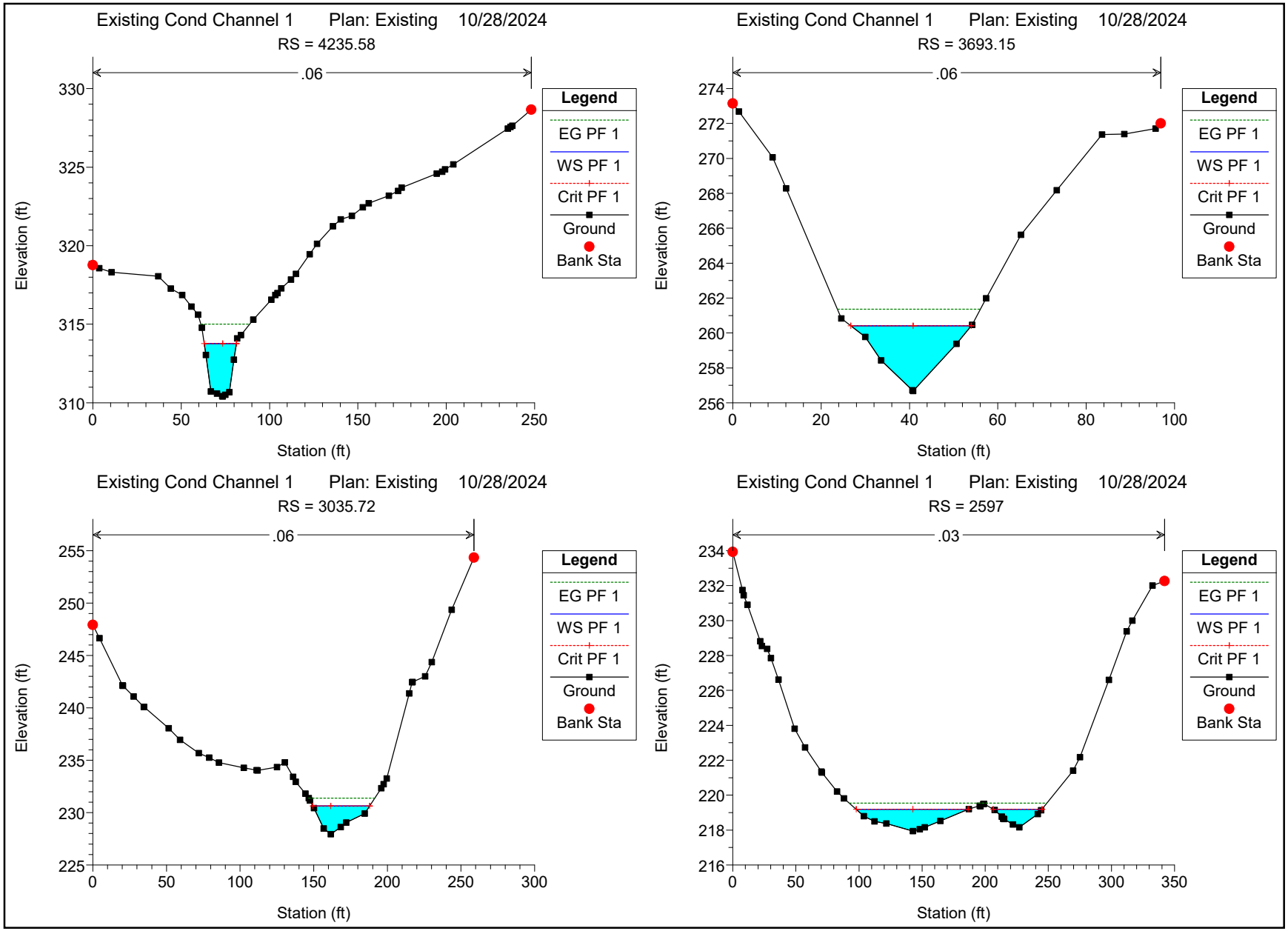
SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS
River: Alignment Existi

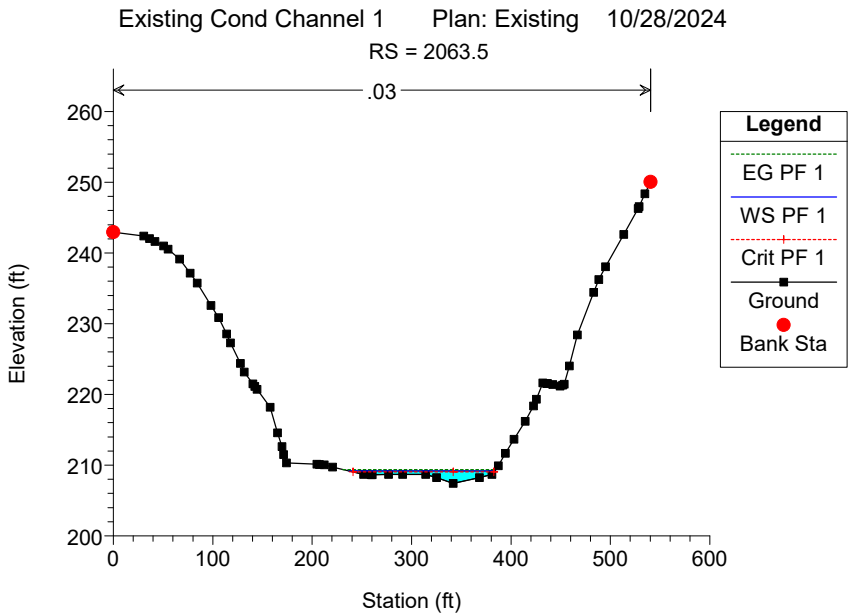

      Reach          River Sta.     Contr.    Expan.

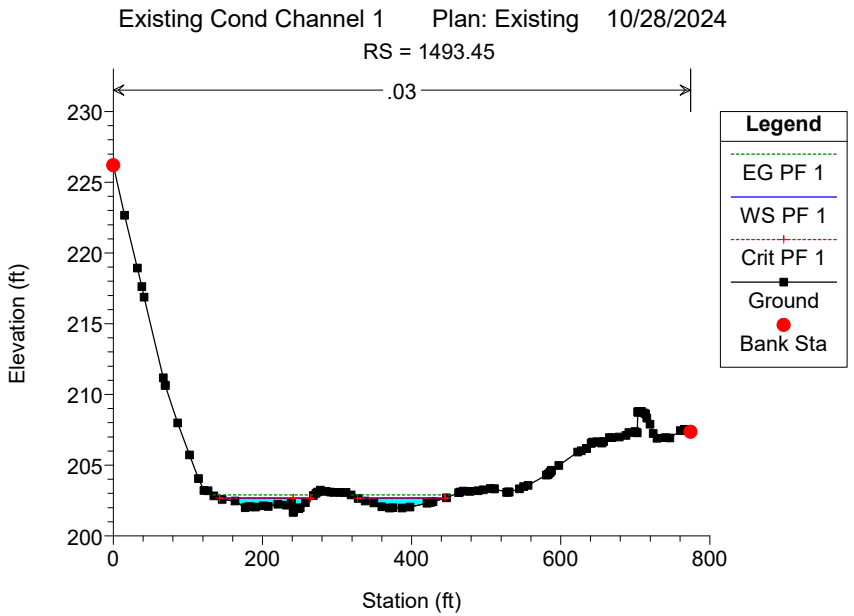
 Alignment Existi     4235.58         .1        .3
 Alignment Existi     3693.15         .1        .3
 Alignment Existi     3035.72         .1        .3
 Alignment Existi     2597            .1        .3
```

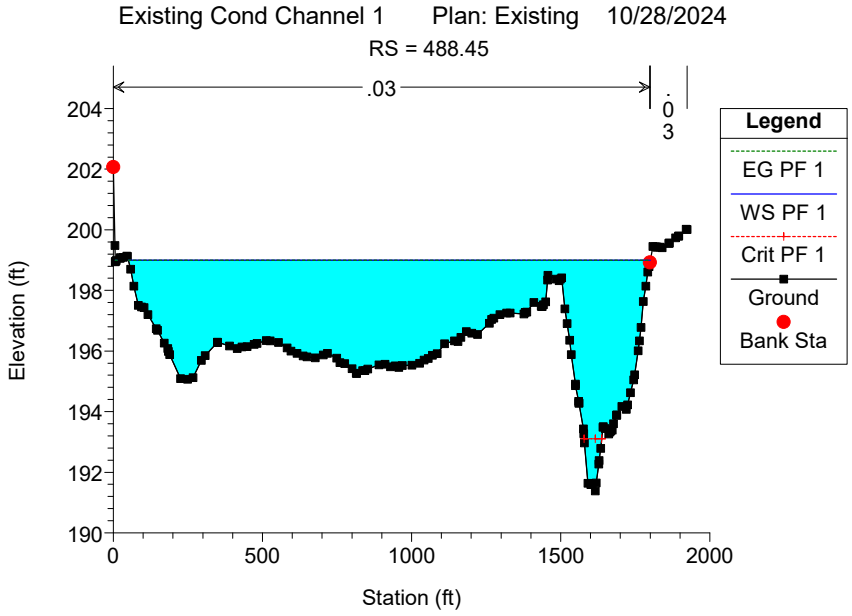


```
Alignment Existi     2063.5          .1        .3
Alignment Existi     1493.45         .1        .3
Alignment Existi     488.45          .1        .3
```


Existing Cond Channel 1 Plan: Existing 10/28/2024
RS = 4235.58
.06
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Existing Cond Channel 1 Plan: Existing 10/28/2024
RS = 3693.15
.06
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Existing Cond Channel 1 Plan: Existing 10/28/2024
RS = 3035.72
.06
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Existing Cond Channel 1 Plan: Existing 10/28/2024
RS = 2597
.03
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta


Existing Cond Channel 1 Plan: Existing 10/28/2024
RS = 2063.5
.03
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
260
250
240
230
220
210
200
0
100
200
300
400
500
600


Existing Cond Channel 1 Plan: Existing 10/28/2024
RS = 1493.45
.03
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
230
225
220
215
210
205
200
0
200
400
600
800


Existing Cond Channel 1 Plan: Existing 10/28/2024
RS = 488.45
.03
.03
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
204
202
200
198
196
194
192
190
0
500
1000
1500
2000

HEC-RAS Plan: Ex River: Alignment Existi Reach: Alignment Existi Profile: PF 1

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Alignment Existi	4235.58	PF 1	402.00	310.40	313.76	313.76	315.01	0.045580	8.96	44.85	18.16	1.01
Alignment Existi	3693.15	PF 1	402.00	256.68	260.42	260.41	261.36	0.044359	7.79	51.63	27.27	1.00
Alignment Existi	3035.72	PF 1	402.00	227.93	230.64	230.64	231.39	0.046691	6.95	57.85	38.59	1.00
Alignment Existi	2597	PF 1	402.00	217.94	219.19	219.19	219.54	0.015420	4.71	85.36	127.29	1.01
Alignment Existi	2063.5	PF 1	402.00	207.42	209.17	209.03	209.38	0.008058	3.66	109.69	146.49	0.75
Alignment Existi	1493.45	PF 1	402.00	201.68	202.67	202.67	202.89	0.017295	3.79	106.06	238.83	1.00
Alignment Existi	488.45	PF 1	402.00	191.38	199.00	193.10	199.00	0.000001	0.08	5265.87	1756.86	0.01

HEC-RAS HEC-RAS 6.5 February 2024
U.S. Army Corps of Engineers
Hydrologic Engineering Center
609 Second Street
Davis, California

```
X     X  XXXXXX    XXXX        XXXX       XX      XXXX
X     X  X        X    X       X   X     X  X    X
X     X  X        X            X   X    X    X   X
XXXXXXX  XXXX     X       XXX  XXXX     XXXXXX    XXXX
X     X  X        X            X  X     X    X        X
X     X  X        X    X       X   X    X    X        X
X     X  XXXXXX    XXXX        X    X   X    X   XXXXX
```

PROJECT DATA
Project Title: Channel 2 Ex Floodplain
Project File : Channel2ExFloodp.prj
Run Date and Time: 10/26/2024 11:00:03 PM

Project in English units

PLAN DATA

Plan Title: Existing
Plan File :
q:\CA-SAND-PD\Projects\4192.10\Engr\Reports\Drainage-FE\HYDRA\HEC-RAS\Existing\Channel
2\Channel2ExFloodp.p01

Geometry Title: Channel 2 Geom
Geometry File :
q:\CA-SAND-PD\Projects\4192.10\Engr\Reports\Drainage-FE\HYDRA\HEC-RAS\Existing\Channel
2\Channel2ExFloodp.g01

Flow Title : EX Flow
Flow File :
q:\CA-SAND-PD\Projects\4192.10\Engr\Reports\Drainage-FE\HYDRA\HEC-RAS\Existing\Channel
2\Channel2ExFloodp.f01

Plan Summary Information:
Number of: Cross Sections = 4 Multiple Openings = 0
Culverts = 0 Inline Structures = 0
Bridges = 0 Lateral Structures = 0

Computational Information
Water surface calculation tolerance = 0.01
Critical depth calculation tolerance = 0.01
Maximum number of iterations = 20
Maximum difference tolerance = 0.3
Flow tolerance factor = 0.001

Computation Options
Critical depth computed only where necessary
Conveyance Calculation Method: At breaks in n values only
Friction Slope Method: Average Conveyance
Computational Flow Regime: Subcritical Flow

FLOW DATA

Flow Title: EX Flow
Flow File :
q:\CA-SAND-PD\Projects\4192.10\Engr\Reports\Drainage-FE\HYDRA\HEC-RAS\Existing\Channel
2\Channel2ExFloodp.f01

Flow Data (cfs)

River	Reach	RS	PF 1
Alignment 2	Alignment 2	2053.73	101.3

Boundary Conditions

River	Reach	Profile	Upstream
Downstream			

Alignment 2	Alignment 2	PF 1	Normal S = 0.1	Known

WS = 212

GEOMETRY DATA

Geometry Title: Channel 2 Geom
Geometry File :
q:\CA-SAND-PD\Projects\4192.10\Engr\Reports\Drainage-FE\HYDRA\HEC-RAS\Existing\Channel
2\Channel2ExFloodp.g01

CROSS SECTION

RIVER: Alignment 2
REACH: Alignment 2 RS: 2053.73

INPUT
Description:
Station Elevation Data num= 50

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	420.29.390015	417.9426.43002	414.3526.62003	414.31	39.25	411.92			
50.45001	409.9269.48001	406.8271.30002	406.5876.12003	405.9189.83002	404.07				
94.98001	403.53	104.94	402.36	106.43	402.18	108.61	401.89	116.23	400.92
123.27	400.14	137.08	398.39	138.64	398.16	139.77	397.91	149.48	396
155.07	394.82	159.75	394.22	165.52	393.55	171.62	392.71	181	392.12
182.61	392.04	183.94	392.71	197.88	398.67	202.4	399.51	205.9	399.94
214.48	399.78	218.51	399.65	219.6	400.21	228.65	403.98	235.21	404.87
246.34	407.24	261.79	409.89	274.88	412.13	293.87	415.84	299.95	417.09
305.81	418.36	321.03	421.6	341.49	425.5	348.52	426.94	358.91	429.7
368.8	432.51	381.37	434.9	382.58	435.08	385.16	435.38	386.23	435.5

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.06	0	.06	386.23	.06

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	386.23	504.91	504.91	.1	.3

CROSS SECTION

RIVER: Alignment 2
REACH: Alignment 2 RS: 1548.82

INPUT
Description:
Station Elevation Data num= 43

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	390.029.630005	386.2324.14001	381.1230.30002	378.8933.64999	377.72				
45.83002	373.6852.08002	371.2658.96002	368.9370.89999	365.11	88.86	359.4			
97.67001	357.09	114.09	354.04	127.85	350.87	133.82	349.52	146.4	346.63
153.13	345.32	171.13	342.32	174.82	341.67	176.6	341.36	193.72	338.54
197.8	340.01	206.28	342.59	207.82	343.08	209.43	344.03	212.88	346.04
221.32	351.05	226.56	350.62	229.91	350.44	240.64	349.81	241.84	349.72
243.15	350.42	254.05	356.86	258.62	358.78	274.78	363.73	278.18	364.16
292.4	365.44	297.17	365.54	309.67	367.22	314.38	367.13	317.39	367.13
319.78	366.97	323.52	366.92	332.32	367.31				

```
Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .06       0     .06  332.32     .06

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0  332.32           444.76  444.76  444.76             .1       .3

CROSS SECTION


RIVER: Alignment 2
REACH: Alignment 2        RS: 1104.06

INPUT
Description:
Station Elevation Data    num=      45
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0     288.1399841  287.99.8299866  287.922.329987   287.720.25998  285.64
   36.53  283.9845.38998  283.0951.59998  282.2468.04999  279.9873.81999  279.24
75.43999  278.9881.54999  278.2590.80998  277.1892.56999  276.9193.35999  276.79
  101.46  270.52  112.04  261.67  124.94  253.93  128.13  252.24  129.67  251.41
  142.13  244.49  147.62  246.48   150.7  247.55  151.71   247.9  161.62  252.61
  161.83  252.74  163.15  253.47  171.48  257.92  174.72  260.11  182.99  265.54
  195.54  271.12  197.24  271.81  199.75  272.14   224.1  275.25  225.04  275.38
   226.9  275.64  239.64  277.19  243.06  277.04  251.79  277.08  257.78  277.03
  260.63  277.32  271.21  277.34  289.02  277.55  295.66  277.62   323.8  278.01

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .06       0     .06   323.8     .06

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0   323.8           814.73  814.73  814.73             .1       .3

CROSS SECTION


RIVER: Alignment 2
REACH: Alignment 2        RS: 289.33

INPUT
Description:
Station Elevation Data    num=      55
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0  217.02    7.91  216.44    9.32  216.33    9.78  216.22   19.59  214.93
   44.42  213.84   59.89  213.23   62.82  213.09   76.35  212.48   91.52  212.27
  102.16  212.17  116.98   211.7  125.31  211.51  133.07  211.24  156.35   210.7
  161.27   210.7  163.79  210.77  171.98  210.96  175.93  213.96  176.83  214.46
  178.26  215.13  178.89  215.38  179.25  215.19  184.35  212.95  186.23  211.51
   188.3  210.22  194.77  209.23  199.42   208.6  210.83  208.34  211.06  208.33
  211.15  208.33  217.43  208.38  223.38  208.72  227.39  208.81  230.82  208.75
  235.52  208.64  237.27   208.6  251.41  208.61  263.55  208.61  267.27  208.63
  274.26  208.65  278.35  208.67  279.09  208.66  286.89  208.66  287.61  208.66
  288.58  208.66  295.46  208.59  301.59  208.61  305.37  208.61   307.2  208.65
  330.83   208.8  383.04     210  416.83   210.4  434.15  210.73  500.85   212.1

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .06       0     .06  500.85     .06

Bank Sta: Left   Right    Coeff Contr.   Expan.
             0  500.85             .1       .3


SUMMARY OF MANNING'S N VALUES

River:Alignment 2

      Reach          River Sta.       n1        n2        n3

 Alignment 2          2053.73           .06       .06       .06
 Alignment 2          1548.82           .06       .06       .06
 Alignment 2          1104.06           .06       .06       .06
```



```
 Alignment 2          289.33            .06       .06       .06


SUMMARY OF REACH LENGTHS

River: Alignment 2

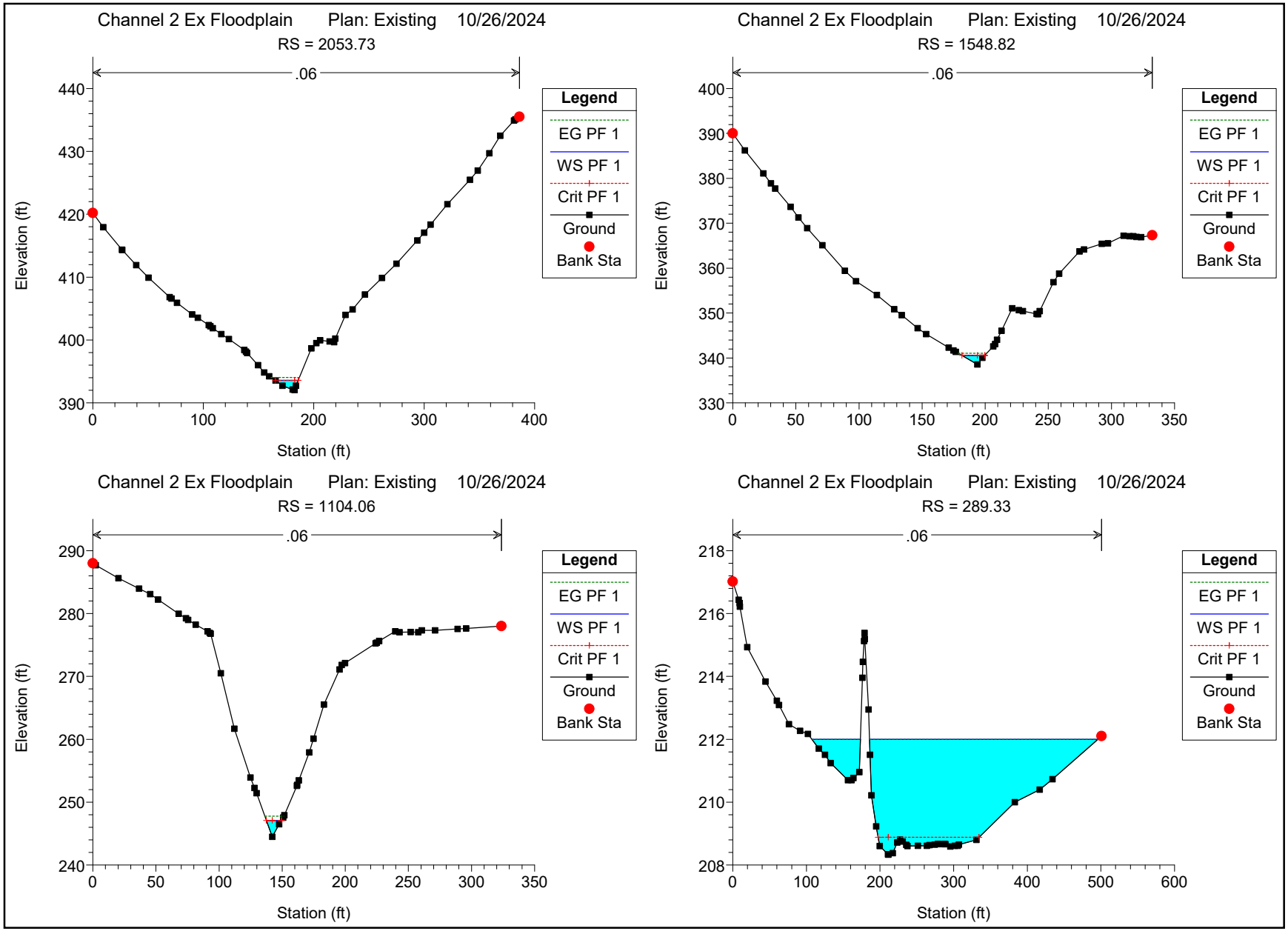
      Reach          River Sta.      Left     Channel    Right

 Alignment 2          2053.73         504.91    504.91    504.91
 Alignment 2          1548.82         444.76    444.76    444.76
 Alignment 2          1104.06         814.73    814.73    814.73
 Alignment 2          289.33


SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS
River: Alignment 2

      Reach          River Sta.     Contr.    Expan.

 Alignment 2          2053.73         .1        .3
 Alignment 2          1548.82         .1        .3
 Alignment 2          1104.06         .1        .3
 Alignment 2          289.33          .1        .3
```


Channel 2 Ex Floodplain Plan: Existing 10/26/2024
RS = 2053.73
.06
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Channel 2 Ex Floodplain Plan: Existing 10/26/2024
RS = 1548.82
.06
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Channel 2 Ex Floodplain Plan: Existing 10/26/2024
RS = 1104.06
.06
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Channel 2 Ex Floodplain Plan: Existing 10/26/2024
RS = 289.33
.06
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta

HEC-RAS Plan: Ex River: Alignment 2 Reach: Alignment 2 Profile: PF 1

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Alignment 2	2053.73	PF 1	101.30	392.04	393.58	393.58	394.04	0.056729	5.42	18.68	20.76	1.01
Alignment 2	1548.82	PF 1	101.30	338.54	340.54	340.54	341.05	0.056244	5.72	17.71	17.94	1.01
Alignment 2	1104.06	PF 1	101.30	244.49	247.09	247.09	247.76	0.055647	6.54	15.49	11.95	1.01
Alignment 2	289.33	PF 1	101.30	208.33	212.00	208.89	212.00	0.000010	0.13	789.20	376.22	0.02

HEC-RAS HEC-RAS 6.0.0 May 2021
U.S. Army Corps of Engineers
Hydrologic Engineering Center
609 Second Street
Davis, California

```
X     X  XXXXXX    XXXX        XXXX       XX      XXXX
X     X  X        X    X       X   X     X  X    X
X     X  X        X            X   X    X    X   X
XXXXXXX  XXXX     X       XXX  XXXX     XXXXXX    XXXX
X     X  X        X            X  X     X    X        X
X     X  X        X    X       X   X    X    X        X
X     X  XXXXXX    XXXX        X    X   X    X   XXXXX
```

PROJECT DATA
Project Title: Channel 3 Existing
Project File : Channel3Existing.prj
Run Date and Time: 6/7/2024 7:56:19 AM

Project in English units

PLAN DATA

Plan Title: Existing
Plan File :
q:\CA-SAND-PD\Projects\4192.10\Engr\Reports\Drainage-FE\HYDRA\HEC-RAS\Existing\C

Geometry Title: Channel 3 Geom Updated
Geometry File :
q:\CA-SAND-PD\Projects\4192.10\Engr\Reports\Drainage-FE\HYDRA\HEC-RAS\Existing\C

Flow Title : Ex Flow
Flow File :
q:\CA-SAND-PD\Projects\4192.10\Engr\Reports\Drainage-FE\HYDRA\HEC-RAS\Existing\C

Plan Summary Information:
Number of: Cross Sections = 6 Multiple Openings = 0
Culverts = 0 Inline Structures = 0
Bridges = 0 Lateral Structures = 0

Computational Information
Water surface calculation tolerance = 0.01
Critical depth calculation tolerance = 0.01
Maximum number of iterations = 20
Maximum difference tolerance = 0.3
Flow tolerance factor = 0.001

Computation Options
Critical depth computed only where necessary
Conveyance Calculation Method: At breaks in n values only
Friction Slope Method: Average Conveyance
Computational Flow Regime: Subcritical Flow

FLOW DATA

Flow Title: Ex Flow
Flow File :
q:\CA-SAND-PD\Projects\4192.10\Engr\Reports\Drainage-FE\HYDRA\HEC-RAS\Existing\C

Flow Data (cfs)

River	Reach	RS	PF 1
Alignment 3	Alignment 3	3377.89	135.5

Boundary Conditions

River	Reach	Profile	Upstream
Downstream			
Alignment 3	Alignment 3	PF 1	Normal S = 0.28
Known WS = 216.5			

GEOMETRY DATA

Geometry Title: Channel 3 Geom Updated
Geometry File :
q:\CA-SAND-PD\Projects\4192.10\Engr\Reports\Drainage-FE\HYDRA\HEC-RAS\Existing\C

CROSS SECTION

RIVER: Alignment 3
REACH: Alignment 3 RS: 3377.89

INPUT
Description:
Station Elevation Data num= 32

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	619.131.450012	618.797.130005	618.018.820007	617.827.23001	615.88				
31.02	615.39	35.47	613.85	47.52	612.0559.14001	607.5667.14001	605.31		
69.94	603.93	73.01	603.01	82.95	598.6186.82001	596.89	95.23	602.17	
99.28001	604.83	101.27	605.93	113.66	612.73	117.57	615.72	123.21	619.49
125.18	618.71	129.46	616.87	134.05	616.76	142.38	617.56	144.49	617.98
150.39	618.14	150.62	618.18	155.38	620.95	158.82	622.92	159.14	623.16
167.93	624.85	169.24	624.98						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.06	0	.06	169.24	.06

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

0	169.24	720.66	720.66	720.66	.1	.3

CROSS SECTION

RIVER: Alignment 3
REACH: Alignment 3 RS: 2706.67

```
 INPUT
 Description:
 Station Elevation Data    num=      44
      Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
        0  461.194.690002  461.0531.57001  461.02   35.22   460.9   43.88  460.63
 74.99001  459.6497.79001  458.0698.54001  458.0399.94002   457.9  109.94  457.01
   115.48  455.87  116.03  455.81  116.89  455.38  119.16  454.63  123.56  452.04
   135.34  447.14   136.9  446.21  138.59  446.64  142.44  447.62  145.86  449.35
   151.75  453.43  156.73  456.68  160.57  458.56  169.75  463.04  169.94  463.16
   170.18  463.15   187.2  463.71  191.12  463.43  204.34  462.69  207.94  462.66
   208.86  462.56  211.22  463.06  212.41  463.11  220.29  463.64  221.47  463.75
   222.39  463.73  253.11   463.8  255.29  463.79  257.98  463.81  287.95  464.06
   301.98  464.19  302.82  464.22  310.65  464.48  311.45  464.51

 Manning's n Values        num=       3
      Sta   n Val     Sta   n Val     Sta   n Val
        0     .06       0     .06  311.45     .06

 Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.         →
→Expan.
             0  311.45          1083.54 1083.54 1083.54             .1       .3

 CROSS SECTION


 RIVER: Alignment 3
 REACH: Alignment 3        RS: 1623.13

 INPUT
 Description:
 Station Elevation Data    num=      72
      Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
        0  305.323.519989  304.94       4  304.894.170013  304.884.299988  304.87
  4.51001  304.865.220001  304.8415.42999  304.2915.82999  304.2516.29001   304.2
 17.35001  304.1226.54999  303.5828.23001  303.3530.35999  302.97   38.41  302.58
 46.64999  302.2948.54999   301.9   56.47  300.6156.67999  300.55   57.28  300.39
 63.29001   298.769.60999  297.3974.57001  296.7878.60001  296.61   85.28  296.28
    95.88  296.06   98.25  295.96  101.51  295.73  114.51  295.52   124.1  295.32
   125.35  295.31  141.07   295.2  141.94  295.18  156.87  294.88  159.94  294.87
   182.03  294.38  185.77  294.36  193.98  294.47   195.2  294.48   202.3  294.51
   205.44  294.53  208.81  294.53  210.16  294.48  218.47  294.28  221.24  294.11
   233.12  293.53  236.64  293.36  242.64  292.17  244.64  291.77  253.06  291.19
   253.09  291.18  266.79  290.76  268.15  290.76  283.15  290.79  285.79  290.84
   292.35  292.64  294.57  293.01  301.63  293.28  302.59  293.36  306.85  293.48
    311.8  293.94  316.43  294.04  323.53  294.15  343.57  293.84  345.43  293.95
   346.84  294.05  347.44  294.12   354.6  294.42  390.45  295.97  417.63   297.3
   432.59  298.14  435.75  298.39

 Manning's n Values        num=       3
      Sta   n Val     Sta   n Val     Sta   n Val
        0     .06       0     .06  435.75     .06

 Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.         →
→Expan.
             0  435.75          1108.68 1108.68 1108.68             .1       .3

 CROSS SECTION


 RIVER: Alignment 3
 REACH: Alignment 3        RS: 1446.60
```



```
 INPUT
 Description:
 Station Elevation Data    num=      57
      Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
        0  284.76   10.01  284.69   25.05  284.56   32.14  284.54    33.2  284.54
    60.07  284.56    64.2  284.53   69.13  284.47   89.96  284.52   91.12  284.57
     95.4  284.49   98.88  284.69  101.83   284.7  107.31  284.42  111.09  284.39
   113.99  284.35  121.79  284.25  129.43  283.72  132.76  283.23  137.51  282.52
   141.61  281.92   146.3  281.32   151.5  280.44  158.77  279.97  164.29  279.42
   177.05  278.66  180.51  278.42  190.84  277.92  193.91  277.74  194.39  277.72
   198.14  277.52  204.77  277.14  215.37  276.87  215.42  276.87  215.43  276.87
   226.82  276.92  227.85  276.93  230.22  276.98  242.21  277.14  247.62  277.13
   257.31   277.3  269.93  277.54  281.11   277.6  287.78   277.8  298.74  278.07
   307.27  278.11  315.64  278.27  324.91   278.5  335.56   278.9  343.35  279.23
   350.78  279.29  357.18  279.69  361.11     280  368.36   280.3     373  280.28
   375.49  280.63  379.48  280.84

 Manning's n Values        num=       3
      Sta   n Val     Sta   n Val     Sta   n Val
        0     .06  164.29     .06  343.35     .06

 Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.         →
→Expan.
         164.29  343.35          176.53  176.53  176.53             .1       .3

 CROSS SECTION


 RIVER: Alignment 3
 REACH: Alignment 3        RS: 514.45

 INPUT
 Description:
 Station Elevation Data    num=      30
      Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
        0  232.52 3.76001  232.35   31.34  231.68   32.19  231.6533.18002  231.63
    83.91  230.27   88.87  230.1494.65002  230.06  117.23  229.57  136.59  229.47
   156.12  229.17  189.27  228.69  200.92  228.56  202.46  228.58   212.6  228.64
   233.23  228.97  255.69  229.49     264  229.72  284.75  229.97  298.77  230.19
   308.13  230.26  341.86  230.36  379.97  230.26  384.94  230.28   392.4  230.26
   417.84  230.12  428.03  229.85  448.61  229.87  471.11  229.97  472.51  230.01

 Manning's n Values        num=       3
      Sta   n Val     Sta   n Val     Sta   n Val
        0     .06       0     .06  472.51     .06

 Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.         →
→Expan.
             0  472.51          368.42  368.42  368.42             .1       .3

 CROSS SECTION


 RIVER: Alignment 3
 REACH: Alignment 3        RS: 146.03

 INPUT
 Description:
 Station Elevation Data    num=      46
      Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
        0  219.613.330017  219.598.099976  219.66   19.19  220.3432.04999  220.69
 35.90997  220.5749.65997  220.7762.20001   220.868.27002  220.8288.89996  220.77
 95.84998  220.8598.53998  220.83  123.43  220.67  146.15  220.09  152.37  219.88
```

```
     162  219.61  191.42  218.82  208.19  218.24  209.86  218.18  235.78  217.85
  239.17   217.8  241.36   217.8   268.1  217.52  288.96  217.75  297.04  217.78
  309.55  217.73  320.66  217.54  323.15  217.54   335.3  217.65  364.66  217.78
  376.14   217.8  405.48  217.95  414.17  218.01  426.05  217.96  454.23  218.09
  468.47  218.18  494.29  218.34  510.88  218.51  534.35  218.86   553.3  219.25
  574.42  220.01  595.71  220.15  614.48  220.19  638.13   220.1  654.54  219.99
  664.68  219.97

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .06       0     .06  664.68     .06

Bank Sta: Left   Right    Coeff Contr.   Expan.
             0  664.68             .1       .3


SUMMARY OF MANNING'S N VALUES

River:Alignment 3

      Reach          River Sta.       n1        n2        n3

 Alignment 3          3377.89            .06       .06       .06
 Alignment 3          2706.67            .06       .06       .06
 Alignment 3          1623.13            .06       .06       .06
 Alignment 3          1446.60            .06       .06       .06
 Alignment 3          514.45             .06       .06       .06
 Alignment 3          146.03             .06       .06       .06



SUMMARY OF REACH LENGTHS

River: Alignment 3

      Reach          River Sta.      Left     Channel    Right

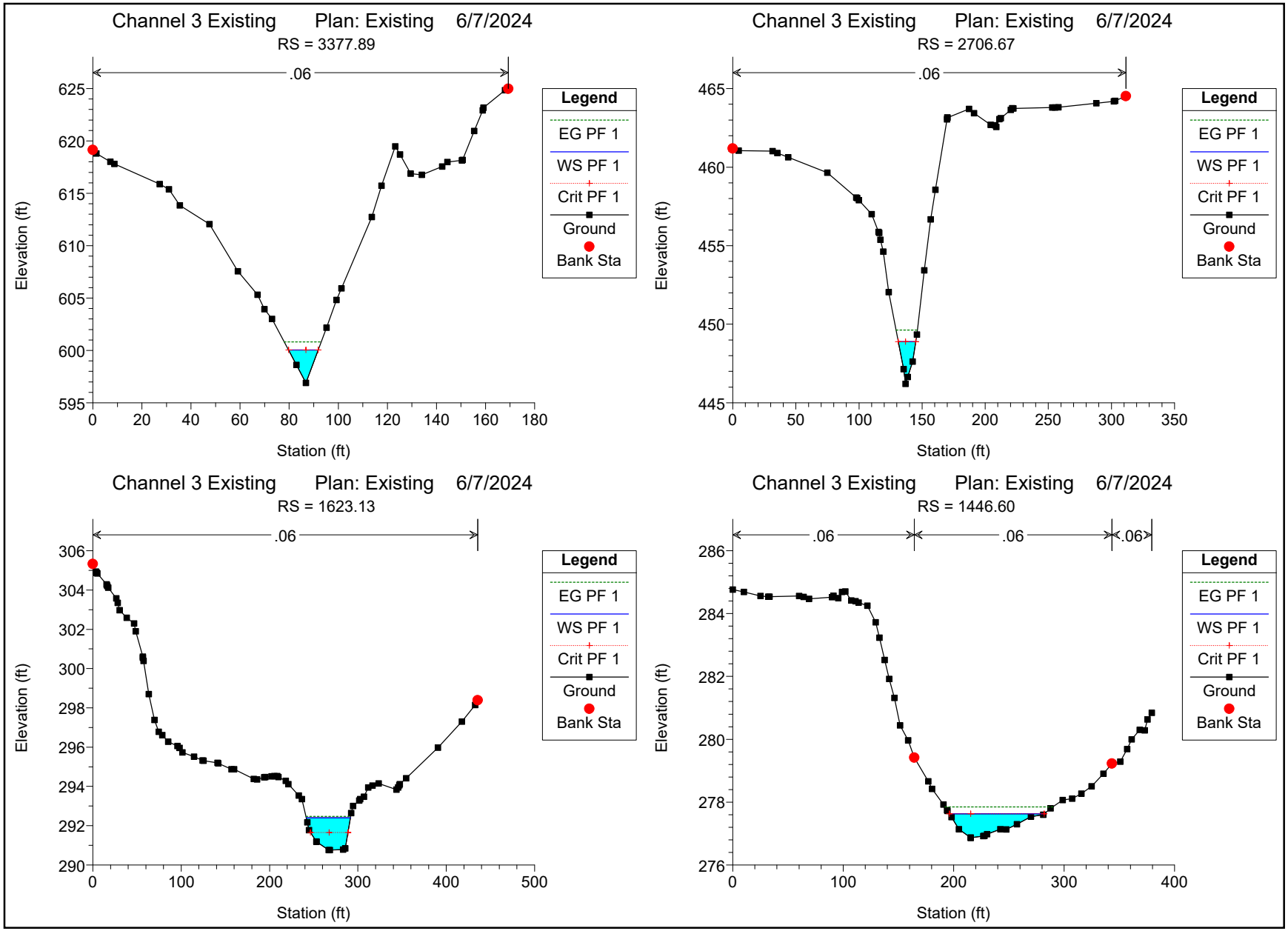
 Alignment 3          3377.89         720.66    720.66    720.66
 Alignment 3          2706.67        1083.54   1083.54   1083.54
 Alignment 3          1623.13        1108.68   1108.68   1108.68
 Alignment 3          1446.60         176.53    176.53    176.53
 Alignment 3          514.45          368.42    368.42    368.42
 Alignment 3          146.03

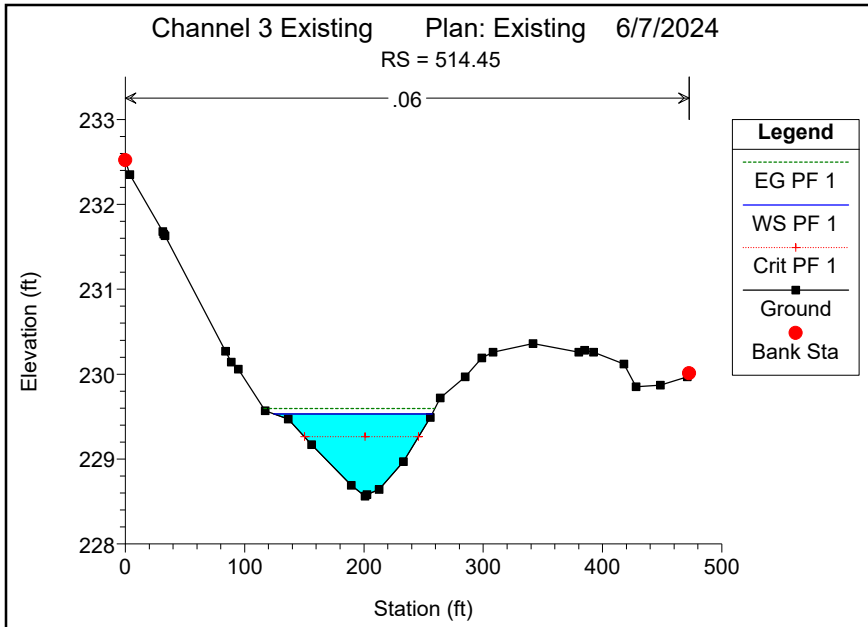


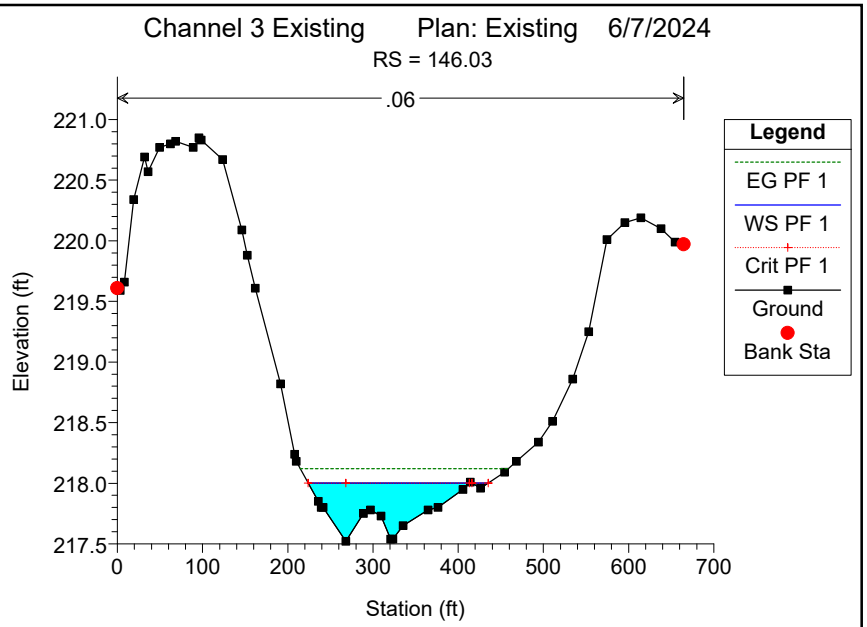
SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS
River: Alignment 3


      Reach          River Sta.     Contr.    Expan.

 Alignment 3          3377.89          .1        .3
 Alignment 3          2706.67          .1        .3
 Alignment 3          1623.13          .1        .3
 Alignment 3          1446.60          .1        .3
 Alignment 3          514.45           .1        .3
 Alignment 3          146.03           .1        .3
```


Channel 3 Existing Plan: Existing 6/7/2024
RS = 3377.89
.06
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Channel 3 Existing Plan: Existing 6/7/2024
RS = 2706.67
.06
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Channel 3 Existing Plan: Existing 6/7/2024
RS = 1623.13
.06
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Channel 3 Existing Plan: Existing 6/7/2024
RS = 1446.60
.06
.06
.06
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta


Channel 3 Existing Plan: Existing 6/7/2024
RS = 514.45
.06
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta


Channel 3 Existing Plan: Existing 6/7/2024
RS = 146.03
.06
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta

```
                    HEC-RAS HEC-RAS 6.0.0 May 2021
                     U.S. Army Corps of Engineers
                    Hydrologic Engineering Center
                          609 Second Street
                          Davis, California


           X     X  XXXXXX    XXXX        XXXX       XX      XXXX
           X     X  X        X    X       X   X     X  X    X
           X     X  X        X            X   X    X    X   X
           XXXXXXX  XXXX     X       XXX  XXXX     XXXXXX    XXXX
           X     X  X        X            X  X      X    X        X
           X     X  X        X    X       X   X     X    X        X
           X     X  XXXXXX    XXXX        X    X    X    X   XXXXX


 PROJECT DATA
 Project Title: Channel 4 Existing
 Project File : Channel4Existing.prj
 Run Date and Time: 6/7/2024 7:57:45 AM

 Project in English units



 PLAN DATA

 Plan Title: Channel 4 Existing
 Plan File :
→q:\CA-SAND-PD\Projects\4192.10\Engr\Reports\Drainage-FE\HYDRA\HEC-RAS\Existing\C→

            Geometry Title: Channel 4 Ex
            Geometry File :
→q:\CA-SAND-PD\Projects\4192.10\Engr\Reports\Drainage-FE\HYDRA\HEC-RAS\Existing\C→

            Flow Title    : Channel 4 Ex Flow
            Flow File     :
→q:\CA-SAND-PD\Projects\4192.10\Engr\Reports\Drainage-FE\HYDRA\HEC-RAS\Existing\C→

 Plan Summary Information:
 Number of:  Cross Sections =    7    Multiple Openings  =    0
             Culverts       =    0    Inline Structures  =    0
             Bridges        =    0    Lateral Structures =    0

 Computational Information
     Water surface calculation tolerance  =  0.01
     Critical depth calculation tolerance =  0.01
     Maximum number of iterations         =  20
     Maximum difference tolerance         =  0.3
     Flow tolerance factor                =  0.001

 Computation Options
     Critical depth computed only where necessary
     Conveyance Calculation Method: At breaks in n values only
     Friction Slope Method:         Average Conveyance
     Computational Flow Regime:     Subcritical Flow
```



```
 FLOW DATA

 Flow Title: Channel 4 Ex Flow
 Flow File :                                                                  →
→q:\CA-SAND-PD\Projects\4192.10\Engr\Reports\Drainage-FE\HYDRA\HEC-RAS\Existing\C→

 Flow Data (cfs)

   River           Reach           RS                   PF 1
   Alignment 4 EastAlignment 4 East4418.6               893.3


 Boundary Conditions
                                                                              →
→
   River           Reach           Profile                       Upstream     →
→         Downstream
                                                                              →
→
   Alignment 4 EastAlignment 4 EastPF 1                          Normal S = 0.2→
→        Known WS = 223
                                                                              →
→



 GEOMETRY DATA

 Geometry Title: Channel 4 Ex
 Geometry File :                                                              →
→q:\CA-SAND-PD\Projects\4192.10\Engr\Reports\Drainage-FE\HYDRA\HEC-RAS\Existing\C→

 CROSS SECTION


 RIVER: Alignment 4 East
 REACH: Alignment 4 East   RS: 4418.6

 INPUT
 Description:
 Station Elevation Data    num=      33
      Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
 26.17999  340.5342.01999  336.6845.48999  335.77   46.53  335.61   46.84  335.54
 49.85999  334.66   66.97   329.9   69.63  329.1574.73999  327.95  101.65  322.45
   132.33  318.11  148.09  316.44  154.51   315.8  157.75  315.43  170.03  313.92
   189.69  311.28  198.04  309.62  217.04  306.23  227.96  304.37  238.78  301.47
   242.97  301.33   274.4   301.2  297.58  301.15  300.79  301.12  328.85  300.85
    330.3  301.13  363.16   309.7  374.09  313.07  405.45  323.35  435.27  331.39
   448.16  335.02  456.58   337.3  456.75  337.35

 Manning's n Values        num=       3
      Sta   n Val     Sta   n Val     Sta   n Val
 26.17999     .0626.17999     .06  456.75     .06

 Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.      →
→Expan.
       26.17999  456.75           850.53  850.53  850.53             .1       .3

 CROSS SECTION


 RIVER: Alignment 4 East
 REACH: Alignment 4 East   RS: 3568.07
```

```
 INPUT
 Description:
 Station Elevation Data    num=      56
      Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
        0  317.931.349976  317.8920.66998  316.83   27.69  316.3633.20001  315.99
 38.83997  315.7464.45001  312.0774.14999  310.6885.43997  308.17   94.59  305.59
 97.99997  304.89  115.43  300.87  123.95  299.38  142.12  296.91   152.6  295.25
   168.46  293.96  176.81     293  185.28  291.93  193.25  291.76  194.67  291.73
   199.75  290.84  205.97  289.45  209.63  288.86   215.2  287.91   220.3  287.48
   233.07  286.25  235.78  286.25  236.63  286.25  239.63  286.25  336.96  286.25
   360.66  286.25   406.3  286.25  416.96  286.25  417.11  286.25  418.58  286.54
   423.83  287.45  426.54  287.73  435.74   288.4  442.98  289.07   452.8  291.06
   455.46  291.34  467.04   293.5  467.47  293.57   467.7  293.62  468.02  293.63
   475.64  293.87  484.84  296.96  489.82  298.49  491.67  299.18   526.1  311.36
      527  311.67  528.38  312.06  532.26  313.46   558.3  322.43  572.45  327.76
   580.42  330.63

 Manning's n Values        num=       3
      Sta   n Val     Sta   n Val     Sta   n Val
        0     .06       0     .06  580.42     .06

 Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.          →
→Expan.
             0  580.42           217.44  217.44  217.44             .1       .3

 CROSS SECTION


 RIVER: Alignment 4 East
 REACH: Alignment 4 East   RS: 3350.63

 INPUT
 Description:
 Station Elevation Data    num=      70
      Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
        0  298.028.440002  297.3133.71002  293.9234.74005  293.7835.68005  293.63
 48.13004   291.556.89001  288.3460.14001  287.0164.67001  286.2575.03003  284.53
 78.07004  283.9981.48004  283.47  103.13  285.67  108.32  286.02  118.15  288.17
   123.05  289.84  131.89  294.43  133.79  295.29  150.07  298.02  151.29  298.22
    152.2  298.36  157.26  298.72  172.61  299.04  183.26  298.99  189.93  298.86
   198.43  297.95  209.37  296.81  219.65  295.62  226.43  294.76  235.48  293.44
   243.17  292.03   252.2  290.89  263.56   290.1  279.55  290.11  281.76  290.12
   282.97  290.09  299.86  289.97  305.02  289.96   320.5  289.79  327.87  289.77
   344.32  289.69   348.6  289.74  357.78  289.81  371.19  289.87  373.07  289.84
   391.09  289.77  393.21  289.74   405.2  289.82  417.27  289.77   420.7  289.78
   424.64  289.82  444.47  290.02  450.47  289.98  460.77  290.33  466.64  290.57
   472.55  291.02  476.04  291.09   480.1  291.28   481.3   291.3   488.7  291.68
   496.48  292.18  506.32  294.13  506.43  294.16  506.49   294.2  516.04  300.55
   528.77  306.07   535.1  307.93  547.78  312.58   552.9  314.66  553.84  315.03

 Manning's n Values        num=       3
      Sta   n Val     Sta   n Val     Sta   n Val
        0     .06       0     .06  553.84     .06

 Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.          →
→Expan.
             0  553.84           122.97  122.97  122.97             .1       .3

 CROSS SECTION


 RIVER: Alignment 4 East
```



```
 REACH: Alignment 4 East   RS: 3227.66

 INPUT
 Description:
 Station Elevation Data    num=      60
      Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
        0  292.054.920013  291.936.640015  291.8916.33002  291.64   23.19  291.28
 28.55002  290.8529.33002  290.8535.58002  289.0939.82001  287.6645.61002  285.54
 55.27002  281.8563.39999  278.78   65.19  278.6275.67999  277.7581.26001  277.26
 82.27002  277.25   90.37  277.23  108.02  277.15  111.69  276.99   119.9   276.4
   131.11  275.95  155.63  275.45  189.11  276.01  194.49  276.06  194.84  276.27
    199.5  277.83  205.31  274.21  207.45   272.8  210.51  272.12  220.54  270.32
   237.76  268.25   241.1  267.99  243.26  268.01  243.63  268.02  273.57  267.49
   278.09  267.12  279.84  267.12  330.64  267.03  365.73  266.97  366.97  267.19
   380.15   268.3  400.84  272.05   403.1  272.38  404.11  272.56  417.66  275.29
   432.63   280.9  441.71  284.51  445.11  284.82  449.73  285.31  455.38  286.01
   458.01  286.31  466.52  292.45  468.19   293.4  473.62  294.65  474.88  295.31
   484.03   298.4   486.8  299.73  493.97   301.9  497.71  302.86  501.85  303.97

 Manning's n Values        num=       3
      Sta   n Val     Sta   n Val     Sta   n Val
        0     .06       0     .06  501.85     .06

 Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.          →
→Expan.
             0  501.85           414.19  414.19  414.19             .1       .3

 CROSS SECTION


 RIVER: Alignment 4 East
 REACH: Alignment 4 East   RS: 2813.47

 INPUT
 Description:
 Station Elevation Data    num=      44
      Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
        0  273.9922.20001  271.1536.17001  268.48   51.69  266.77   79.03  263.12
 80.79001  262.9181.42999  262.8382.26999  262.76   84.87  262.52   114.3  260.25
    124.7  259.44     125  259.43   127.1  259.26  138.88  258.44  142.48  258.19
   148.43  257.85  164.53   256.6  166.91   256.4  171.85  255.99  197.73     254
   206.03  254.17  214.06  254.45  249.34  255.48  250.73  255.58  254.03  255.87
   269.62  257.06  280.34  259.32  282.98  259.74  285.19  259.09  287.44  258.27
    290.1  258.15   292.4  258.02   306.5  258.75  310.01  258.99  320.72  260.21
   322.95  260.46  325.21  260.65  368.51  265.06  370.18  265.21  371.84  265.45
   398.16  268.44  422.11  271.89  433.64  273.26  439.28  273.81

 Manning's n Values        num=       3
      Sta   n Val     Sta   n Val     Sta   n Val
        0     .06       0     .06  439.28     .06

 Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.          →
→Expan.
             0  439.28          1192.52 1192.52 1192.52             .1       .3

 CROSS SECTION


 RIVER: Alignment 4 East
 REACH: Alignment 4 East   RS: 1620.95

 INPUT
 Description:
```

Station Elevation Data num= 64

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	234.39	4.889954	233.93	19.88995	232.93	1.69995	232.52	48.38	231.77
69.55997	231.14	82.59998	230.96	130.8	230.63	133.51	230.61	134.24	230.61
162.31	230.96	184.41	231.45	190.8	231.6	198.91	231.68	219.28	231.97
235.31	232.12	253.72	232.36	260.4	232.44	274.04	232.35	274.23	232.35
274.31	232.34	278.88	231.79	285.23	230.37	287.7	229.96	293.44	229.59
300.12	229.2	304.58	229.87	313.7	231.12	313.71	231.12	320.69	232.13
326.32	232.79	328.84	233.36	335.8	234.75	339.26	234.09	343.7	232.99
350.5	232.59	351.28	232.53	353.1	232.52	354.14	232.49	356.69	232.48
365.06	232.45	379.86	232.35	381.52	232.37	390.17	232.25	390.3	232.25
390.46	232.25	403.34	232.17	403.73	232.17	404.7	232.17	406.63	232.19
416.54	232.25	421.98	232.27	432.03	232.31	440.21	232.34	446.82	232.37
458.67	232.52	476.08	232.77	484.75	232.95	487.54	233.03	512.05	234.24
525.21	234.71	542.55	236.08	565.72	237.65	578.54	238.94		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.06	0	.06	578.54	.06

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
0	578.54	424.02	424.02	424.02	.1	.3

CROSS SECTION

RIVER: Alignment 4 East
REACH: Alignment 4 East RS: 1196.93

INPUT
Description:
Station Elevation Data num= 92

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	225.96	3.860046	225.92	35.56	226.32	42.22003	226.36	42.84003	226.41
46.27002	226.29	55.79004	225.99	78.29999	225.49	92.11005	225.04	111.48	224.89
136.23	224.71	145.26	224.77	164.63	224.61	175.36	224.53	180.36	224.4
194.06	224.52	224.48	224.74	235.57	224.78	259.39	224.81	265.68	224.78
268.61	224.83	276.64	224.9	312.73	225.28	332.07	225.33	354.15	225.52
354.42	225.52	354.55	225.52	354.69	225.51	363.75	225.49	382.23	224.37
383.19	224.32	388.85	224.09	390.26	224.01	400.44	222.66	404.68	222.27
409.41	222.79	409.62	222.82	409.77	222.85	413.74	223.81	421.96	225.57
423.69	225.94	428.42	227.01	441.95	228.69	442.89	228.83	443.27	228.72
452.52	225.45	453.06	225.42	458.24	224.92	463.68	225.06	473.58	225.46
482.27	225.34	484.55	225.34	495.1	225.28	512.5	225.17	524.19	225.15
531.19	224.99	545.86	224.79	552.97	224.67	556.7	224.58	569.35	224.58
569.5	224.58	569.53	224.58	569.58	224.58	589.88	224.32	607.49	224.07
646.09	223.88	648.47	223.87	649.98	223.84	656.77	223.65	683.16	222.88
689.45	222.78	698.81	222.77	716.6	222.76	741.84	223.14	745.88	223.2
747.98	223.28	751.46	223.33	778.09	223.99	789.27	224.28	794.96	224.81
808.23	225.65	811.13	225.86	816.64	226.71	826.65	227.56	833.32	228.01
843.51	228.84	858.1	229.86	872.85	230.79	876.04	230.95	891.43	231.98
919.42	234.14	950.33	235.97						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.06	0	.06	950.33	.06

Bank Sta: Left	Right	Coeff Contr.	Expan.
0	950.33	.1	.3

SUMMARY OF MANNING'S N VALUES

River:Alignment 4 East

Reach	River Sta.	n1	n2	n3
Alignment 4 East	4418.6	.06	.06	.06
Alignment 4 East	3568.07	.06	.06	.06
Alignment 4 East	3350.63	.06	.06	.06
Alignment 4 East	3227.66	.06	.06	.06
Alignment 4 East	2813.47	.06	.06	.06
Alignment 4 East	1620.95	.06	.06	.06
Alignment 4 East	1196.93	.06	.06	.06

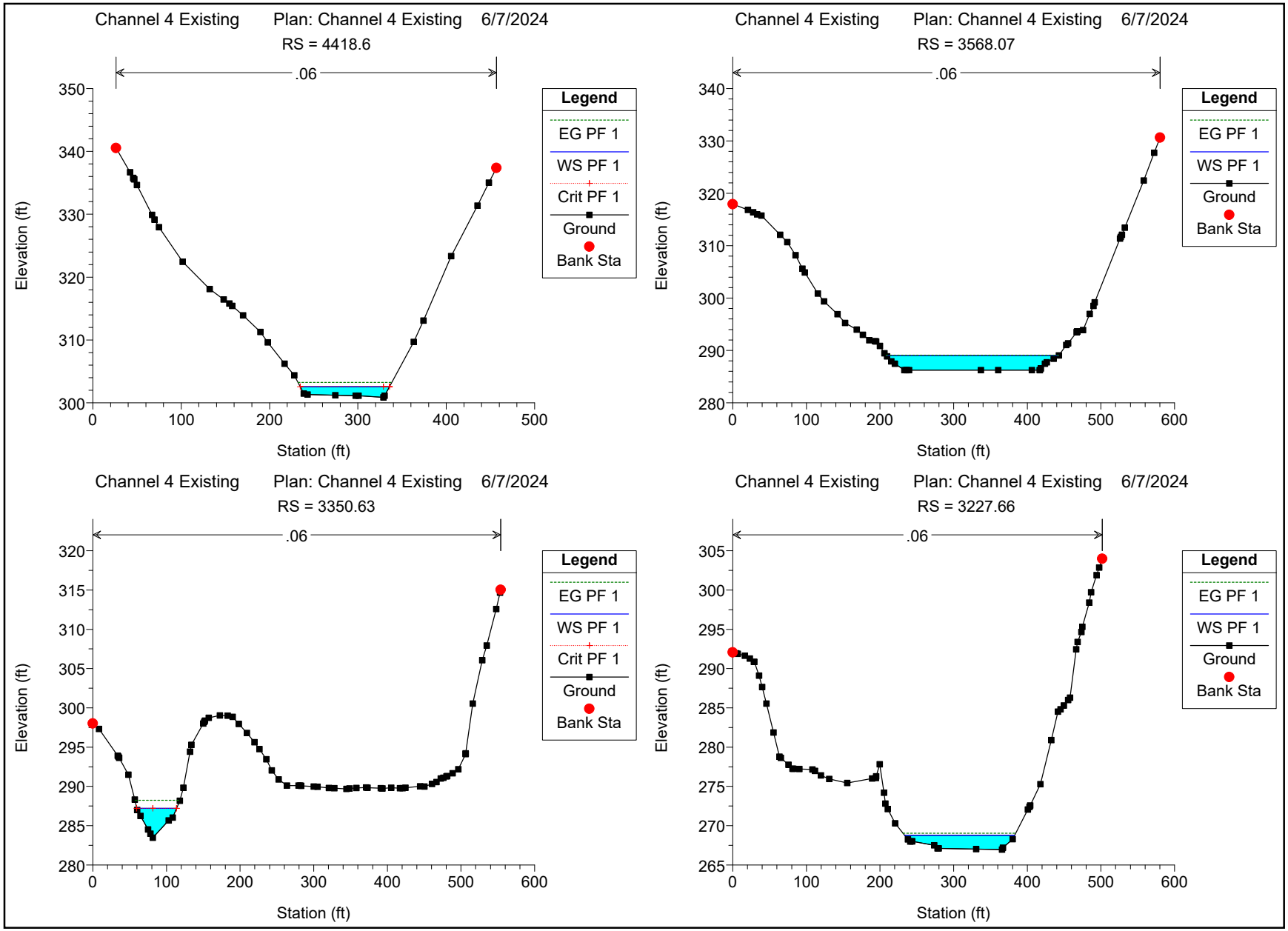
SUMMARY OF REACH LENGTHS

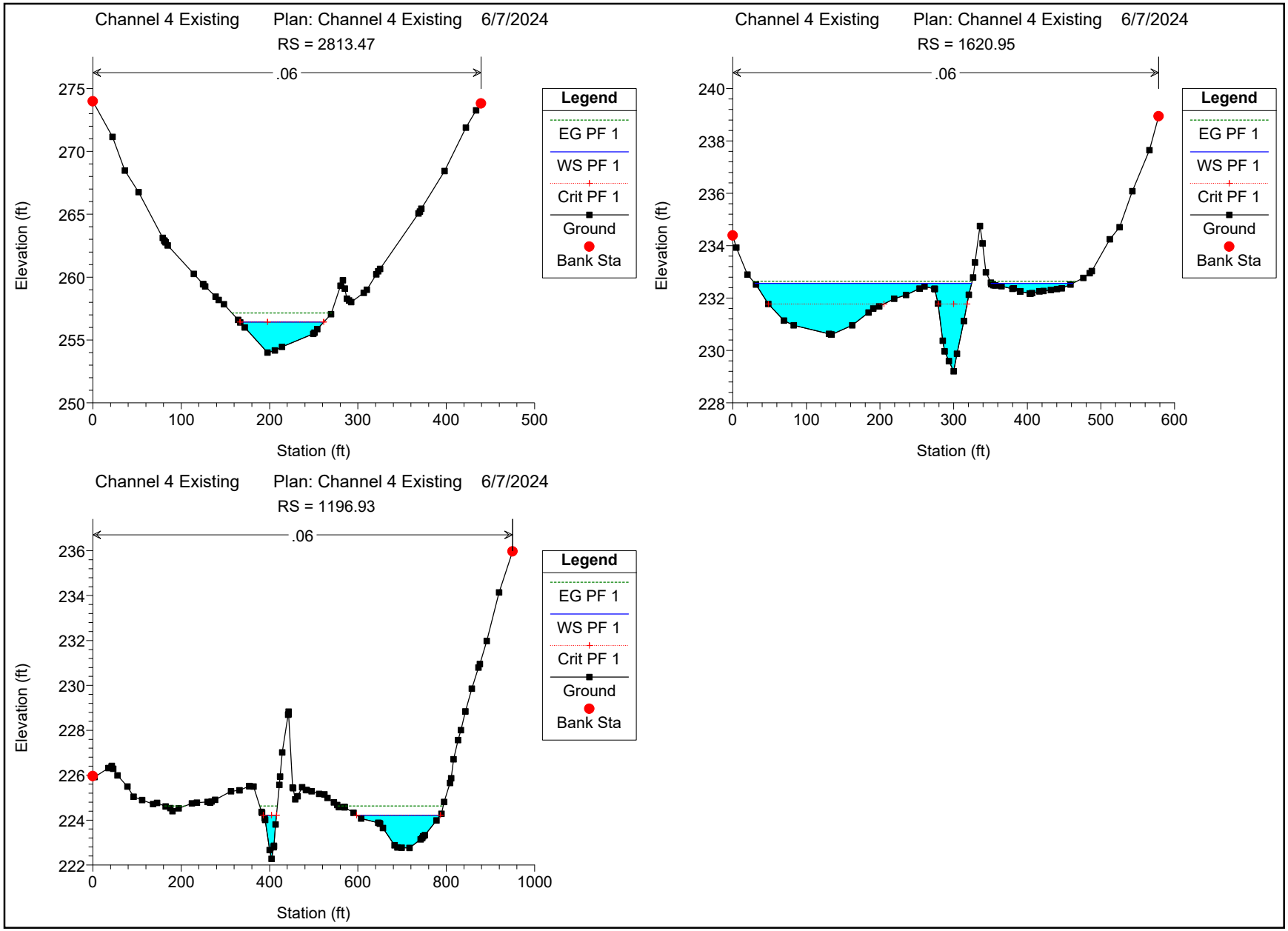
River: Alignment 4 East

Reach	River Sta.	Left	Channel	Right
Alignment 4 East	4418.6	850.53	850.53	850.53
Alignment 4 East	3568.07	217.44	217.44	217.44
Alignment 4 East	3350.63	122.97	122.97	122.97
Alignment 4 East	3227.66	414.19	414.19	414.19
Alignment 4 East	2813.47	1192.52	1192.52	1192.52
Alignment 4 East	1620.95	424.02	424.02	424.02
Alignment 4 East	1196.93			

SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS
River: Alignment 4 East

Reach	River Sta.	Contr.	Expan.
Alignment 4 East	4418.6	.1	.3
Alignment 4 East	3568.07	.1	.3
Alignment 4 East	3350.63	.1	.3
Alignment 4 East	3227.66	.1	.3
Alignment 4 East	2813.47	.1	.3
Alignment 4 East	1620.95	.1	.3
Alignment 4 East	1196.93	.1	.3


Channel 4 Existing Plan: Channel 4 Existing 6/7/2024
RS = 4418.6
.06
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Channel 4 Existing Plan: Channel 4 Existing 6/7/2024
RS = 3568.07
.06
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Channel 4 Existing Plan: Channel 4 Existing 6/7/2024
RS = 3350.63
.06
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Channel 4 Existing Plan: Channel 4 Existing 6/7/2024
RS = 3227.66
.06
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta


Channel 4 Existing Plan: Channel 4 Existing 6/7/2024
RS = 2813.47
.06
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Channel 4 Existing Plan: Channel 4 Existing 6/7/2024
RS = 1620.95
.06
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Channel 4 Existing Plan: Channel 4 Existing 6/7/2024
RS = 1196.93
.06
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta

Proposed Conditions HEC-RAS Output

```
                    HEC-RAS HEC-RAS 6.5 February 2024
                      U.S. Army Corps of Engineers
                     Hydrologic Engineering Center
                           609 Second Street
                           Davis, California


           X     X  XXXXXX    XXXX        XXXX       XX      XXXX
           X     X  X        X    X       X   X     X  X    X
           X     X  X        X            X   X    X    X   X
           XXXXXXX  XXXX     X       XXX  XXXX     XXXXXX    XXXX
           X     X  X        X            X  X     X    X        X
           X     X  X        X    X       X   X    X    X        X
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 PROJECT DATA
 Project Title: Prop Cond Floodplain
 Project File : ProCondFloodplain.prj
 Run Date and Time: 11/7/2024 5:18:33 PM

 Project in English units



 PLAN DATA

 Plan Title: Proposed Condition Channel 1
 Plan File :
→q:\CA-SAND-PD\Projects\4192.10\Engr\Reports\Drainage-FE\HYDRA\HEC-RAS\Proposed\C→

            Geometry Title: PropChannel 1
            Geometry File :
→q:\CA-SAND-PD\Projects\4192.10\Engr\Reports\Drainage-FE\HYDRA\HEC-RAS\Proposed\C→

            Flow Title    : Prop Channel 1 Flow
            Flow File     :
→q:\CA-SAND-PD\Projects\4192.10\Engr\Reports\Drainage-FE\HYDRA\HEC-RAS\Proposed\C→

 Plan Summary Information:
 Number of:  Cross Sections =   13    Multiple Openings  =    0
             Culverts       =    3    Inline Structures  =    0
             Bridges        =    0    Lateral Structures =    0

 Computational Information
     Water surface calculation tolerance  =  0.01
     Critical depth calculation tolerance =  0.01
     Maximum number of iterations         =  20
     Maximum difference tolerance         =  0.3
     Flow tolerance factor                =  0.001

 Computation Options
     Critical depth computed only where necessary
     Conveyance Calculation Method: At breaks in n values only
     Friction Slope Method:         Average Conveyance
     Computational Flow Regime:     Subcritical Flow
```



```
 FLOW DATA

 Flow Title: Prop Channel 1 Flow
 Flow File :
→q:\CA-SAND-PD\Projects\4192.10\Engr\Reports\Drainage-FE\HYDRA\HEC-RAS\Proposed\C→

 Flow Data (cfs)

   River           Reach           RS                  PF 1
   Alignment 1     Alignment 1     3896.89             222.9
   Alignment 1     Alignment 1     1738.73             354.9


 Boundary Conditions
                                                                                →
→
   River           Reach           Profile                       Upstream       →
→         Downstream
                                                                                →
→
   Alignment 1     Alignment 1     PF 1                        Normal S = 0.1   →
→        Known WS = 199
                                                                                →
→



 GEOMETRY DATA

 Geometry Title: PropChannel 1
 Geometry File :
→q:\CA-SAND-PD\Projects\4192.10\Engr\Reports\Drainage-FE\HYDRA\HEC-RAS\Proposed\C→

 CROSS SECTION


 RIVER: Alignment 1
 REACH: Alignment 1        RS: 3896.89

 INPUT
 Description:
 Station Elevation Data    num=      43
      Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
        0  328.6610.79999  327.6311.82999  327.56   13.31  327.45   44.12  325.18
 48.90999  324.8550.45999   324.753.57999  324.5973.42999   323.7   75.47  323.48
     80.7  323.19   92.03   322.7   95.34  322.45  101.51   321.9  107.83  321.66
    112.3  321.23  121.32  320.12  125.39  319.46  133.24  318.21  136.09  317.84
   141.56  317.28  143.62  316.98   144.9  316.87  147.16  316.56  157.34  315.29
   164.33  314.31  166.42   314.1  168.38  312.75  170.91  310.68  173.23  310.52
   174.59   310.4  177.93  310.59  181.33  310.72  184.12  313.04   186.4  314.78
   188.54  315.61  192.34  316.12  197.52  316.86  204.09  317.27  211.09  318.05
    237.5  318.31  244.51  318.57  248.15  318.77

 Manning's n Values        num=       3
      Sta   n Val     Sta   n Val     Sta   n Val
        0     .15       0     .15  248.15     .15

 Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.        →
→Expan.
              0  248.15           542.43  542.43  542.43             .1       .3

 CROSS SECTION
```

```
RIVER: Alignment 1
REACH: Alignment 1        RS: 3354.46

INPUT
Description:
Station Elevation Data    num=      18
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0     2721.220001  271.718.260002  271.39   13.32  271.36    23.5   268.2
   31.66  265.62   39.66  261.96   42.76  260.48   46.18  259.42   53.75  257.34
   56.08  256.68   64.06   258.6   67.55  259.87   72.33  260.78   85.84   268.8
   87.94  270.02   92.69  271.63   96.39  272.89

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .15       0     .15   96.39     .15

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.         →
→Expan.
             0   96.39           656.02  656.02  656.02             .1       .3

CROSS SECTION


RIVER: Alignment 1
REACH: Alignment 1        RS: 2698.44

INPUT
Description:
Station Elevation Data    num=      43
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0  259.96.5100098  259.76   10.47  256.32   15.12 254.794    31.5  249.42
   41.39  246.6757.10001  242.13   57.14  242.1357.20999  242.11   60.55  241.65
    71.5   240.171.73999  240.0888.35001  238.0796.17999  236.94  108.84   235.7
   115.9  235.25  122.63  234.77  139.46  234.28  148.08  234.05  148.81  234.02
  161.92  234.33  167.32  234.79  172.91  233.43  174.72  232.93  181.54  231.76
  183.55  231.37  184.35  231.17  186.86  230.49  193.72  228.49  198.65  227.93
  205.06   228.6  208.93  229.03  221.47  229.89  232.68   232.3  234.43   232.7
  236.46  233.26  252.03  241.51  253.78  242.44  253.97  242.45  262.51  243.01
  267.06  244.35  280.53  249.36  295.69  254.34

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .15   15.12     .15  295.69     .15

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.         →
→Expan.
         15.12  295.69           112.16  112.16  112.16             .1       .3

CROSS SECTION


RIVER: Alignment 1
REACH: Alignment 1        RS: 2586.28

INPUT
Description:
Station Elevation Data    num=      35
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0     260   10.57     255      21     250    31.5     245   47.83     240
    58.36     235   68.26    23071.57001  229.09   79.78  228.45   89.75  228.41
   97.09  228.47  107.81  228.55  118.49  228.67  123.53  228.83  135.77  229.21
  144.67   227.8  148.76  227.09  151.49  226.25  157.61  224.09  158.52  224.67
```



```
  158.56  224.69  164.62  228.54   166.5  229.63  171.03  231.84  173.71  233.15
   176.2  233.25  185.76   233.6  196.89   238.1  197.22  238.22  197.41  238.29
  211.42  243.47  219.81  246.69  225.17   248.8  240.74  253.03  244.41     254

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .15       0     .15  244.41     .15

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.         →
→Expan.
             0  244.41           216.27  216.27  216.27             .1       .3

CULVERT


RIVER: Alignment 1
REACH: Alignment 1        RS: 2574.08

INPUT
Description:
Distance from Upstream XS =    12.2
Deck/Roadway Width        =  186.83
Weir Coefficient          =     2.6
Upstream  Deck/Roadway Coordinates
    num=       5
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
       0     259           43.72     258          125.46     255
  231.57     250          253.05     249

Upstream Bridge Cross Section Data
Station Elevation Data    num=      35
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0     260   10.57     255      21     250    31.5     245   47.83     240
   58.36     235   68.26    23071.57001  229.09   79.78  228.45   89.75  228.41
   97.09  228.47  107.81  228.55  118.49  228.67  123.53  228.83  135.77  229.21
  144.67   227.8  148.76  227.09  151.49  226.25  157.61  224.09  158.52  224.67
  158.56  224.69  164.62  228.54   166.5  229.63  171.03  231.84  173.71  233.15
   176.2  233.25  185.76   233.6  196.89   238.1  197.22  238.22  197.41  238.29
  211.42  243.47  219.81  246.69  225.17   248.8  240.74  253.03  244.41     254

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .15       0     .15  244.41     .15

Bank Sta: Left   Right    Coeff Contr.   Expan.
             0  244.41             .1       .3

Downstream  Deck/Roadway Coordinates
    num=       6
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
       0   258.5             35     258          101.82     255
   195.1     250          239.92     249             260   248.5

Downstream Bridge Cross Section Data
Station Elevation Data    num=      36
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0     23510.46001     230   20.81     22526.49001     22330.54001  222.02
36.23001  222.0877.23001   221.7    87.8  221.4593.45001  221.79   105.4  222.24
  110.63  222.14  119.19  222.06  124.45  221.15  124.52  221.14  124.83  221.13
  127.63  221.06  132.02  220.95  132.29  221.01  134.84  221.63  140.78  223.56
  152.37   223.5  158.74  223.67  161.87  223.61  170.08  223.81  171.69  223.78
  175.99   223.9  179.98  223.98  180.81  224.01  190.21  223.59   197.5  223.57
   200.7  223.61  204.66  223.62   217.2  223.82  224.82  224.13  252.14  225.14
```

```
  252.32  225.16

 Manning's n Values        num=       3
      Sta   n Val     Sta   n Val     Sta   n Val
        0     .15       0     .15  252.32     .15

 Bank Sta: Left   Right    Coeff Contr.   Expan.
             0  252.32             .1       .3

 Upstream Embankment side slope              =       0 horiz. to 1.0 vertical
 Downstream Embankment side slope            =       0 horiz. to 1.0 vertical
 Maximum allowable submergence for weir flow =     .98
 Elevation at which weir flow begins         =
 Energy head used in spillway design         =
 Spillway height used in design              =
 Weir crest shape                            = Broad Crested

 Number of Culverts =  1

 Culvert Name     Shape      Rise    Span
 Culvert #1      Circular       5       5
 FHWA Chart # 1 - Concrete Pipe Culvert
 FHWA Scale # 1 - Square edge entrance with headwall
 Solution Criteria = Highest U.S. EG
 Culvert Upstrm Dist  Length    Top n  Bottom n  Depth Blocked  Entrance Loss
→Coef   Exit Loss Coef
               12.2  195.72     .013     .013        0                  .5
→           1
 Upstream   Elevation =  224
            Centerline Station =  108.76
 Downstream Elevation =  222
            Centerline Station =  132.29

 CROSS SECTION


 RIVER: Alignment 1
 REACH: Alignment 1        RS: 2370.01

 INPUT
 Description:
 Station Elevation Data    num=      36
      Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
        0     23510.46001     230   20.81     22526.49001     22330.54001  222.02
 36.23001  222.0877.23001   221.7    87.8  221.4593.45001  221.79   105.4  222.24
   110.63  222.14  119.19  222.06  124.45  221.15  124.52  221.14  124.83  221.13
   127.63  221.06  132.02  220.95  132.29  221.01  134.84  221.63  140.78  223.56
   152.37   223.5  158.74  223.67  161.87  223.61  170.08  223.81  171.69  223.78
   175.99   223.9  179.98  223.98  180.81  224.01  190.21  223.59   197.5  223.57
    200.7  223.61  204.66  223.62   217.2  223.82  224.82  224.13  252.14  225.14
   252.32  225.16

 Manning's n Values        num=       3
      Sta   n Val     Sta   n Val     Sta   n Val
        0     .15       0     .15  252.32     .15

 Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
→Expan.
             0  252.32           631.28  631.28  631.28             .1       .3

 CROSS SECTION
```



```
 RIVER: Alignment 1
 REACH: Alignment 1        RS: 2259.92

 INPUT
 Description:
 Station Elevation Data    num=      26
      Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
        0     234      16     23231.57999  229.9936.04001  229.3850.20001   226.6
 78.48999   221.1  103.82  219.13  106.55  218.92  121.19  218.16  126.31  218.32
   133.11  218.64  140.75  219.15  149.07   219.5  163.12  219.35   176.1  218.96
   190.99  218.54  208.78  218.16  220.84  218.39   237.1  218.59  250.19  219.04
   261.18  219.75  274.24     221  299.15     228  325.31     240   338.3     246
      350   246.6

 Manning's n Values        num=       3
      Sta   n Val     Sta   n Val     Sta   n Val
        0     .15       0     .15     350     .15

 Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
→Expan.
             0     350           521.19  521.19  521.19             .1       .3

 CROSS SECTION


 RIVER: Alignment 1
 REACH: Alignment 1        RS: 1738.73

 INPUT
 Description:
 Station Elevation Data    num=      47
      Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
        0     23822.32999     23840.42001     230   57.97  221.6564.39999  219.31
 67.32001  218.3575.60999  216.22   86.87  213.6895.60001  211.66  102.64  209.89
   109.22  208.67  121.83  208.22     148  207.42  164.76  208.22  175.96  208.71
   199.08  208.69   213.1  208.69   229.7  208.64  230.57  208.63  238.19  208.67
   269.65  209.73  278.02  210.05  282.57  210.11  285.34  210.12  315.93  210.31
   318.64   211.5   320.5  212.63  324.86  214.55  332.21  218.21  345.42  220.72
   347.63  221.14  349.68  221.51  358.49  223.17  362.31  224.38  372.11  227.28
   376.16  228.54  383.98  230.87  391.79  232.58  405.81  235.75  412.62  237.14
   423.41  237.14  435.09  237.14  439.58  237.14     448  237.14  453.54  237.14
   459.43  237.14     490  237.14

 Manning's n Values        num=       3
      Sta   n Val     Sta   n Val     Sta   n Val
        0     .15       0     .15     490     .15

 Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
→Expan.
             0     490           550.04  550.04  550.04             .1       .3

 CROSS SECTION


 RIVER: Alignment 1
 REACH: Alignment 1        RS: 1166.89

 INPUT
 Description:
 Station Elevation Data    num=      46
      Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
        0   218.310.26001     218   18.41     21531.43002     21044.74002     205
 48.43002     20351.18002  202.9651.21002  202.96   63.88  202.8478.39001  202.87
```

```
83.43001  202.8398.79001  202.77  109.67  202.78  121.82  202.77  126.24  202.79
  137.58   202.8  141.99  202.79  156.32   202.9  158.02  202.92  161.69  202.98
  172.75  203.06  176.53   203.1  184.69  203.24  194.49  203.21  196.07  203.21
   208.9  203.21  210.54  203.21  212.15  203.22  223.45  203.04  233.72  202.75
  239.72  202.61  247.56  202.38  251.09  202.24  258.71  201.95  259.71  202.12
  260.98   202.3     262  202.53  268.83  202.51   274.2  202.49  277.71     202
  284.95     205  298.43     210  308.45     215  320.13     220  327.37   223.3
  335.92   223.3

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .0351.21002     .03  284.95     .03

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.          →
→Expan.
      51.21002  284.95           579.36  579.36  579.36             .1       .3

CULVERT


RIVER: Alignment 1
REACH: Alignment 1        RS: 1100

INPUT
Description:
Distance from Upstream XS =   55.88
Deck/Roadway Width        =     208
Weir Coefficient          =     2.6
Upstream  Deck/Roadway Coordinates
    num=       2
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
       0     216     100     400     216     200

Upstream Bridge Cross Section Data
Station Elevation Data    num=      46
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0  218.310.26001     218   18.41     21531.43002     21044.74002     205
48.43002     20351.18002  202.9651.21002  202.96   63.88  202.8478.39001  202.87
83.43001  202.8398.79001  202.77  109.67  202.78  121.82  202.77  126.24  202.79
  137.58   202.8  141.99  202.79  156.32   202.9  158.02  202.92  161.69  202.98
  172.75  203.06  176.53   203.1  184.69  203.24  194.49  203.21  196.07  203.21
   208.9  203.21  210.54  203.21  212.15  203.22  223.45  203.04  233.72  202.75
  239.72  202.61  247.56  202.38  251.09  202.24  258.71  201.95  259.71  202.12
  260.98   202.3     262  202.53  268.83  202.51   274.2  202.49  277.71     202
  284.95     205  298.43     210  308.45     215  320.13     220  327.37   223.3
  335.92   223.3

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .0351.21002     .03  284.95     .03

Bank Sta: Left   Right    Coeff Contr.   Expan.
      51.21002  284.95            .1       .3

Downstream  Deck/Roadway Coordinates
    num=       2
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
       0     215     100     850     215     200

Downstream Bridge Cross Section Data
Station Elevation Data    num=      18
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0     210   10.89 206.483    28.8   200.7    60.3   200.7    77.6   206.5
```



```
   88.14   206.5    98.6     201    99.6  200.47  128.41  200.88  141.48  201.16
  165.22  201.65  169.38  201.87  174.28  202.07     189     203   193.3     205
   203.3     210     216     215     352     220

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .03   10.89     .03    77.6     .03

Bank Sta: Left   Right    Coeff Contr.   Expan.
        10.89    77.6            .1       .3
Ineffective Flow     num=       1
   Sta L   Sta R    Elev  Permanent
   88.14     352   206.5       F

Upstream Embankment side slope              =       0 horiz. to 1.0 vertical
Downstream Embankment side slope            =       0 horiz. to 1.0 vertical
Maximum allowable submergence for weir flow =     .98
Elevation at which weir flow begins         =
Energy head used in spillway design         =
Spillway height used in design              =
Weir crest shape                            = Broad Crested

Number of Culverts =  1

Culvert Name     Shape      Rise    Span
Culvert #1      Circular       5       5
FHWA Chart # 1 - Concrete Pipe Culvert
FHWA Scale # 3 - Groove end entrance; pipe projecting from fill
Solution Criteria = Highest U.S. EG
Culvert Upstrm Dist  Length    Top n  Bottom n  Depth Blocked  Entrance Loss      →
→Coef   Exit Loss Coef
                50     217     .013     .013        0                    .5      →
→          .5
Number of Barrels =  2
Upstream   Elevation =  202
Centerline Stations
    Sta.    Sta.
     179   187.6
Downstream Elevation =  201.5
Centerline Stations
    Sta.    Sta.
    43.1    51.1

CROSS SECTION


RIVER: Alignment 1
REACH: Alignment 1        RS: 912.82

INPUT
Description:
Station Elevation Data    num=      18
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0     210   10.89 206.483    28.8   200.7    60.3   200.7    77.6   206.5
   88.14   206.5    98.6     201    99.6  200.47  128.41  200.88  141.48  201.16
  165.22  201.65  169.38  201.87  174.28  202.07     189     203   193.3     205
   203.3     210     216     215     352     220

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .03   10.89     .03    77.6     .03

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.          →
```

```
Expan.
         10.89    77.6           151.86  151.86  151.86             .1       .3
 Ineffective Flow     num=       1
    Sta L   Sta R    Elev  Permanent
    88.14     352   206.5       F

 CROSS SECTION


 RIVER: Alignment 1
 REACH: Alignment 1        RS: 760.96

 INPUT
 Description:
 Station Elevation Data    num=      23
      Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
        0     208    4.52 206.493      21     201    23.5   200.5    53.5   200.5
       56     201      68     205      71     206    72.5   206.5    82.5   206.5
    83.25     206   93.25     201  100.73   201.3  112.13  201.26  142.07  201.52
   145.46  201.59  161.31  201.92  174.62  202.18  181.41  202.38  189.64  202.95
   200.27 203.185  201.38  203.21  207.71  203.33

 Manning's n Values        num=       3
      Sta   n Val     Sta   n Val     Sta   n Val
        0     .03    4.52     .03    72.5     .03

 Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
          4.52    72.5           68.42   68.42   68.42             .1       .3
 Ineffective Flow     num=       1
    Sta L   Sta R    Elev  Permanent
     82.5  207.71   206.5       F

 CROSS SECTION


 RIVER: Alignment 1
 REACH: Alignment 1        RS: 692.54

 INPUT
 Description:
 Station Elevation Data    num=      14
      Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
        0   208.2    7.22     208    12.3 206.523    31.3     201    32.5   199.7
     61.5   199.7      62     200      65     201    81.5   206.5    91.5   206.5
    102.7     201  165.34     202  237.52     202  473.81     201

 Manning's n Values        num=       3
      Sta   n Val     Sta   n Val     Sta   n Val
        0     .03    12.3     .03    81.5     .03

 Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
          12.3    81.5           146.59  146.59   68.42             .1       .3
 Ineffective Flow     num=       1
    Sta L   Sta R    Elev  Permanent
     91.5  473.81   206.5       F

 CULVERT


 RIVER: Alignment 1
 REACH: Alignment 1        RS: 651.71
```



```
INPUT
Description:
Distance from Upstream XS =   42.65
Deck/Roadway Width        =      54
Weir Coefficient          =     2.6
Upstream  Deck/Roadway Coordinates
    num=       3
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
       0     208              30  208.22            81.5   207.5

Upstream Bridge Cross Section Data
Station Elevation Data    num=      14
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0   208.2    7.22     208    12.3 206.523    31.3     201    32.5   199.7
    61.5   199.7      62     200      65     201    81.5   206.5    91.5   206.5
   102.7     201  165.34     202  237.52     202  473.81     201

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .03    12.3     .03    81.5     .03

Bank Sta: Left   Right    Coeff Contr.   Expan.
         12.3    81.5           .1       .3
Ineffective Flow     num=       1
   Sta L   Sta R    Elev  Permanent
    91.5  473.81   206.5       F

Downstream  Deck/Roadway Coordinates
    num=       5
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
       0     208              30  208.22              60     208
     156     205           194.98     203

Downstream Bridge Cross Section Data
Station Elevation Data    num=       7
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0   207.2    6.61     207    20.4     200   30.71   199.2   52.43   199.8
  190.64   200.3  194.98     201

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .15       0     .15   52.43     .15

Bank Sta: Left   Right    Coeff Contr.   Expan.
            0   52.43             .1       .3

Upstream Embankment side slope              =       0 horiz. to 1.0 vertical
Downstream Embankment side slope            =       0 horiz. to 1.0 vertical
Maximum allowable submergence for weir flow =     .98
Elevation at which weir flow begins         =
Energy head used in spillway design         =
Spillway height used in design              =
Weir crest shape                            = Broad Crested

Number of Culverts =  1

Culvert Name     Shape      Rise    Span
Culvert #1      Circular       4       4
FHWA Chart # 1 - Concrete Pipe Culvert
FHWA Scale # 1 - Square edge entrance with headwall
Solution Criteria = Highest U.S. EG
Culvert Upstrm Dist  Length    Top n  Bottom n  Depth Blocked  Entrance Loss
```

```
Coef   Exit Loss Coef
              40.83   79.54     .013     .013        0                  .5
           1
  Number of Barrels =  4
  Upstream   Elevation =  199.69
  Centerline Stations
      Sta.    Sta.    Sta.    Sta.
     36.33   42.33   49.33   54.33
  Downstream Elevation =  199.29
  Centerline Stations
      Sta.    Sta.    Sta.    Sta.
     39.33   45.33   51.33   57.33

  CROSS SECTION


  RIVER: Alignment 1
  REACH: Alignment 1        RS: 545.95

  INPUT
  Description:
  Station Elevation Data    num=       7
       Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
         0   207.2    6.61     207    20.4     200   30.71   199.2   52.43   199.8
    190.64   200.3  194.98     201

  Manning's n Values        num=       3
       Sta   n Val     Sta   n Val     Sta   n Val
         0     .15       0     .15   52.43     .15

  Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
               0   52.43            145.6   145.6   145.6             .1       .3

  CROSS SECTION


  RIVER: Alignment 1
  REACH: Alignment 1        RS: 400.35

  INPUT
  Description:
  Station Elevation Data    num=      33
       Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
         0     205    13.2  198.6715.13997  198.6929.58998  198.7949.89998  198.96
  65.13997  198.96   78.48     19995.57997  199.18   96.26  199.18  115.13  199.35
    162.94  199.39     165  199.39  181.33   199.6  184.69  199.57  191.53  199.41
    197.21  199.31  204.11  199.44   206.6  199.54   208.9  199.37  214.12  199.51
    223.59  199.22  225.02  198.95  228.97  198.36  237.53  197.01  239.31  196.69
    244.28   196.6  245.93   196.5  247.65  196.65  253.06  196.91  267.33  198.99
     274.2  199.15  276.76   199.2  280.41   199.2

  Manning's n Values        num=       3
       Sta   n Val     Sta   n Val     Sta   n Val
         0     .15       0     .15  280.41     .15

  Bank Sta: Left   Right    Coeff Contr.   Expan.
               0  280.41             .1       .3



  SUMMARY OF MANNING'S N VALUES
```



```
River:Alignment 1

      Reach          River Sta.       n1        n2        n3

 Alignment 1          3896.89            .15       .15       .15
 Alignment 1          3354.46            .15       .15       .15
 Alignment 1          2698.44            .15       .15       .15
 Alignment 1          2586.28            .15       .15       .15
 Alignment 1          2574.08      Culvert
 Alignment 1          2370.01            .15       .15       .15
 Alignment 1          2259.92            .15       .15       .15
 Alignment 1          1738.73            .15       .15       .15
 Alignment 1          1166.89            .03       .03       .03
 Alignment 1          1100         Culvert
 Alignment 1          912.82             .03       .03       .03
 Alignment 1          760.96             .03       .03       .03
 Alignment 1          692.54             .03       .03       .03
 Alignment 1          651.71       Culvert
 Alignment 1          545.95             .15       .15       .15
 Alignment 1          400.35             .15       .15       .15



SUMMARY OF REACH LENGTHS

River: Alignment 1

      Reach          River Sta.      Left     Channel    Right

 Alignment 1          3896.89          542.43    542.43    542.43
 Alignment 1          3354.46          656.02    656.02    656.02
 Alignment 1          2698.44          112.16    112.16    112.16
 Alignment 1          2586.28          216.27    216.27    216.27
 Alignment 1          2574.08      Culvert
 Alignment 1          2370.01          631.28    631.28    631.28
 Alignment 1          2259.92          521.19    521.19    521.19
 Alignment 1          1738.73          550.04    550.04    550.04
 Alignment 1          1166.89          579.36    579.36    579.36
 Alignment 1          1100         Culvert
 Alignment 1          912.82           151.86    151.86    151.86
 Alignment 1          760.96            68.42     68.42     68.42
 Alignment 1          692.54           146.59    146.59     68.42
 Alignment 1          651.71       Culvert
 Alignment 1          545.95            145.6     145.6     145.6
 Alignment 1          400.35

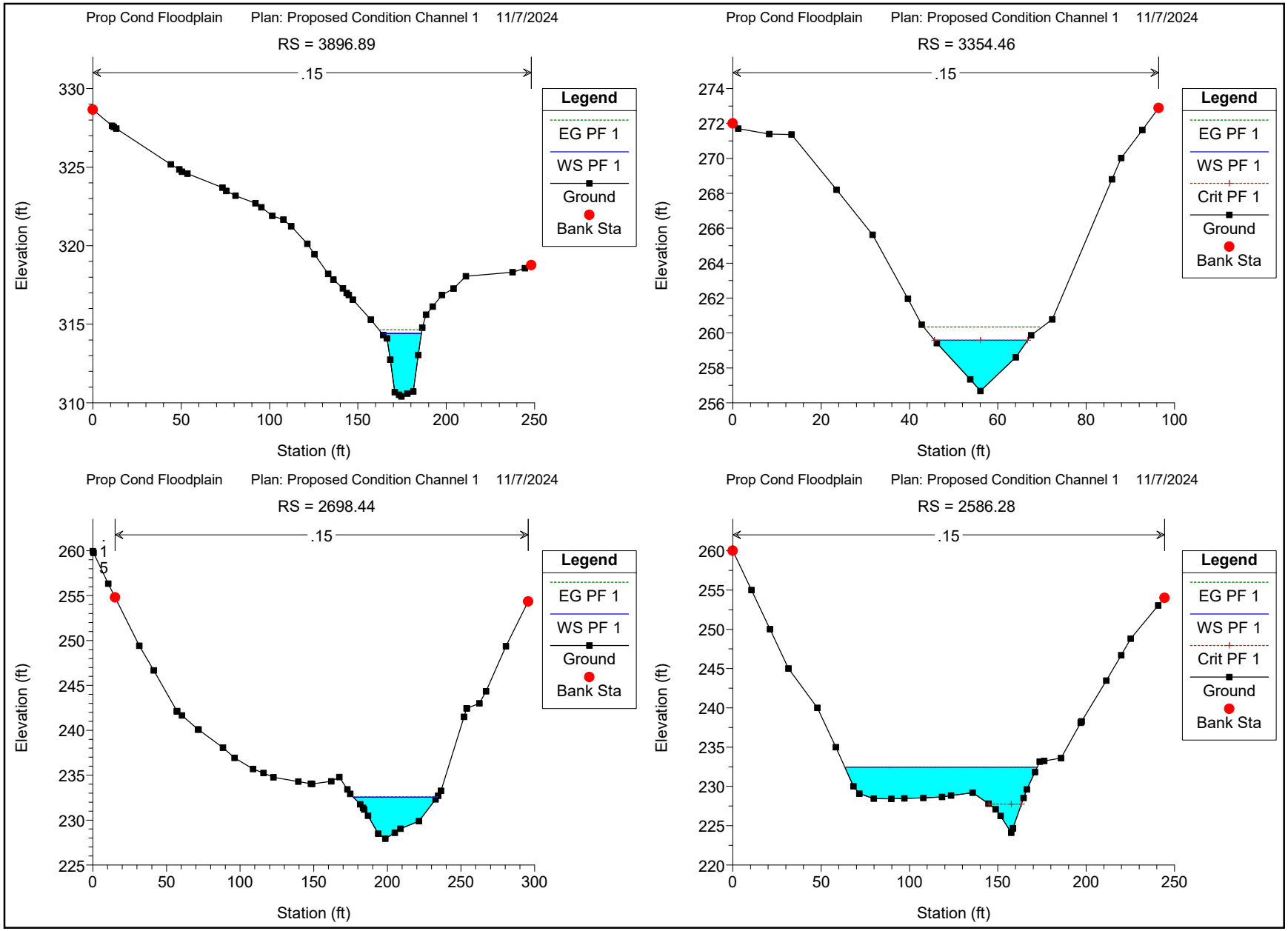


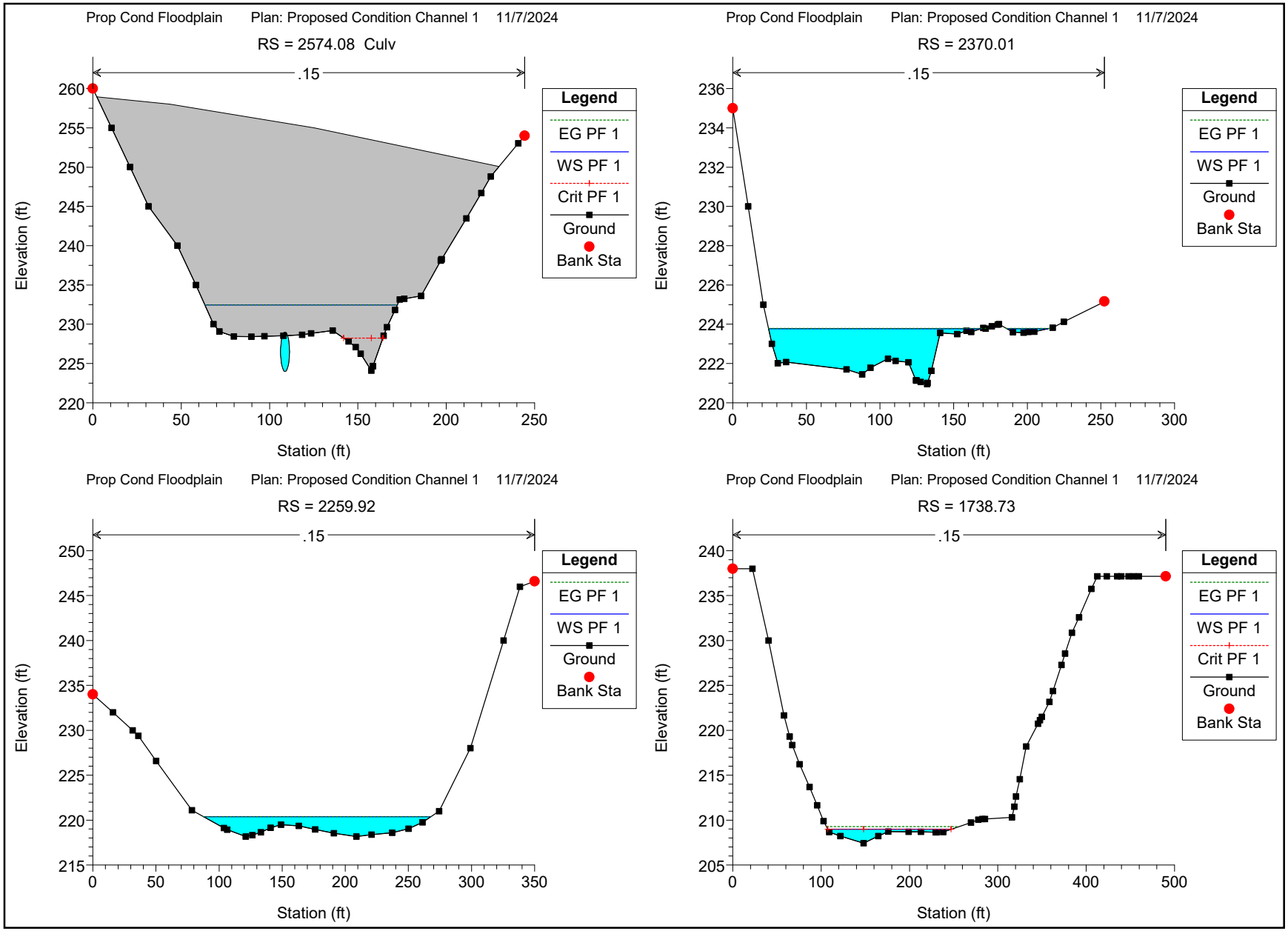
SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS
River: Alignment 1

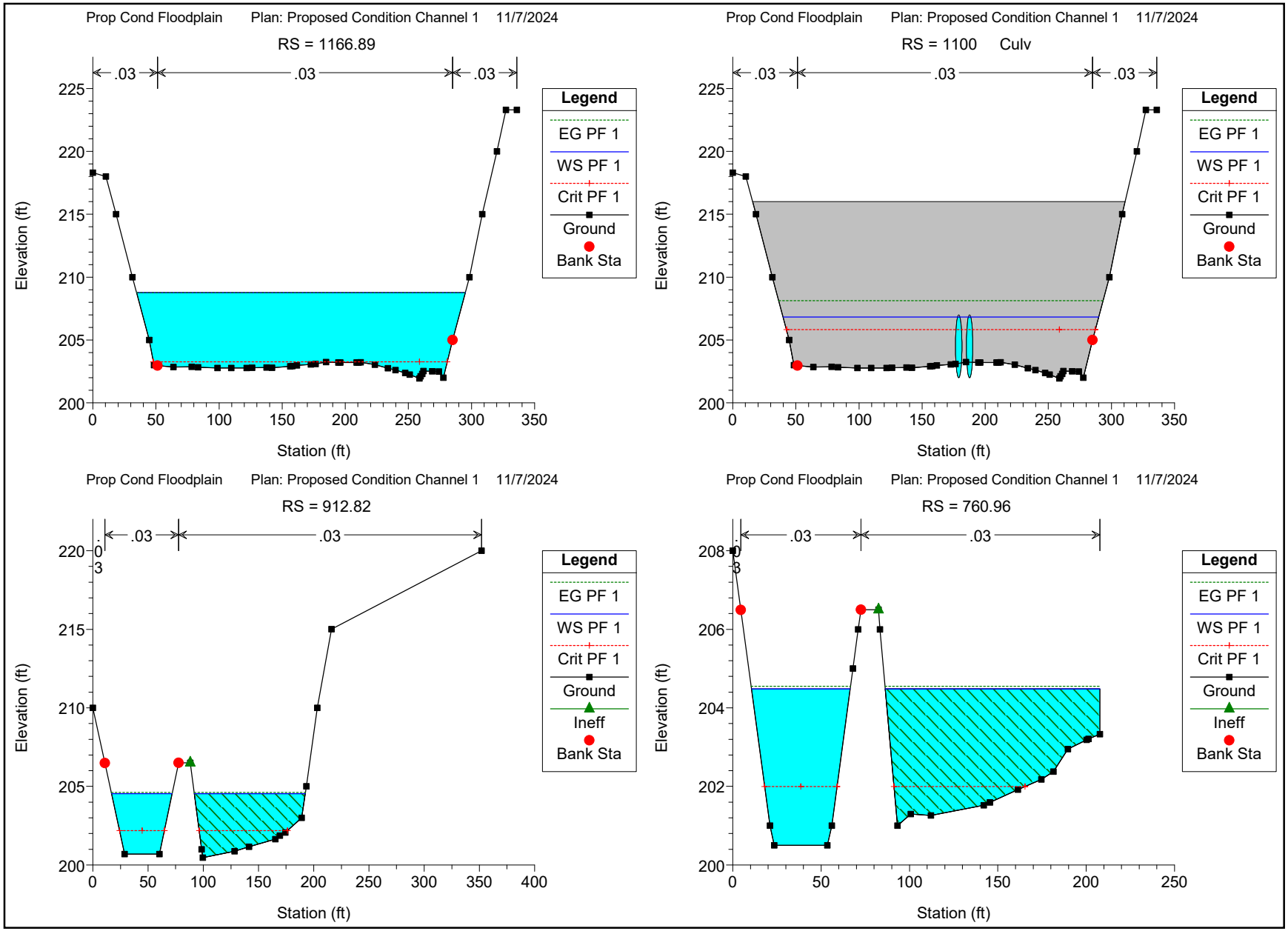

      Reach          River Sta.     Contr.    Expan.

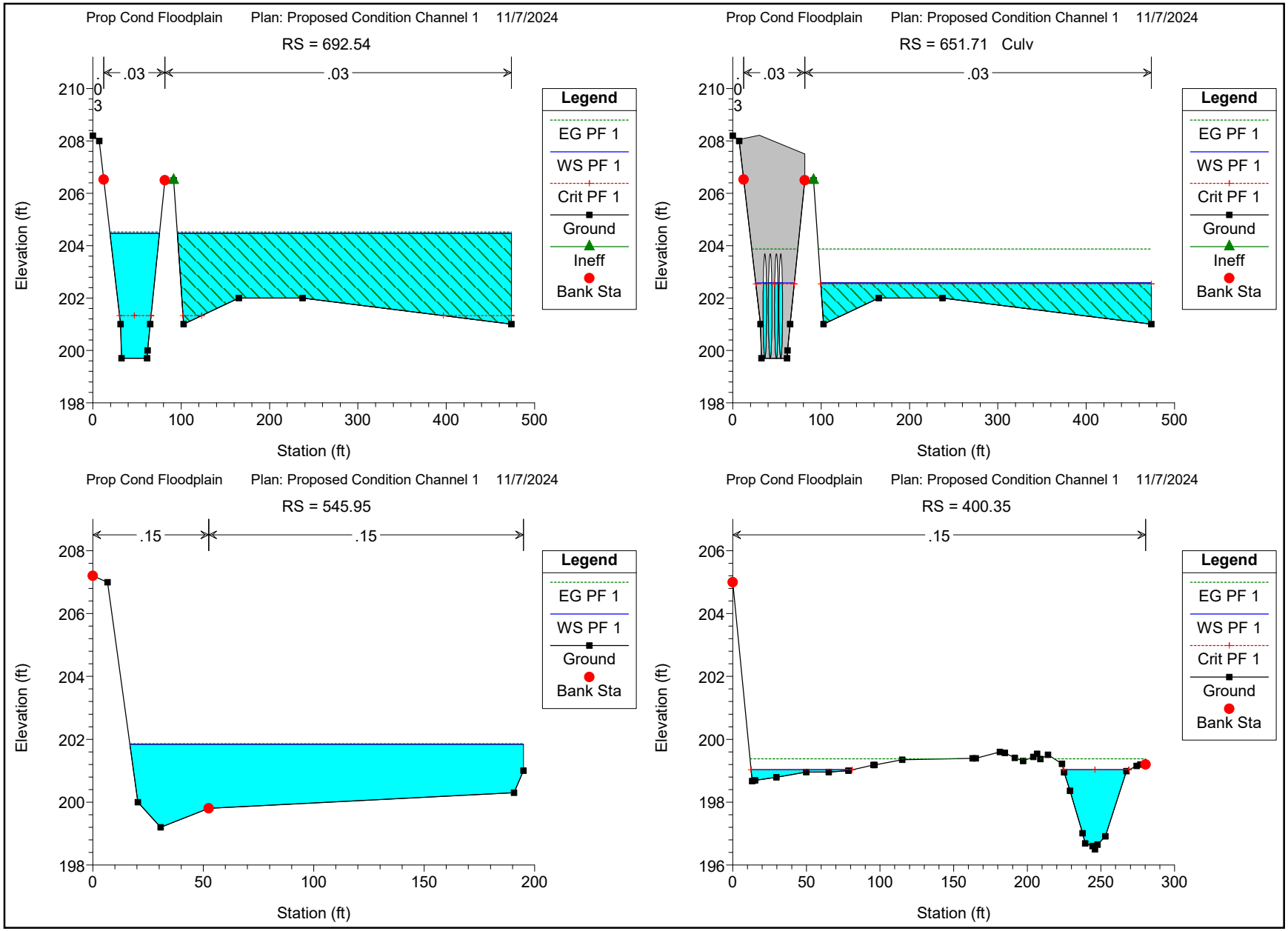
 Alignment 1          3896.89          .1        .3
 Alignment 1          3354.46          .1        .3
 Alignment 1          2698.44          .1        .3
 Alignment 1          2586.28          .1        .3
 Alignment 1          2574.08  Culvert
 Alignment 1          2370.01          .1        .3
 Alignment 1          2259.92          .1        .3
```

Alignment 1	1738.73		.1	.3
Alignment 1	1166.89		.1	.3
Alignment 1	1100	Culvert		
Alignment 1	912.82		.1	.3
Alignment 1	760.96		.1	.3
Alignment 1	692.54		.1	.3
Alignment 1	651.71	Culvert		
Alignment 1	545.95		.1	.3
Alignment 1	400.35		.1	.3


Prop Cond Floodplain Plan: Proposed Condition Channel 1 11/7/2024
RS = 3896.89
.15
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Prop Cond Floodplain Plan: Proposed Condition Channel 1 11/7/2024
RS = 3354.46
.15
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Prop Cond Floodplain Plan: Proposed Condition Channel 1 11/7/2024
RS = 2698.44
.15
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Prop Cond Floodplain Plan: Proposed Condition Channel 1 11/7/2024
RS = 2586.28
.15
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta


Prop Cond Floodplain Plan: Proposed Condition Channel 1 11/7/2024
RS = 2574.08 Culv
.15
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Prop Cond Floodplain Plan: Proposed Condition Channel 1 11/7/2024
RS = 2370.01
.15
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Prop Cond Floodplain Plan: Proposed Condition Channel 1 11/7/2024
RS = 2259.92
.15
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Prop Cond Floodplain Plan: Proposed Condition Channel 1 11/7/2024
RS = 1738.73
.15
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta


Prop Cond Floodplain Plan: Proposed Condition Channel 1 11/7/2024
RS = 1166.89
.03
.03
.03
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Prop Cond Floodplain Plan: Proposed Condition Channel 1 11/7/2024
RS = 1100 Culv
.03
.03
.03
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Prop Cond Floodplain Plan: Proposed Condition Channel 1 11/7/2024
RS = 912.82
.03
.03
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Ineff
Bank Sta
Prop Cond Floodplain Plan: Proposed Condition Channel 1 11/7/2024
RS = 760.96
.03
.03
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Ineff
Bank Sta


Prop Cond Floodplain Plan: Proposed Condition Channel 1 11/7/2024
RS = 692.54
.03
.03
.03
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
Prop Cond Floodplain Plan: Proposed Condition Channel 1 11/7/2024
RS = 651.71 Culv
.03
.03
.03
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
Prop Cond Floodplain Plan: Proposed Condition Channel 1 11/7/2024
RS = 545.95
.15
.15
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
Prop Cond Floodplain Plan: Proposed Condition Channel 1 11/7/2024
RS = 400.35
.15
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

HEC-RAS Plan: Proposed Con River: Alignment 1 Reach: Alignment 1 Profile: PF 1

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Alignment 1	3896.89	PF 1	222.90	310.40	314.42		314.65	0.049357	3.86	57.76	22.38	0.42
Alignment 1	3354.46	PF 1	222.90	256.68	259.58	259.58	260.34	0.301069	6.99	31.90	21.08	1.00
Alignment 1	2698.44	PF 1	222.90	227.93	232.55		232.59	0.006467	1.50	148.89	56.88	0.16
Alignment 1	2586.28	PF 1	222.90	224.09	232.45	227.75	232.45	0.000449	0.52	432.51	108.87	0.05
Alignment 1	2574.08		Culvert									
Alignment 1	2370.01	PF 1	222.90	220.95	223.77		223.79	0.006883	0.98	226.60	172.30	0.15
Alignment 1	2259.92	PF 1	222.90	218.16	220.39		220.40	0.004312	0.84	265.08	180.17	0.12
Alignment 1	1738.73	PF 1	354.90	207.42	208.97	208.97	209.27	0.394743	4.35	81.60	139.60	1.00
Alignment 1	1166.89	PF 1	354.90	201.95	208.77	203.26	208.77	0.000002	0.25	1453.01	260.39	0.02
Alignment 1	1100		Culvert									
Alignment 1	912.82	PF 1	354.90	200.70	204.54	202.19	204.61	0.000441	2.14	165.74	155.28	0.22
Alignment 1	760.96	PF 1	354.90	200.50	204.48	202.00	204.55	0.000380	2.03	174.49	177.32	0.20
Alignment 1	692.54	PF 1	354.90	199.70	204.47	201.33	204.52	0.000262	1.81	196.27	434.22	0.17
Alignment 1	651.71		Culvert									
Alignment 1	545.95	PF 1	354.90	199.20	201.84		201.86	0.005201	1.19	329.95	178.21	0.14
Alignment 1	400.35	PF 1	354.90	196.50	199.03	199.03	199.38	0.407036	4.77	74.42	113.09	1.04

```
                    HEC-RAS HEC-RAS 6.0.0 May 2021
                     U.S. Army Corps of Engineers
                    Hydrologic Engineering Center
                          609 Second Street
                          Davis, California


           X     X  XXXXXX    XXXX        XXXX       XX      XXXX
           X     X  X        X    X       X   X     X  X    X
           X     X  X        X            X   X    X    X   X
           XXXXXXX  XXXX     X       XXX  XXXX     XXXXXX    XXXX
           X     X  X        X            X  X     X    X        X
           X     X  X        X    X       X   X    X    X        X
           X     X  XXXXXX    XXXX        X    X   X    X   XXXXX


 PROJECT DATA
 Project Title: Channel 2 Prop Floodplain
 Project File : Channel2PropFloodp.prj
 Run Date and Time: 6/5/2024 10:55:39 AM

 Project in English units



 PLAN DATA

 Plan Title: Proposed
 Plan File :
q:\CA-SAND-PD\Projects\4192.10\Engr\Reports\Drainage-FE\HYDRA\HEC-RAS\Proposed\C

            Geometry Title: Channel 2 Geom
            Geometry File :
q:\CA-SAND-PD\Projects\4192.10\Engr\Reports\Drainage-FE\HYDRA\HEC-RAS\Proposed\C

            Flow Title    : PR Flow
            Flow File     :
q:\CA-SAND-PD\Projects\4192.10\Engr\Reports\Drainage-FE\HYDRA\HEC-RAS\Proposed\C

 Plan Summary Information:
 Number of:  Cross Sections =    5    Multiple Openings  =    0
             Culverts       =    1    Inline Structures  =    0
             Bridges        =    0    Lateral Structures =    0

 Computational Information
     Water surface calculation tolerance  =  0.01
     Critical depth calculation tolerance =  0.01
     Maximum number of iterations         =  20
     Maximum difference tolerance         =  0.3
     Flow tolerance factor                =  0.001

 Computation Options
     Critical depth computed only where necessary
     Conveyance Calculation Method: At breaks in n values only
     Friction Slope Method:         Average Conveyance
     Computational Flow Regime:     Subcritical Flow
```



```
 FLOW DATA

 Flow Title: PR Flow
 Flow File :
q:\CA-SAND-PD\Projects\4192.10\Engr\Reports\Drainage-FE\HYDRA\HEC-RAS\Proposed\C

 Flow Data (cfs)

   River           Reach           RS                  PF 1
   Alignment 2     Alignment 2     2053.73             53.8


 Boundary Conditions

   River           Reach           Profile                      Upstream
         Downstream

   Alignment 2     Alignment 2     PF 1                         Normal S = 0.1
        Known WS = 212



 GEOMETRY DATA

 Geometry Title: Channel 2 Geom
 Geometry File :
q:\CA-SAND-PD\Projects\4192.10\Engr\Reports\Drainage-FE\HYDRA\HEC-RAS\Proposed\C

 CROSS SECTION


 RIVER: Alignment 2
 REACH: Alignment 2        RS: 2053.73

 INPUT
 Description:
 Station Elevation Data    num=      50
      Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
        0   420.29.390015  417.9426.43002  414.3526.62003  414.31   39.25  411.92
 50.45001  409.9269.48001  406.8271.30002  406.5876.12003  405.9189.83002  404.07
 94.98001  403.53  104.94  402.36  106.43  402.18  108.61  401.89  116.23  400.92
   123.27  400.14  137.08  398.39  138.64  398.16  139.77  397.91  149.48     396
   155.07  394.82  159.75  394.22  165.52  393.55  171.62  392.71     181  392.12
   182.61  392.04  183.94  392.71  197.88  398.67   202.4  399.51   205.9  399.94
   214.48  399.78  218.51  399.65   219.6  400.21  228.65  403.98  235.21  404.87
   246.34  407.24  261.79  409.89  274.88  412.13  293.87  415.84  299.95  417.09
   305.81  418.36  321.03   421.6  341.49   425.5  348.52  426.94  358.91   429.7
    368.8  432.51  381.37   434.9  382.58  435.08  385.16  435.38  386.23   435.5

 Manning's n Values        num=       3
      Sta   n Val     Sta   n Val     Sta   n Val
        0     .15       0     .15  386.23     .15

 Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
             0  386.23           504.91  504.91  504.91             .1       .3

 CROSS SECTION
```

```
RIVER: Alignment 2
REACH: Alignment 2        RS: 1548.82

INPUT
Description:
Station Elevation Data    num=      43
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0  390.029.630005  386.2324.14001  381.1230.30002  378.8933.64999  377.72
45.83002  373.6852.08002  371.2658.96002  368.9370.89999  365.11   88.86   359.4
97.67001  357.09  114.09  354.04  127.85  350.87  133.82  349.52   146.4  346.63
  153.13  345.32  171.13  342.32  174.82  341.67   176.6  341.36  193.72  338.54
   197.8  340.01  206.28  342.59  207.82  343.08  209.43  344.03  212.88  346.04
  221.32  351.05  226.56  350.62  229.91  350.44  240.64  349.81  241.84  349.72
  243.15  350.42  254.05  356.86  258.62  358.78  274.78  363.73  278.18  364.16
   292.4  365.44  297.17  365.54  309.67  367.22  314.38  367.13  317.39  367.13
  319.78  366.97  323.52  366.92  332.32  367.31

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .15       0     .15  332.32     .15

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.         →
→Expan.
             0  332.32           444.76  444.76  444.76             .1       .3

CROSS SECTION


RIVER: Alignment 2
REACH: Alignment 2        RS: 1104.06

INPUT
Description:
Station Elevation Data    num=      45
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0    288.1399841  287.99.8299866  287.922.329987   287.720.25998  285.64
   36.53  283.9845.38998  283.0951.59998  282.2468.04999  279.9873.81999  279.24
75.43999  278.9881.54999  278.2590.80998  277.1892.56999  276.9193.35999  276.79
  101.46  270.52  112.04  261.67  124.94  253.93  128.13  252.24  129.67  251.41
  142.13  244.49  147.62  246.48   150.7  247.55  151.71   247.9  161.62  252.61
  161.83  252.74  163.15  253.47  171.48  257.92  174.72  260.11  182.99  265.54
  195.54  271.12  197.24  271.81  199.75  272.14   224.1  275.25  225.04  275.38
   226.9  275.64  239.64  277.19  243.06  277.04  251.79  277.08  257.78  277.03
  260.63  277.32  271.21  277.34  289.02  277.55  295.66  277.62   323.8  278.01

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .15       0     .15   323.8     .15

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.         →
→Expan.
             0   323.8           222.54  222.54  222.54             .1       .3

CULVERT


RIVER: Alignment 2
REACH: Alignment 2        RS: 1020.5

INPUT
Description: Roadway Dulin
```



```
Distance from Upstream XS =   83.44
Deck/Roadway Width        =      36
Weir Coefficient          =     2.6
Upstream  Deck/Roadway Coordinates
    num=       2
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
       0     280         227.999     264

Upstream Bridge Cross Section Data
Station Elevation Data    num=      45
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0    288.1399841  287.99.8299866  287.922.329987   287.720.25998  285.64
   36.53  283.9845.38998  283.0951.59998  282.2468.04999  279.9873.81999  279.24
75.43999  278.9881.54999  278.2590.80998  277.1892.56999  276.9193.35999  276.79
  101.46  270.52  112.04  261.67  124.94  253.93  128.13  252.24  129.67  251.41
  142.13  244.49  147.62  246.48   150.7  247.55  151.71   247.9  161.62  252.61
  161.83  252.74  163.15  253.47  171.48  257.92  174.72  260.11  182.99  265.54
  195.54  271.12  197.24  271.81  199.75  272.14   224.1  275.25  225.04  275.38
   226.9  275.64  239.64  277.19  243.06  277.04  251.79  277.08  257.78  277.03
  260.63  277.32  271.21  277.34  289.02  277.55  295.66  277.62   323.8  278.01

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .15       0     .15   323.8     .15

Bank Sta: Left   Right    Coeff Contr.   Expan.
             0   323.8             .1       .3

Downstream  Deck/Roadway Coordinates
    num=       2
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
       0     280             232     264

Downstream Bridge Cross Section Data
Station Elevation Data    num=      18
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0   251.6    35.6     250    53.3     248    64.4     246    74.6     244
    83.6     242    92.2     240    99.8     238   105.9     236   109.5     234
   112.9   232.2   113.7   232.2   122.3     234   123.8     236   168.5     249
   172.4   249.5   196.1   249.5     224     246

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .15       0     .15     224     .15

Bank Sta: Left   Right    Coeff Contr.   Expan.
             0     224             .1       .3

Upstream Embankment side slope             =       2 horiz. to 1.0 vertical
Downstream Embankment side slope           =       0 horiz. to 1.0 vertical
Maximum allowable submergence for weir flow =     .98
Elevation at which weir flow begins        =
Energy head used in spillway design        =
Spillway height used in design             =
Weir crest shape                           = Broad Crested

Number of Culverts =  1

Culvert Name     Shape      Rise    Span
Culvert #1      Circular     2.5     2.5
FHWA Chart # 1 - Concrete Pipe Culvert
FHWA Scale # 1 - Square edge entrance with headwall
```

```
 Solution Criteria = Highest U.S. EG
 Culvert Upstrm Dist  Length    Top n  Bottom n  Depth Blocked  Entrance Loss
Coef   Exit Loss Coef
              31.5   167.7     .045     .045        0                .045
            1
 Upstream   Elevation =  245
            Centerline Station =  142
 Downstream Elevation =  234.5
            Centerline Station =  143.5

 CROSS SECTION


 RIVER: Alignment 2
 REACH: Alignment 2        RS: 881.52

 INPUT
 Description:
 Station Elevation Data    num=      18
      Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
        0   251.6    35.6     250    53.3     248    64.4     246    74.6     244
     83.6     242    92.2     240    99.8     238   105.9     236   109.5     234
    112.9   232.2   113.7   232.2   122.3     234   123.8     236   168.5     249
    172.4   249.5   196.1   249.5     224     246

 Manning's n Values        num=       3
      Sta   n Val     Sta   n Val     Sta   n Val
        0     .15       0     .15     224     .15

 Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
             0     224           592.19  592.19  592.19             .1       .3

 CROSS SECTION


 RIVER: Alignment 2
 REACH: Alignment 2        RS: 289.33

 INPUT
 Description:
 Station Elevation Data    num=      59
      Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
        0  217.027.910004  216.449.320007  216.339.779999  216.22   19.59  214.93
 44.41998  213.8459.88998  213.2362.82001  213.0976.35001  212.4891.51999  212.27
   102.16  212.17  116.98   211.7  125.31  211.51  133.07  211.24  156.35   210.7
   161.27   210.7  163.79  210.77  171.98  210.96  175.93  213.96  176.83  214.46
   178.26  215.13  178.89  215.38  179.25  215.19  184.35  212.95  186.23  211.51
    188.3  210.22  194.77  209.23  199.42   208.6  210.83  208.34  211.06  208.33
   211.15  208.33  217.43  208.38  223.38  208.72  227.39  208.81  230.82  208.75
   235.52  208.64  237.27   208.6  251.41  208.61  263.55  208.61  267.27  208.63
   274.26  208.65  278.35  208.67  279.09  208.66  286.89  208.66  287.61  208.66
   288.58  208.66  300.55     214  301.59   214.3  329.38     214  344.39     207
   345.07  207.01  348.26  206.87  372.23  206.63  391.53  206.48  396.72  206.48
   414.56   206.5  428.98  206.54  433.19  206.53  434.15  206.54

 Manning's n Values        num=       3
      Sta   n Val     Sta   n Val     Sta   n Val
        0     .15       0     .15  434.15     .15

 Bank Sta: Left   Right    Coeff Contr.   Expan.
             0  434.15            .1       .3
 Ineffective Flow     num=       1
```



```
   Sta L   Sta R    Elev  Permanent
  301.59  434.15     214       F


SUMMARY OF MANNING'S N VALUES

River:Alignment 2

      Reach          River Sta.       n1        n2        n3

 Alignment 2          2053.73            .15       .15       .15
 Alignment 2          1548.82            .15       .15       .15
 Alignment 2          1104.06            .15       .15       .15
 Alignment 2          1020.5       Culvert
 Alignment 2          881.52             .15       .15       .15
 Alignment 2          289.33             .15       .15       .15



SUMMARY OF REACH LENGTHS

River: Alignment 2

      Reach          River Sta.      Left     Channel    Right

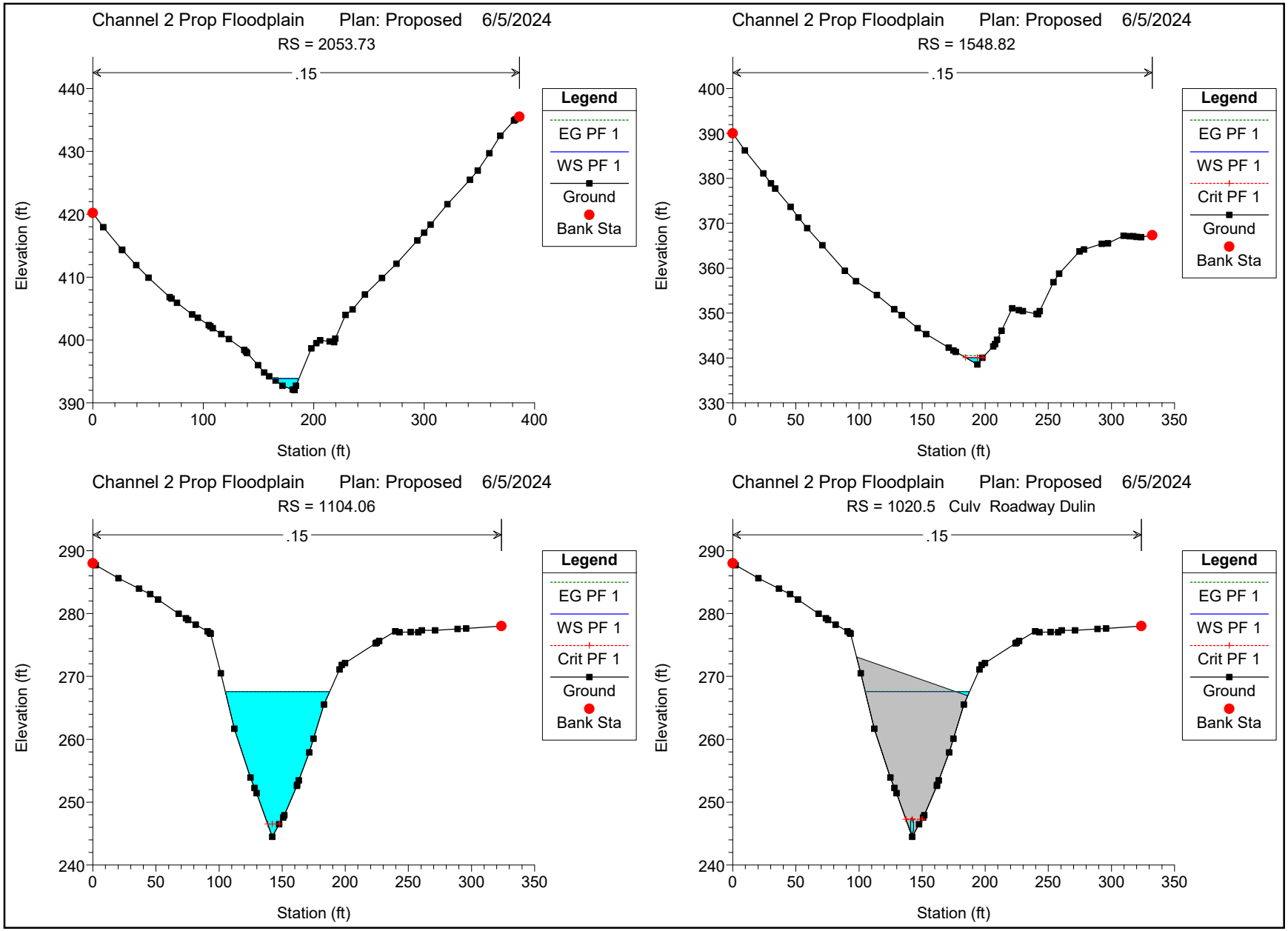
 Alignment 2          2053.73         504.91    504.91    504.91
 Alignment 2          1548.82         444.76    444.76    444.76
 Alignment 2          1104.06         222.54    222.54    222.54
 Alignment 2          1020.5       Culvert
 Alignment 2          881.52          592.19    592.19    592.19
 Alignment 2          289.33

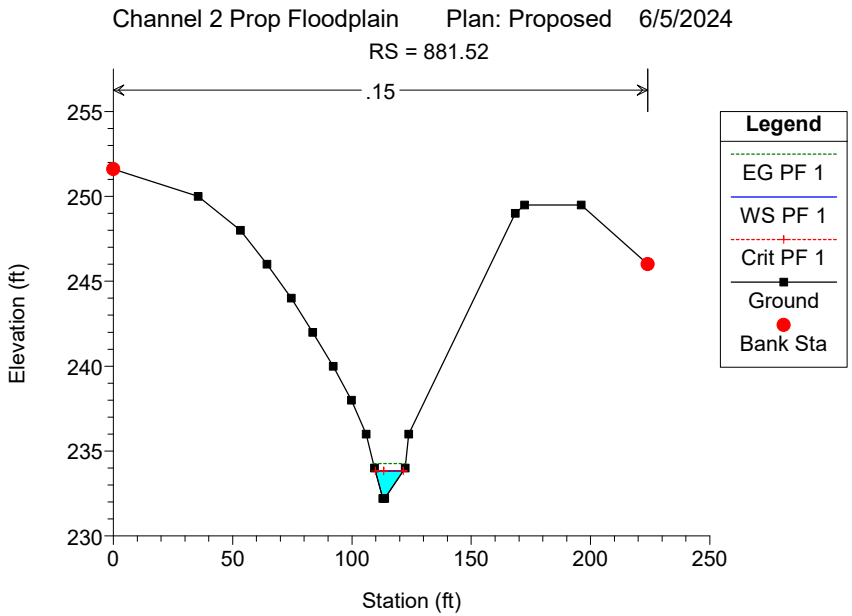


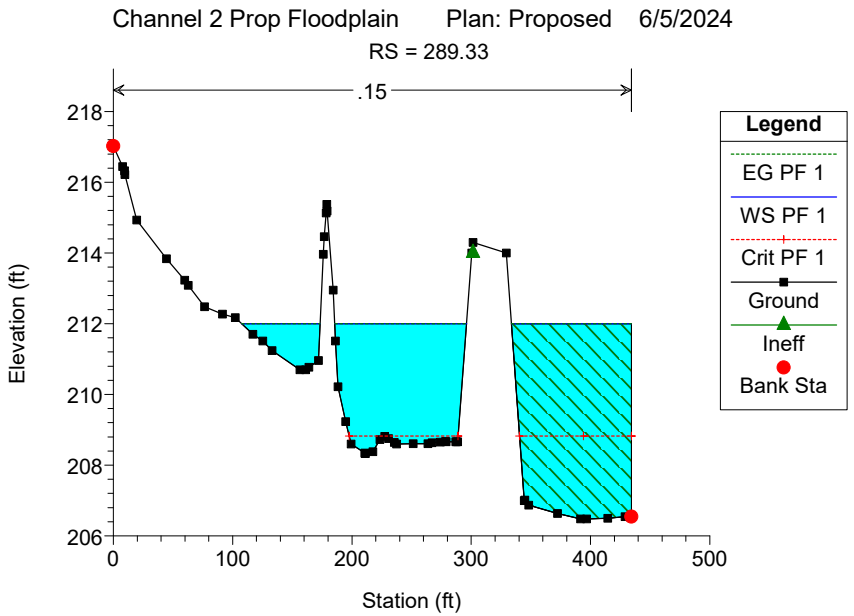
SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS
River: Alignment 2

      Reach          River Sta.     Contr.    Expan.

 Alignment 2          2053.73         .1        .3
 Alignment 2          1548.82         .1        .3
 Alignment 2          1104.06         .1        .3
 Alignment 2          1020.5   Culvert
 Alignment 2          881.52          .1        .3
 Alignment 2          289.33          .1        .3
```


Channel 2 Prop Floodplain Plan: Proposed 6/5/2024
RS = 2053.73
.15
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Channel 2 Prop Floodplain Plan: Proposed 6/5/2024
RS = 1548.82
.15
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Channel 2 Prop Floodplain Plan: Proposed 6/5/2024
RS = 1104.06
.15
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Channel 2 Prop Floodplain Plan: Proposed 6/5/2024
RS = 1020.5 Culv Roadway Dulin
.15
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta


Channel 2 Prop Floodplain Plan: Proposed 6/5/2024
RS = 881.52
.15
Elevation (ft)
Station (ft)
255
250
245
240
235
230
0
50
100
150
200
250
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta


Channel 2 Prop Floodplain Plan: Proposed 6/5/2024
RS = 289.33
.15
Elevation (ft)
Station (ft)
218
216
214
212
210
208
206
0
100
200
300
400
500
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Ineff
Bank Sta

HEC-RAS HEC-RAS 6.5 February 2024
U.S. Army Corps of Engineers
Hydrologic Engineering Center
609 Second Street
Davis, California

```
X     X  XXXXXX    XXXX        XXXX       XX      XXXX
X     X  X        X    X       X   X     X  X    X
X     X  X        X            X   X    X    X   X
XXXXXXX  XXXX     X       XXX  XXXX     XXXXXX    XXXX
X     X  X        X            X  X     X    X        X
X     X  X        X    X       X   X    X    X        X
X     X  XXXXXX    XXXX        X    X   X    X   XXXXX
```

PROJECT DATA
Project Title: Channel 3 Proposed Upstream
Project File : Channel3PropUS.prj
Run Date and Time: 10/23/2024 10:00:58 PM

Project in English units

PLAN DATA

Plan Title: Prop US-West
Plan File :
q:\CA-SAND-PD\Projects\4192.10\Engr\Reports\Drainage-FE\HYDRA\HEC-RAS\Proposed\Channel
3\Channel3PropUS.p03

Geometry Title: Channel 3 Upstream
Geometry File :
q:\CA-SAND-PD\Projects\4192.10\Engr\Reports\Drainage-FE\HYDRA\HEC-RAS\Proposed\Channel
3\Channel3PropUS.g03

Flow Title : Prop West Flow
Flow File :
q:\CA-SAND-PD\Projects\4192.10\Engr\Reports\Drainage-FE\HYDRA\HEC-RAS\Proposed\Channel
3\Channel3PropUS.f02

Plan Summary Information:
Number of: Cross Sections = 3 Multiple Openings = 0
Culverts = 0 Inline Structures = 0
Bridges = 0 Lateral Structures = 0

Computational Information
Water surface calculation tolerance = 0.01
Critical depth calculation tolerance = 0.01
Maximum number of iterations = 20
Maximum difference tolerance = 0.3
Flow tolerance factor = 0.001

Computation Options
Critical depth computed only where necessary
Conveyance Calculation Method: At breaks in n values only
Friction Slope Method: Average Conveyance
Computational Flow Regime: Subcritical Flow

FLOW DATA

Flow Title: Prop West Flow
Flow File :
q:\CA-SAND-PD\Projects\4192.10\Engr\Reports\Drainage-FE\HYDRA\HEC-RAS\Proposed\Channel
3\Channel3PropUS.f02

Flow Data (cfs)

River	Reach	RS	PF 1
Alignment 3	Alignment 3	3377.89	57.4

Boundary Conditions

River	Reach	Profile	Upstream
Downstream			
Alignment 3	Alignment 3	PF 1	Normal S = 0.28 Known
WS = 216.5			

GEOMETRY DATA

Geometry Title: Channel 3 Upstream
Geometry File :
q:\CA-SAND-PD\Projects\4192.10\Engr\Reports\Drainage-FE\HYDRA\HEC-RAS\Proposed\Channel
3\Channel3PropUS.g03

CROSS SECTION

RIVER: Alignment 3
REACH: Alignment 3 RS: 3377.89

INPUT
Description:
Station Elevation Data num= 32

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	619.131.450012	618.797.130005	618.018.820007	617.827.23001	615.88				
31.02	615.39	35.47	613.85	47.52	612.0559.14001	607.5667.14001	605.31		
69.94	603.93	73.01	603.01	82.95	598.6186.82001	596.89	95.23	602.17	
99.28001	604.83	101.27	605.93	113.66	612.73	117.57	615.72	123.21	619.49
125.18	618.71	129.46	616.87	134.05	616.76	142.38	617.56	144.49	617.98
150.39	618.14	150.62	618.18	155.38	620.95	158.82	622.92	159.14	623.16
167.93	624.85	169.24	624.98						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.06	0	.06	169.24	.06

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	169.24	720.66	720.66	720.66	.1 .3

CROSS SECTION

RIVER: Alignment 3
REACH: Alignment 3 RS: 2706.67

INPUT
Description:
Station Elevation Data num= 44

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	461.194.690002	461.0531.57001	461.02	35.22	460.9	43.88	460.63		
74.99001	459.6497.79001	458.0698.54001	458.0399.94002	457.9	109.94	457.01			
115.48	455.87	116.03	455.81	116.89	455.38	119.16	454.63	123.56	452.04
135.34	447.14	136.9	446.21	138.59	446.64	142.44	447.62	145.86	449.35
151.75	453.43	156.73	456.68	160.57	458.56	169.75	463.04	169.94	463.16
170.18	463.15	187.2	463.71	191.12	463.43	204.34	462.69	207.94	462.66
208.86	462.56	211.22	463.06	212.41	463.11	220.29	463.64	221.47	463.75
222.39	463.73	253.11	463.8	255.29	463.79	257.98	463.81	287.95	464.06
301.98	464.19	302.82	464.22	310.65	464.48	311.45	464.51		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.06	0	.06	311.45	.06

```
Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0  311.45          1083.54 1083.54 1083.54             .1       .3

CROSS SECTION


RIVER: Alignment 3
REACH: Alignment 3        RS: 1623.13

INPUT
Description:
Station Elevation Data    num=      47
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0  292.86   24.67  293.02   47.59   293.6   56.41  293.22   57.26  293.47
   64.89   294.3   68.54  294.25   70.18   294.2   72.46  294.22   74.97  293.26
   78.62  292.09   81.51   291.3   85.01  290.46   92.04  290.81   94.38  290.94
   94.85  290.97   95.73   290.9   107.1   289.8  116.72  287.66  121.01   286.6
  130.98  284.76  134.47  284.12  142.85  282.68  149.68  281.54  161.97  282.03
  165.58  282.31  183.09  283.28  189.41  283.63  191.06  283.63  192.72  283.62
  208.79  283.68  222.36  283.08  222.42  283.07  237.57  283.15  245.67  283.17
  258.65  283.23  277.48  282.95  281.52     283  285.01  282.99  291.48  283.46
  301.63  283.92  304.27  283.98  304.93     284  305.95  284.06  329.97  285.63
  343.86  287.26  344.97  287.38

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .06       0     .06  343.86     .06

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0  343.86          1108.68 1108.68 1108.68             .1       .3


SUMMARY OF MANNING'S N VALUES

River:Alignment 3

      Reach          River Sta.       n1        n2        n3

 Alignment 3          3377.89            .06       .06       .06
 Alignment 3          2706.67            .06       .06       .06
 Alignment 3          1623.13            .06       .06       .06



SUMMARY OF REACH LENGTHS

River: Alignment 3

      Reach          River Sta.      Left     Channel    Right

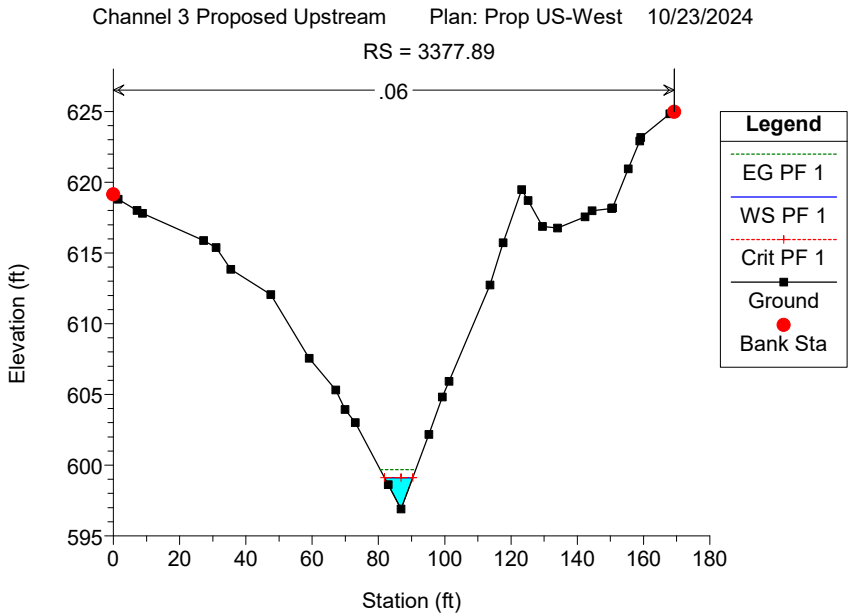
 Alignment 3          3377.89         720.66    720.66    720.66
 Alignment 3          2706.67        1083.54   1083.54   1083.54
 Alignment 3          1623.13        1108.68   1108.68   1108.68

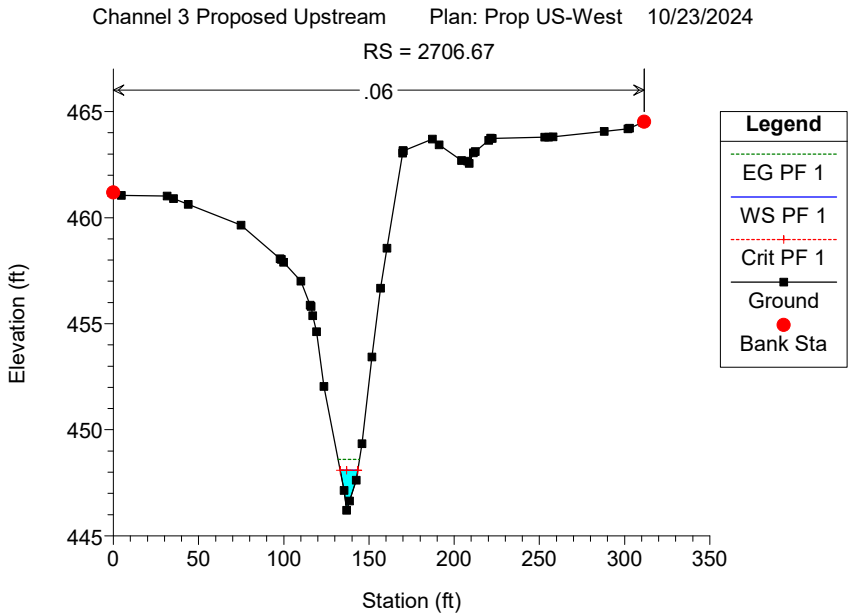


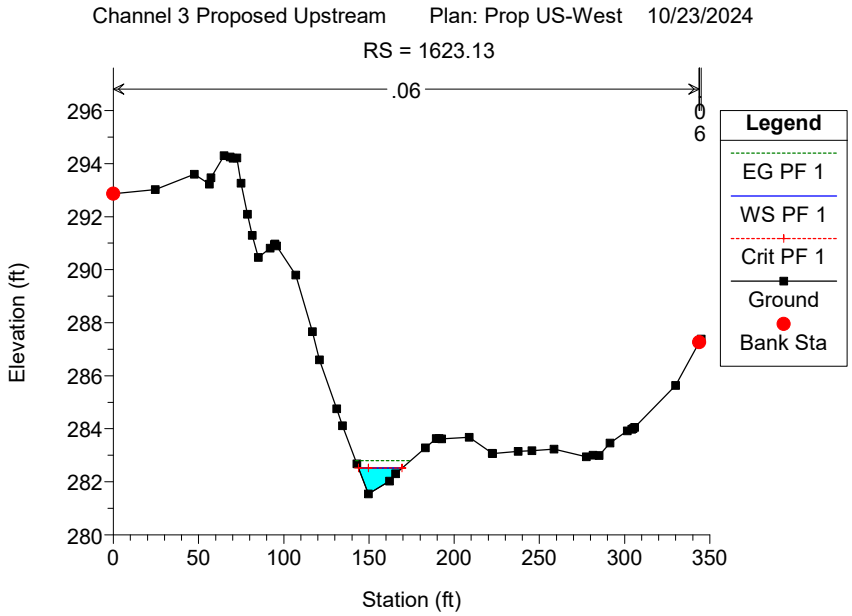
SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS
River: Alignment 3


      Reach          River Sta.     Contr.    Expan.

 Alignment 3          3377.89         .1        .3
 Alignment 3          2706.67         .1        .3
 Alignment 3          1623.13         .1        .3
```


Channel 3 Proposed Upstream Plan: Prop US-West 10/23/2024
RS = 3377.89
.06
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta


Channel 3 Proposed Upstream Plan: Prop US-West 10/23/2024
RS = 2706.67
.06
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta


Channel 3 Proposed Upstream Plan: Prop US-West 10/23/2024
RS = 1623.13
.06
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta

HEC-RAS Plan: West River: Alignment 3 Reach: Alignment 3 Profile: PF 1

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Alignment 3	3377.89	PF 1	57.40	596.89	599.11	599.11	599.68	0.061285	6.06	9.48	8.54	1.01
Alignment 3	2706.67	PF 1	57.40	446.21	448.10	448.10	448.60	0.059579	5.68	10.10	10.35	1.01
Alignment 3	1623.13	PF 1	57.40	281.54	282.52	282.52	282.80	0.066699	4.19	13.69	25.67	1.01

```
                    HEC-RAS HEC-RAS 6.5 February 2024
                      U.S. Army Corps of Engineers
                     Hydrologic Engineering Center
                           609 Second Street
                           Davis, California


          X     X  XXXXXX    XXXX        XXXX       XX      XXXX
          X     X  X        X    X       X   X     X  X    X
          X     X  X        X            X   X    X    X   X
          XXXXXXX  XXXX     X       XXX  XXXX     XXXXXX    XXXX
          X     X  X        X            X  X     X    X        X
          X     X  X        X    X       X   X    X    X        X
          X     X  XXXXXX    XXXX        X    X   X    X   XXXXX


 PROJECT DATA
 Project Title: Channel 3A Side
 Project File : Channel3ASide.prj
 Run Date and Time: 10/25/2024 4:05:58 PM

 Project in English units



 PLAN DATA

 Plan Title: Channel 3 East
 Plan File :
→q:\CA-SAND-PD\Projects\4192.10\Engr\Reports\Drainage-FE\HYDRA\HEC-RAS\Proposed\Channel
→3\Channel3ASide.p02

           Geometry Title: Channel 3 Side
           Geometry File :
→q:\CA-SAND-PD\Projects\4192.10\Engr\Reports\Drainage-FE\HYDRA\HEC-RAS\Proposed\Channel
→3\Channel3ASide.g01

           Flow Title    : Flow 01
           Flow File     :
→q:\CA-SAND-PD\Projects\4192.10\Engr\Reports\Drainage-FE\HYDRA\HEC-RAS\Proposed\Channel
→3\Channel3ASide.f01

 Plan Summary Information:
 Number of:  Cross Sections =    5    Multiple Openings  =    0
             Culverts       =    0    Inline Structures  =    0
             Bridges        =    0    Lateral Structures =    0

 Computational Information
     Water surface calculation tolerance  =  0.01
     Critical depth calculation tolerance =  0.01
     Maximum number of iterations         =  20
     Maximum difference tolerance         =  0.3
     Flow tolerance factor                =  0.001

 Computation Options
     Critical depth computed only where necessary
     Conveyance Calculation Method: At breaks in n values only
     Friction Slope Method:         Average Conveyance
     Computational Flow Regime:     Subcritical Flow



 FLOW DATA

 Flow Title: Flow 01
 Flow File :
→q:\CA-SAND-PD\Projects\4192.10\Engr\Reports\Drainage-FE\HYDRA\HEC-RAS\Proposed\Channel
→3\Channel3ASide.f01

 Flow Data (cfs)
```



```
   River           Reach           RS                  PF 1
   Alignment 3 SideAlignment 3 Side1601.78             57.6


 Boundary Conditions
→
   River           Reach           Profile                      Upstream
→Downstream
→
   Alignment 3 SideAlignment 3 SidePF 1                    Normal S = 0.36          Known
→WS = 279
→


 GEOMETRY DATA

 Geometry Title: Channel 3 Side
 Geometry File :
→q:\CA-SAND-PD\Projects\4192.10\Engr\Reports\Drainage-FE\HYDRA\HEC-RAS\Proposed\Channel
→3\Channel3ASide.g01

 CROSS SECTION


 RIVER: Alignment 3 Side
 REACH: Alignment 3 Side   RS: 1601.78

 INPUT
 Description:
 Station Elevation Data    num=     115
      Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
        0  533.6927.10004  535.8238.52002  535.8948.53003  535.9951.85004  535.92
 58.42004   535.968.93005  536.9672.82001  537.29   85.56  537.4690.86005  537.68
   104.15  538.03  114.23  537.69  129.86  537.32134.9901  537.15  151.63  536.41
   155.09  536.13  158.35  535.82  168.71  534.11  170.15  534.09   171.3  534.07
   183.36  533.82   187.3  533.54  189.36  533.42   192.8   533.3   197.5  532.46
   199.45  531.93  210.14  530.79  211.98   531.1  213.22  531.54  218.07   532.4
   224.07  533.04   225.3  533.12  226.15  533.35  231.36     534  248.71  534.79
   266.03  535.52  268.42  535.63  269.94  535.68  278.68  538.02  286.59  541.89
   289.82  543.47  292.35  544.83  292.72     545  302.09  549.86  309.02  553.73
   319.71  554.62  323.38  554.98   325.5  556.17  333.52  561.75  340.97  565.92
    348.9  570.12  357.37  571.08  360.34  571.35  371.18  579.33   373.3  580.64
   378.84  581.19  382.86  581.68  385.82  583.63  392.77  588.22  395.37  588.82
   397.77   589.3  411.75  595.83  412.42  596.12  412.47  596.13  413.02  596.37
   428.96  602.77  438.79  603.46  443.85  603.77  461.14  609.75  464.28  610.57
   468.89  611.48  478.55  612.06  484.77  612.25  496.21  612.49  497.64  612.49
   509.69  612.46  512.58  612.32  526.34  611.43  533.78  610.09  535.32  609.74
   536.07  609.54  537.38  609.27  552.82  605.91  556.76   605.7  560.74  604.78
   562.98  604.88  567.37  606.02572.1801  607.04  581.62  610.22   589.8  613.01
   590.14  613.11  599.57  615.93  607.74  617.82   616.8     618  634.65  617.99
   635.78  618.43638.1901  618.87  650.22  621.43662.2401  622.58  666.07  622.96
   669.46  623.06682.2401  623.07687.6801  622.47698.2401  621.61  709.02  620.49
 720.9901  618.42  735.84  616.11737.3101  615.98  738.12  615.94  753.56  615.82
   754.29  615.73  755.35  615.74  756.61     616765.3701  617.39  782.34  620.63

 Manning's n Values        num=       3
      Sta   n Val     Sta   n Val     Sta   n Val
        0     .06       0     .06  782.34     .06

 Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0  782.34           452.93  452.93  452.93             .1       .3

 CROSS SECTION


 RIVER: Alignment 3 Side
 REACH: Alignment 3 Side   RS: 1108.73

 INPUT
```

```
Description:
Station Elevation Data    num=      93
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0  469.93    1.15  469.64    2.28  469.29   17.52  464.73   28.91  460.55
   32.23  459.33   37.49   457.7   48.69  455.71   53.68  454.77   57.85     454
   60.34  453.47   70.75  451.69   82.76  449.51   86.95  449.02   99.76  447.05
  106.26  446.48  116.67  445.01  118.73  444.75  124.86   444.3  140.44  442.58
  140.89  442.53  155.69  441.54  156.09  441.51  164.31  440.95  165.38  440.87
  173.37  439.81  179.03  439.45  186.79   438.9  197.52  438.15  204.26  437.92
  207.07  437.78  207.79  437.75   213.7  437.57  216.31  436.75  220.21  434.81
  223.35  433.29   228.1  431.38  233.83   430.9  236.91  430.57  241.78  431.97
  246.89  433.24  249.58  434.12  253.34  434.84   258.7  435.85  260.84  436.31
  270.08  436.03  283.52  435.71  285.07  435.65  286.64  435.65  288.38  435.61
  341.48   434.5  344.93  434.43  371.49  433.35  398.07  431.94  399.78  431.89
  401.48  431.81  454.67  428.74  458.02  428.42  511.26  424.15  512.91  424.03
  514.57  423.96  567.85  423.83  569.48  423.82  571.09  423.84  624.47  424.16
  627.66  424.08  660.59  421.42   665.3  421.04  674.17  419.86  676.68  419.52
  681.94  419.25  690.79  421.43   700.3  423.83  700.93  424.15  708.24  428.38
  708.34 428.439  709.54  429.15  709.74  429.25  710.41  429.52  716.92  432.05
  726.28  433.01  737.84  434.28  740.46  434.45  746.69  434.91  756.32  435.63
  757.49  435.65  767.46  435.55  792.48  435.27  795.33  435.08     810  433.33
   850.8  427.57  852.32  427.27  853.85   426.9

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .06       0     .06  708.34     .06

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0  708.34           437.7   437.7   437.7             .1       .3
Blocked Obstructions     num=       1
   Sta L   Sta R    Elev
     271  853.85

CROSS SECTION


RIVER: Alignment 3 Side
REACH: Alignment 3 Side   RS: 671.03

INPUT
Description:
Station Elevation Data    num=      68
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0     37616.28998  373.34   36.69  370.14   58.38  365.8264.98999  364.61
71.19995  363.32  116.77  355.15  121.58  354.34  129.86  353.09  148.57  350.57
   160.3  347.98  162.36   347.7  169.14  343.73  170.45  342.85  172.69  341.78
  180.35   338.7   192.3  334.58  193.93   333.9  198.24  332.36  204.45     330
  210.11  329.55  215.33  329.26  220.89   329.7  221.33  329.94  221.99  330.29
  230.25  334.53  241.31  338.46  245.57  340.21  261.43  344.68  262.18  344.83
  280.58  347.36  287.99  347.24  302.44  347.82  334.19  348.93  349.29  349.27
  369.67  348.42  383.97  347.52  396.79  345.73  409.44  344.35   411.6  343.48
  414.39  342.45  418.65  340.98  423.34  340.11   430.5   338.5  433.68  339.33
  439.04  341.73  444.97   344.4  445.89  344.83  454.45  349.36  460.61  352.23
   470.1  354.84  471.94  355.29  472.21  355.28  476.17  354.98  483.96  355.47
  501.29  356.21   517.9  356.63  523.06 356.5853.3199  356.49  571.25   356.4
   583.1  356.49  609.91  356.56  622.12  356.73  631.33  356.52  633.36  356.55
  638.45  356.81  682.67  359.91  683.79  360.01

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .06       0     .06  683.79     .06

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0  683.79           444.97  444.97  444.97             .1       .3

CROSS SECTION


RIVER: Alignment 3 Side
REACH: Alignment 3 Side   RS: 226.06

INPUT
Description:
Station Elevation Data    num=      52
```



```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0     31016.89999  309.4235.84998  308.8350.51999  308.4964.39999  308.16
   82.37  308.05   101.3  307.68  123.46     307   131.5  306.81  140.89  306.56
  142.87  306.48  144.71  306.24  148.39  305.74  151.01  305.33  154.93  304.39
  171.73  300.63  179.98  298.02   186.3   296.1   188.5  295.33   190.9   294.2
  195.13  293.33  196.38  293.11  197.09  293.03  201.14   292.7  203.04  292.75
  207.04  292.89  211.73  294.03  215.73  294.38   215.9   294.4  220.69  294.65
  227.53  294.71  230.33  295.33  233.93  296.46  245.61   300.1   246.4  300.41
  247.37  300.59   257.2  303.21  263.55  305.96  264.51  306.37  264.94  306.54
  265.16  306.56  265.47  306.56  293.12  307.36  295.98  307.42  307.04  307.89
   313.9  307.64  339.24  307.22  383.88  307.35  384.47  307.36  413.87  306.74
   429.7  306.96  469.24     308

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .06       0     .06  469.24     .06

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0  469.24           226.06  226.06  226.06             .1       .3

CROSS SECTION


RIVER: Alignment 3 Side
REACH: Alignment 3 Side   RS: 0

INPUT
Description:
Station Elevation Data    num=      54
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0  297.825.929993  297.1331.40997   294.562.14999  292.1573.02997  291.38
  102.94  289.81  114.64  289.26  133.67  288.29  141.51  287.95  151.98  287.42
  156.28  287.15  160.04  287.12  177.21  286.59  191.88  286.14  204.23  285.71
  204.98  285.69  205.66  285.69   212.2  285.72  227.26     284  251.39     275
  258.77     275  281.14     284  291.89  283.25  293.32  283.36  297.62  283.81
  299.56  283.08  304.58  281.16  305.93  280.37  307.07   280.3  309.46  279.49
  316.36  278.66  316.47  278.67  316.53  278.67  326.12  279.27  332.01  279.48
  333.51  279.58  334.62  279.67  343.13  280.48  351.95  281.29  360.55  282.73
  362.59   283.1  364.69  283.28  367.42  283.39  387.28  283.74  396.16  283.74
  405.93   284.5  427.51   284.3  447.55  284.21  458.65  283.99  489.16   283.2
  497.36     283  530.77  281.98  555.66  281.43  557.73  281.33

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .06       0     .06  557.73     .06

Bank Sta: Left   Right    Coeff Contr.   Expan.
             0  557.73             .1       .3
Ineffective Flow     num=       1
   Sta L   Sta R    Elev  Permanent
  297.62  557.73               F



SUMMARY OF MANNING'S N VALUES

River:Alignment 3 Side

      Reach          River Sta.       n1        n2        n3

 Alignment 3 Side     1601.78           .06       .06       .06
 Alignment 3 Side     1108.73           .06       .06       .06
 Alignment 3 Side     671.03            .06       .06       .06
 Alignment 3 Side     226.06            .06       .06       .06
 Alignment 3 Side     0                 .06       .06       .06



SUMMARY OF REACH LENGTHS

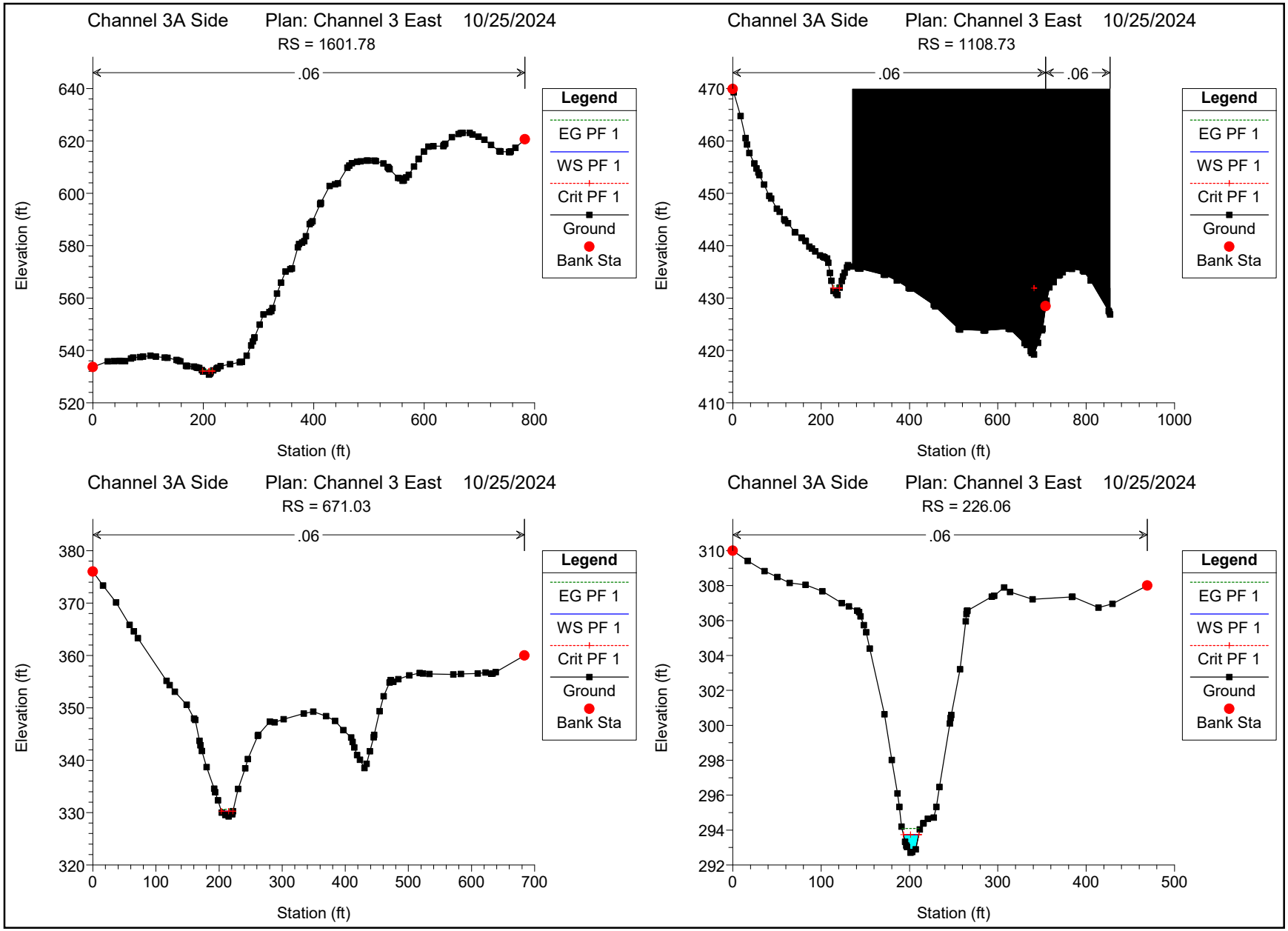
River: Alignment 3 Side

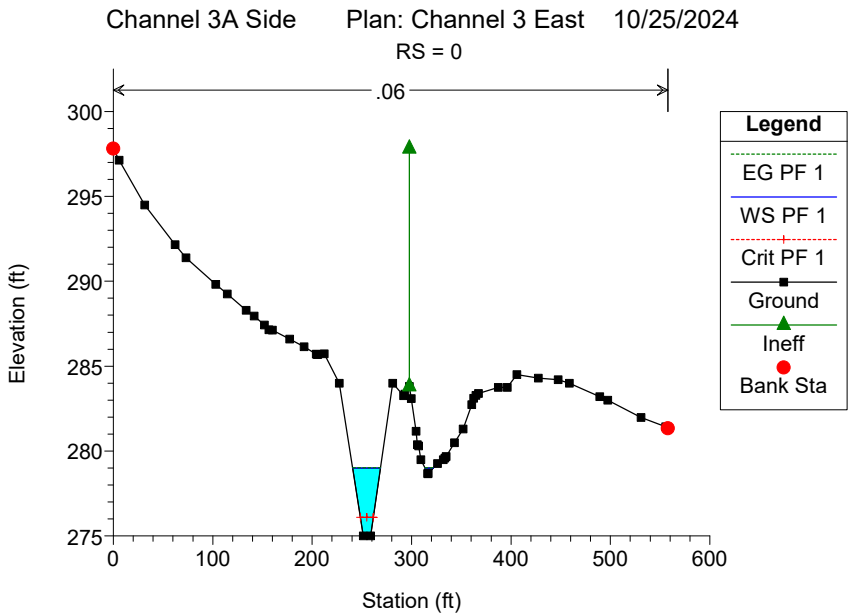
      Reach          River Sta.      Left     Channel    Right
```

Alignment 3 Side	1601.78	452.93	452.93	452.93
Alignment 3 Side	1108.73	437.7	437.7	437.7
Alignment 3 Side	671.03	444.97	444.97	444.97
Alignment 3 Side	226.06	226.06	226.06	226.06
Alignment 3 Side	0			

SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS
River: Alignment 3 Side

Reach	River Sta.	Contr.	Expan.
Alignment 3 Side	1601.78	.1	.3
Alignment 3 Side	1108.73	.1	.3
Alignment 3 Side	671.03	.1	.3
Alignment 3 Side	226.06	.1	.3
Alignment 3 Side	0	.1	.3


Channel 3A Side Plan: Channel 3 East 10/25/2024
RS = 1601.78
.06
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Channel 3A Side Plan: Channel 3 East 10/25/2024
RS = 1108.73
.06
.06
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Channel 3A Side Plan: Channel 3 East 10/25/2024
RS = 671.03
.06
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Channel 3A Side Plan: Channel 3 East 10/25/2024
RS = 226.06
.06
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta


Channel 3A Side Plan: Channel 3 East 10/25/2024
RS = 0
.06
Elevation (ft)
300
295
290
285
280
275
0
100
200
300
400
500
600
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Ineff
Bank Sta

HEC-RAS Plan: Plan p02 River: Alignment 3 Side Reach: Alignment 3 Side Profile: PF 1

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Alignment 3 Side	1601.78	PF 1	57.60	530.79	532.11	532.11	532.46	0.061127	4.73	12.17	17.68	1.01
Alignment 3 Side	1108.73	PF 1	57.60	430.57	431.90	431.90	432.30	0.060484	5.05	11.40	14.75	1.01
Alignment 3 Side	671.03	PF 1	57.60	329.26	330.28	330.28	330.62	0.061789	4.69	12.29	18.26	1.01
Alignment 3 Side	226.06	PF 1	57.60	292.70	293.74	293.74	294.09	0.060786	4.76	12.09	17.36	1.01
Alignment 3 Side	0	PF 1	57.60	275.00	279.00	276.09	279.01	0.000336	0.81	70.85	36.32	0.09

```
                    HEC-RAS HEC-RAS 6.0.0 May 2021
                     U.S. Army Corps of Engineers
                    Hydrologic Engineering Center
                          609 Second Street
                          Davis, California


           X     X  XXXXXX    XXXX        XXXX       XX      XXXX
           X     X  X        X    X       X   X     X  X    X
           X     X  X        X            X   X    X    X   X
           XXXXXXX  XXXX     X       XXX  XXXX     XXXXXX    XXXX
           X     X  X        X            X  X      X    X        X
           X     X  X        X    X       X   X     X    X        X
           X     X  XXXXXX    XXXX        X    X    X    X   XXXXX


 PROJECT DATA
 Project Title: Channel 3 Proposed Downstream
 Project File : Channel3Proposed.prj
 Run Date and Time: 6/5/2024 11:00:40 AM

 Project in English units



 PLAN DATA

 Plan Title: Channel DS of Culvert PropQ
 Plan File :
q:\CA-SAND-PD\Projects\4192.10\Engr\Reports\Drainage-FE\HYDRA\HEC-RAS\Proposed\C

            Geometry Title: Channel 3 Geom Downstream of Culvert
            Geometry File :
q:\CA-SAND-PD\Projects\4192.10\Engr\Reports\Drainage-FE\HYDRA\HEC-RAS\Proposed\C

            Flow Title    : Prop Flow DS Culvert
            Flow File     :
q:\CA-SAND-PD\Projects\4192.10\Engr\Reports\Drainage-FE\HYDRA\HEC-RAS\Proposed\C

 Plan Summary Information:
 Number of:  Cross Sections =    2    Multiple Openings  =    0
             Culverts       =    0    Inline Structures  =    0
             Bridges        =    0    Lateral Structures =    0

 Computational Information
     Water surface calculation tolerance  =  0.01
     Critical depth calculation tolerance =  0.01
     Maximum number of iterations         =  20
     Maximum difference tolerance         =  0.3
     Flow tolerance factor                =  0.001

 Computation Options
     Critical depth computed only where necessary
     Conveyance Calculation Method: At breaks in n values only
     Friction Slope Method:         Average Conveyance
     Computational Flow Regime:     Subcritical Flow
```



```
 FLOW DATA

 Flow Title: Prop Flow DS Culvert
 Flow File :
q:\CA-SAND-PD\Projects\4192.10\Engr\Reports\Drainage-FE\HYDRA\HEC-RAS\Proposed\C

 Flow Data (cfs)

   River           Reach           RS                  PF 1
   Alignment 3     Alignment 3     183.23              145.37


 Boundary Conditions


   River           Reach           Profile                       Upstream
         Downstream


   Alignment 3     Alignment 3     PF 1                        Normal S = 0.48
      Known WS = 216.5



 GEOMETRY DATA

 Geometry Title: Channel 3 Geom Downstream of Culvert
 Geometry File :
q:\CA-SAND-PD\Projects\4192.10\Engr\Reports\Drainage-FE\HYDRA\HEC-RAS\Proposed\C

 CROSS SECTION


 RIVER: Alignment 3
 REACH: Alignment 3        RS: 183.23

 INPUT
 Description:
 Station Elevation Data    num=       8
      Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
        0   219.7     200     216     235     216     250   216.2     260     216
      280   215.7     302     216     470   216.7

 Manning's n Values        num=       3
      Sta   n Val     Sta   n Val     Sta   n Val
        0     .15     260     .15     302     .15

 Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
           260     302             72.7    72.7    72.7             .1       .3

 CROSS SECTION


 RIVER: Alignment 3
 REACH: Alignment 3        RS: 110.53

 INPUT
 Description:
 Station Elevation Data    num=       5
      Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
```

```
       0   214.6    73.6 214.491  135.51   214.4   316.5   214.5     476   214.3

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .15    73.6     .15   316.5     .15

Bank Sta: Left   Right    Coeff Contr.   Expan.
          73.6   316.5             .1       .3


SUMMARY OF MANNING'S N VALUES

River:Alignment 3

      Reach          River Sta.       n1        n2        n3

 Alignment 3          183.23             .15       .15       .15
 Alignment 3          110.53             .15       .15       .15



SUMMARY OF REACH LENGTHS

River: Alignment 3

      Reach          River Sta.      Left     Channel    Right

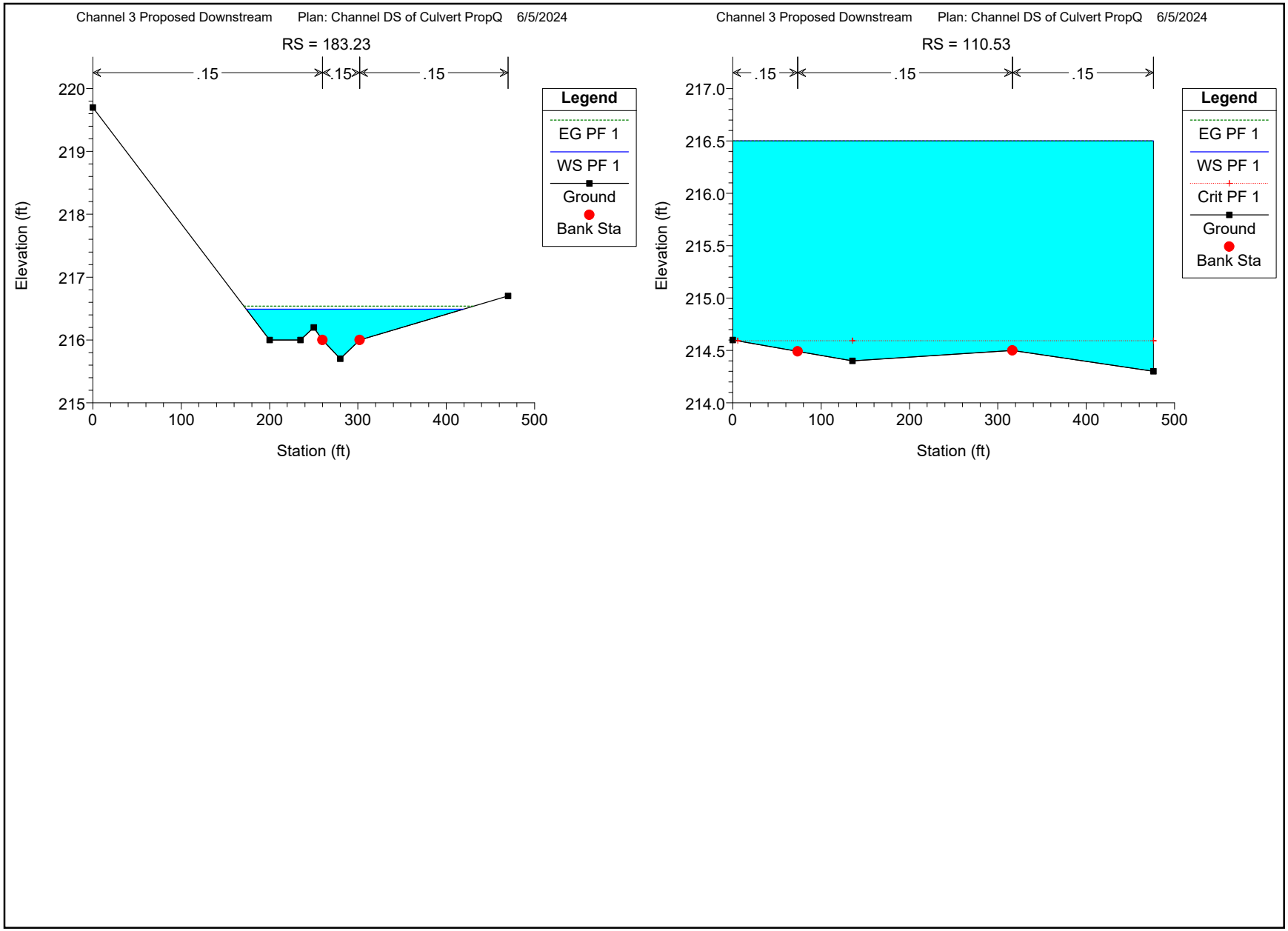
 Alignment 3          183.23            72.7      72.7      72.7
 Alignment 3          110.53



SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS
River: Alignment 3


      Reach          River Sta.     Contr.    Expan.

 Alignment 3          183.23          .1        .3
 Alignment 3          110.53          .1        .3
```


Channel 3 Proposed Downstream Plan: Channel DS of Culvert PropQ 6/5/2024
RS = 183.23
.15
.15
.15
Elevation (ft)
220
219
218
217
216
215
0
100
200
300
400
500
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Channel 3 Proposed Downstream Plan: Channel DS of Culvert PropQ 6/5/2024
RS = 110.53
.15
.15
.15
Elevation (ft)
217.0
216.5
216.0
215.5
215.0
214.5
214.0
0
100
200
300
400
500
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta

HEC-RAS Plan: DS C Prop Q River: Alignment 3 Reach: Alignment 3 Profile: PF 1

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Alignment 3	183.23	PF 1	145.37	215.70	216.49		216.54	0.090251	2.21	88.95	245.93	0.49
Alignment 3	110.53	PF 1	145.37	214.40	216.50	214.59	216.50	0.000087	0.15	977.03	476.00	0.02

```
                    HEC-RAS HEC-RAS 6.5 February 2024
                      U.S. Army Corps of Engineers
                     Hydrologic Engineering Center
                           609 Second Street
                           Davis, California


           X     X  XXXXXX    XXXX        XXXX       XX      XXXX
           X     X  X        X    X       X   X     X  X    X
           X     X  X        X            X   X    X    X   X
           XXXXXXX  XXXX     X       XXX  XXXX     XXXXXX    XXXX
           X     X  X        X            X  X     X    X        X
           X     X  X        X    X       X   X    X    X        X
           X     X  XXXXXX    XXXX        X    X   X    X   XXXXX


 PROJECT DATA
 Project Title: Channel 4 Prop
 Project File : Channel4Prop.prj
 Run Date and Time: 10/25/2024 4:02:58 PM

 Project in English units



 PLAN DATA

 Plan Title: Proposed conditions
 Plan File :
q:\CA-SAND-PD\Projects\4192.10\Engr\Reports\Drainage-FE\HYDRA\HEC-RAS\Proposed\Channel
4\Channel4Prop.p03

            Geometry Title: Channel 4 Propr
            Geometry File :
q:\CA-SAND-PD\Projects\4192.10\Engr\Reports\Drainage-FE\HYDRA\HEC-RAS\Proposed\Channel
4\Channel4Prop.g02

            Flow Title    : Channel 4 Flow
            Flow File     :
q:\CA-SAND-PD\Projects\4192.10\Engr\Reports\Drainage-FE\HYDRA\HEC-RAS\Proposed\Channel
4\Channel4Prop.f01

 Plan Summary Information:
 Number of:  Cross Sections =   10    Multiple Openings  =    0
             Culverts       =    1    Inline Structures  =    0
             Bridges        =    0    Lateral Structures =    0

 Computational Information
     Water surface calculation tolerance  =  0.01
     Critical depth calculation tolerance =  0.01
     Maximum number of iterations         =  20
     Maximum difference tolerance         =  0.3
     Flow tolerance factor                =  0.001

 Computation Options
     Critical depth computed only where necessary
     Conveyance Calculation Method: At breaks in n values only
     Friction Slope Method:         Average Conveyance
     Computational Flow Regime:     Subcritical Flow




 FLOW DATA

 Flow Title: Channel 4 Flow
 Flow File :
q:\CA-SAND-PD\Projects\4192.10\Engr\Reports\Drainage-FE\HYDRA\HEC-RAS\Proposed\Channel
4\Channel4Prop.f01

 Flow Data (cfs)
```



```
  River           Reach           RS                  PF 1
  Alignment 2 EastAlignment 2 East4418.6            1237.5
  Alignment 4     Channel 4       4418.6            1237.5


 Boundary Conditions

  River           Reach           Profile                     Upstream
Downstream

  Alignment 4     Channel 4       PF 1                    Normal S = 0.2      Known WS
= 217.36


 GEOMETRY DATA

 Geometry Title: Channel 4 Propr
 Geometry File :
q:\CA-SAND-PD\Projects\4192.10\Engr\Reports\Drainage-FE\HYDRA\HEC-RAS\Proposed\Channel
4\Channel4Prop.g02

 CROSS SECTION


 RIVER: Alignment 4
 REACH: Channel 4          RS: 4418.6

 INPUT
 Description:
 Station Elevation Data    num=      33
      Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
 26.17999  340.5342.01999  336.6845.48999  335.77   46.53  335.61   46.84  335.54
 49.85999  334.66   66.97   329.9   69.63  329.1574.73999  327.95  101.65  322.45
   132.33  318.11  148.09  316.44  154.51   315.8  157.75  315.43  170.03  313.92
   189.69  311.28  198.04  309.62  217.04  306.23  227.96  304.37  238.78  301.47
   242.97  301.33   274.4   301.2  297.58  301.15  300.79  301.12  328.85  300.85
    330.3  301.13  363.16   309.7  374.09  313.07  405.45  323.35  435.27  331.39
   448.16  335.02  456.58   337.3  456.75  337.35

 Manning's n Values        num=       3
      Sta   n Val     Sta   n Val     Sta   n Val
 26.17999     .1526.17999     .15  456.75     .15

 Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       26.17999  456.75           685.44  850.53  895.56             .1       .3

 CROSS SECTION


 RIVER: Alignment 4
 REACH: Channel 4          RS: 3568.07

 INPUT
 Description:
 Station Elevation Data    num=      56
      Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
        0  317.931.349976  317.8920.66998  316.83   27.69  316.3633.20001  315.99
 38.83997  315.7464.45001  312.0774.14999  310.6885.43997  308.17   94.59  305.59
 97.99997  304.89  115.43  300.87  123.95  299.38  142.12  296.91   152.6  295.25
   168.46  293.96  176.81     293  185.28  291.93  193.25  291.76  194.67  291.73
   199.75  290.84  205.97  289.45  209.63  288.86   215.2  287.91   220.3  287.48
   233.07  286.25  235.78  286.25  236.63  286.25  239.63  286.25  336.96  286.25
   360.66  286.25   406.3  286.25  416.96  286.25  417.11  286.25  418.58  286.54
   423.83  287.45  426.54  287.73  435.74   288.4  442.98  289.07   452.8  291.06
   455.46  291.34  467.04   293.5  467.47  293.57   467.7  293.62  468.02  293.63
   475.64  293.87  484.84  296.96  489.82  298.49  491.67  299.18   526.1  311.36
      527  311.67  528.38  312.06  532.26  313.46   558.3  322.43  572.45  327.76
   580.42  330.63
```

```
Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .15       0     .15  580.42     .15

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0  580.42           299.41  217.44  166.82            .1       .3

CROSS SECTION


RIVER: Alignment 4
REACH: Channel 4          RS: 3350.63

INPUT
Description:
Station Elevation Data    num=      70
     Sta     Elev     Sta     Elev     Sta     Elev     Sta     Elev     Sta     Elev
       0  298.028.440002  297.3133.71002  293.9234.74005  293.7835.68005  293.63
48.13004   291.556.89001  288.3460.14001  287.0164.67001  286.2575.03003  284.53
78.07004  283.9981.48004  283.47  103.13  285.67  108.32  286.02  118.15  288.17
  123.05  289.84  131.89  294.43  133.79  295.29  150.07  298.02  151.29  298.22
   152.2  298.36  157.26  298.72  172.61  299.04  183.26  298.99  189.93  298.86
  198.43  297.95  209.37  296.81  219.65  295.62  226.43  294.76  235.48  293.44
  243.17  292.03   252.2  290.89  263.56   290.1  279.55  290.11  281.76  290.12
  282.97  290.09  299.86  289.97  305.02  289.96   320.5  289.79  327.87  289.77
  344.32  289.69   348.6  289.74  357.78  289.81  371.19  289.87  373.07  289.84
  391.09  289.77  393.21  289.74   405.2  289.82  417.27  289.77   420.7  289.78
  424.64  289.82  444.47  290.02  450.47  289.98  460.77  290.33  466.64  290.57
  472.55  291.02  476.04  291.09   480.1  291.28   481.3   291.3   488.7  291.68
  496.48  292.18  506.32  294.13  506.43  294.16  506.49   294.2  516.04  300.55
  528.77  306.07   535.1  307.93  547.78  312.58   552.9  314.66  553.84  315.03

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .15       0     .15  553.84     .15

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0  553.84           391.23  122.97   61.48            .1       .3

CROSS SECTION


RIVER: Alignment 4
REACH: Channel 4          RS: 3227.66

INPUT
Description:
Station Elevation Data    num=      60
     Sta     Elev     Sta     Elev     Sta     Elev     Sta     Elev     Sta     Elev
       0  292.054.920013  291.936.640015  291.8916.33002  291.64   23.19  291.28
28.55002  290.8529.33002  290.8535.58002  289.0939.82001  287.6645.61002  285.54
55.27002  281.8563.39999  278.78   65.19  278.6275.67999  277.7581.26001  277.26
82.27002  277.25   90.37  277.23  108.02  277.15  111.69  276.99   119.9   276.4
  131.11  275.95  155.63  275.45  189.11  276.01  194.49  276.06  194.84  276.27
   199.5  277.83  205.31  274.21  207.45   272.8  210.51  272.12  220.54  270.32
  237.76  268.25   241.1  267.99  243.26  268.01  243.63  268.02  273.57  267.49
  278.09  267.12  279.84  267.12  330.64  267.03  365.73  266.97  366.97  267.19
  380.15   268.3  400.84  272.05   403.1  272.38  404.11  272.56  417.66  275.29
  432.63   280.9  441.71  284.51  445.11  284.82  449.73  285.31  455.38  286.01
  458.01  286.31  466.52  292.45  468.19   293.4  473.62  294.65  474.88  295.31
  484.03   298.4   486.8  299.73  493.97   301.9  497.71  302.86  501.85  303.97

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .15       0     .15  501.85     .15

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0  501.85           240.21  414.19   436.7            .1       .3

CROSS SECTION


RIVER: Alignment 4
```



```
REACH: Channel 4          RS: 2813.47

INPUT
Description:
Station Elevation Data    num=      44
     Sta     Elev     Sta     Elev     Sta     Elev     Sta     Elev     Sta     Elev
       0  273.9922.20001  271.1536.17001  268.48   51.69  266.77   79.03  263.12
80.79001  262.9181.42999  262.8382.26999  262.76   84.87  262.52   114.3  260.25
   124.7  259.44     125  259.43   127.1  259.26  138.88  258.44  142.48  258.19
  148.43  257.85  164.53   256.6  166.91   256.4  171.85  255.99  197.73     254
  206.03  254.17  214.06  254.45  249.34  255.48  250.73  255.58  254.03  255.87
  269.62  257.06  280.34  259.32  282.98  259.74  285.19  259.09  287.44  258.27
   290.1  258.15   292.4  258.02   306.5  258.75  310.01  258.99  320.72  260.21
  322.95  260.46  325.21  260.65  368.51  265.06  370.18  265.21  371.84  265.45
  398.16  268.44  422.11  271.89  433.64  273.26  439.28  273.81

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .15       0     .15  439.28     .15

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0  439.28          1205.77 1192.52 1377.92            .1       .3

CROSS SECTION


RIVER: Alignment 4
REACH: Channel 4          RS: 1620.95

INPUT
Description:
Station Elevation Data    num=      64
     Sta     Elev     Sta     Elev     Sta     Elev     Sta     Elev     Sta     Elev
       0  234.394.889954  233.9319.88995   232.931.69995  232.52   48.38  231.77
69.55997  231.1482.59998  230.96   130.8  230.63  133.51  230.61  134.24  230.61
  162.31  230.96  184.41  231.45   190.8   231.6  198.91  231.68  219.28  231.97
  235.31  232.12  253.72  232.36   260.4  232.44  274.04  232.35  274.23  232.35
  274.31  232.34  278.88  231.79  285.23  230.37   287.7  229.96  293.44  229.59
  300.12   229.2  304.58  229.87   313.7  231.12  313.71  231.12  320.69  232.13
  326.32  232.79  328.84  233.36   335.8  234.75  339.26  234.09   343.7  232.99
   350.5  232.59  351.28  232.53   353.1  232.52  354.14  232.49  356.69  232.48
  365.06  232.45  379.86  232.35  381.52  232.37  390.17  232.25   390.3  232.25
  390.46  232.25  403.34  232.17  403.73  232.17   404.7  232.17  406.63  232.19
  416.54  232.25  421.98  232.27  432.03  232.31  440.21  232.34  446.82  232.37
  458.67  232.52  476.08  232.77  484.75  232.95  487.54  233.03  512.05  234.24
  525.21  234.71  542.55  236.08  565.72  237.65  578.54  238.94

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .15       0     .15  578.54     .15

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0  578.54           43.26  126.16  118.33            .1       .3

CROSS SECTION


RIVER: Alignment 4
REACH: Channel 4          RS: 1494.79

INPUT
Description:
Station Elevation Data    num=      54
     Sta     Elev     Sta     Elev     Sta     Elev     Sta     Elev     Sta     Elev
       0  232.99     6.02  232.52   28.94 231.196   33.19  230.95   34.31  230.87
   35.47  230.82    88.51  229.88   93.38   229.8  119.18  229.66  143.83  229.76
  147.47  229.76  151.28  229.77  199.15  230.14  201.23  230.18  206.93   230.2
  210.95  230.22  247.17   230.8  252.12  230.75  270.09  230.78  277.18  230.51
  285.27 230.142  285.54  230.13  288.33  229.64   293.7  228.83  300.92  227.51
  304.84   226.7   309.3  226.77  311.81  226.64  317.99  228.06  324.76  229.26
  334.67   231.1  335.28 231.196  337.53  231.55 340.15 231.958  341.51  232.17
   343.4  232.33  350.21  232.88  350.88  232.95  355.13  233.35  356.65  232.82
  362.04  230.99  364.63  231.11  365.42  231.18  372.53  231.68  380.33  232.21
  381.11  232.25  385.11  232.44  413.32  234.47  437.98  237.47  453.59  239.25
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  476.55  241.37  492.95  243.37  514.47   244.8  521.03     245

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .15   28.94     .15  335.28     .15

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          28.94  335.28            95.75   95.75   95.75             .1       .3

CROSS SECTION


RIVER: Alignment 4
REACH: Channel 4          RS: 1422.96

INPUT
Description:
Station Elevation Data    num=      50
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0   231.65.790009  231.1513.52002  230.7153.01001  229.69   72.63  229.37
74.90002  229.36   91.16  229.26  119.95  228.99  122.55  228.99  163.76  228.98
  165.16  228.97   181.6  229.11  206.05  229.36  243.35  229.43  246.73  229.44
  248.28  229.44  253.62  229.45  257.47  229.47  260.53  229.29  271.75  228.67
  273.46  228.44  277.03  227.88  278.88  227.43  281.94  226.56  287.91  225.55
  287.95  225.54     289  225.76  297.17  227.49  298.58  227.73  300.08  228.03
   300.4  228.09  300.94  228.19  312.24  230.29  315.41  231.17  320.95  232.18
  323.04  232.54   324.4  232.17  333.83  229.25   337.1  229.81  343.77  230.83
  354.76  232.17  357.88  232.59  362.53  232.87  378.59  234.27  402.93  236.98
  410.39  237.92  417.62  238.36  437.25   238.7  450.09  238.98  483.98  238.68

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .15       0     .15  483.98     .15

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0  483.98           132.21   85.72   92.05             .1       .3

CULVERT


RIVER: Alignment 4
REACH: Channel 4          RS: 1399.08

INPUT
Description:
Distance from Upstream XS =     6.3
Deck/Roadway Width        =      71
Weir Coefficient          =     2.6
Upstream  Deck/Roadway Coordinates
    num=       8
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
       0   233.3          120.75     234          218.83     235
  283.83     236          348.16     237          411.15     238
  471.94     239          533.77     240

Upstream Bridge Cross Section Data
Station Elevation Data    num=      50
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0   231.65.790009  231.1513.52002  230.7153.01001  229.69   72.63  229.37
74.90002  229.36   91.16  229.26  119.95  228.99  122.55  228.99  163.76  228.98
  165.16  228.97   181.6  229.11  206.05  229.36  243.35  229.43  246.73  229.44
  248.28  229.44  253.62  229.45  257.47  229.47  260.53  229.29  271.75  228.67
  273.46  228.44  277.03  227.88  278.88  227.43  281.94  226.56  287.91  225.55
  287.95  225.54     289  225.76  297.17  227.49  298.58  227.73  300.08  228.03
   300.4  228.09  300.94  228.19  312.24  230.29  315.41  231.17  320.95  232.18
  323.04  232.54   324.4  232.17  333.83  229.25   337.1  229.81  343.77  230.83
  354.76  232.17  357.88  232.59  362.53  232.87  378.59  234.27  402.93  236.98
  410.39  237.92  417.62  238.36  437.25   238.7  450.09  238.98  483.98  238.68

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .15       0     .15  483.98     .15

Bank Sta: Left   Right    Coeff Contr.   Expan.
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```
             0  483.98             .1       .3

Downstream  Deck/Roadway Coordinates
    num=       8
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
       0   233.3          120.75     234          218.83     235
  283.83     236          348.16     237          411.15     238
  471.94     239          533.77     240

Downstream Bridge Cross Section Data
Station Elevation Data    num=      59
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0  231.167.840027  230.9917.35004  230.6636.15002  230.0656.80005   229.2
71.45001  228.9974.90002  228.91  110.45  227.85  121.34  227.81  135.03  227.59
  149.81   227.4  161.57  227.28  199.27   227.4  212.69  227.43   213.5  227.44
  238.42  227.56  254.25   227.7  281.63     228  295.65   228.2  309.64  228.17
  319.58  228.14  326.27  228.15   327.9  227.99  342.88  226.65  346.25   226.2
  352.23  225.61  353.45  225.42  360.86  224.33  365.11  225.75  370.38   227.5
  370.49  227.54  370.55  227.55  381.57  229.37   388.3  230.15     392  230.53
  394.27  229.93  403.29  227.45  404.65  227.71  408.02  228.17  411.88  228.22
  419.55  228.81   420.7  228.81  458.83  228.83  486.54  228.98  499.57  228.97
  537.02  228.77540.3101  228.78  542.53  228.77  554.05  228.67576.6801  228.67
  581.04  228.62   587.5  228.56  621.78  228.74  644.97  228.82   658.9  228.89
  663.56  229.08  676.06  229.77  690.08  230.42  714.65     232

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .15       0     .15  714.65     .15

Bank Sta: Left   Right    Coeff Contr.   Expan.
             0  714.65             .1       .3

Upstream Embankment side slope              =       0 horiz. to 1.0 vertical
Downstream Embankment side slope            =       0 horiz. to 1.0 vertical
Maximum allowable submergence for weir flow =     .98
Elevation at which weir flow begins         =
Energy head used in spillway design         =
Spillway height used in design              =
Weir crest shape                            = Broad Crested

Number of Culverts =  1

Culvert Name     Shape      Rise    Span
Culvert #1           Box       5      12
FHWA Chart # 8 - Flared wingwalls
FHWA Scale # 1 - Wingwall flared 30 to 75 deg.
Solution Criteria = Highest U.S. EG
Culvert Upstrm Dist  Length    Top n  Bottom n  Depth Blocked  Entrance Loss Coef   Exit Loss →
→Coef
                 6.3      71     .013     .013        0                    .5                1
Number of Barrels =  3
Upstream   Elevation =  225.8
Centerline Stations
    Sta.    Sta.    Sta.
  287.73  300.97     314
Downstream Elevation =  225.38
Centerline Stations
    Sta.    Sta.    Sta.
  354.73  367.55  380.54

CROSS SECTION


RIVER: Alignment 4
REACH: Channel 4          RS: 1337.24

INPUT
Description:
Station Elevation Data    num=      59
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0  231.167.840027  230.9917.35004  230.6636.15002  230.0656.80005   229.2
71.45001  228.9974.90002  228.91  110.45  227.85  121.34  227.81  135.03  227.59
  149.81   227.4  161.57  227.28  199.27   227.4  212.69  227.43   213.5  227.44
  238.42  227.56  254.25   227.7  281.63     228  295.65   228.2  309.64  228.17
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  319.58  228.14  326.27  228.15   327.9  227.99  342.88  226.65  346.25   226.2
  352.23  225.61  353.45  225.42  360.86  224.33  365.11  225.75  370.38   227.5
  370.49  227.54  370.55  227.55  381.57  229.37   388.3  230.15     392  230.53
  394.27  229.93  403.29  227.45  404.65  227.71  408.02  228.17  411.88  228.22
  419.55  228.81   420.7  228.81  458.83  228.83  486.54  228.98  499.57  228.97
  537.02  228.77540.3101  228.78  542.53  228.77  554.05  228.67576.6801  228.67
  581.04  228.62   587.5  228.56  621.78  228.74  644.97  228.82   658.9  228.89
  663.56  229.08  676.06  229.77  690.08  230.42  714.65     232

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .15       0     .15  714.65     .15

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0  714.65           143.96  140.31   94.21             .1       .3

CROSS SECTION


RIVER: Alignment 4
REACH: Channel 4          RS: 1196.93

INPUT
Description:
Station Elevation Data    num=      90
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0  235.97   30.91  234.14    58.9  231.98   74.29  230.95   77.48  230.79
   92.23  229.86  106.82  228.84  117.01  228.01  123.68  227.56  133.69  226.71
   139.2  225.86   142.1  225.65  155.37  224.81  161.06  224.28  172.24  223.99
  198.87  223.33  202.35  223.28  204.45   223.2  208.49  223.14  233.73  222.76
  251.52  222.77  260.88  222.78  267.17  222.88  293.56  223.65  300.35  223.84
  301.86  223.87  304.24  223.88  342.84  224.07  360.45  224.32  380.75  224.58
  393.63  224.58  397.36  224.67  404.47  224.79  419.14  224.99  426.14  225.15
  437.83  225.17  455.23  225.28  465.78  225.34  468.06  225.34  476.75  225.46
  486.65  225.06  492.09  224.92  497.27  225.42  497.81  225.45  507.06  228.72
  507.44  228.83  508.38  228.69  521.91  227.01  526.64  225.94  528.37  225.57
  533.78  224.41  536.59  223.81  540.56  222.85  540.71  222.82  540.92  222.79
  545.65  222.27  549.89  222.66  560.07  224.01  561.48  224.09  567.14  224.32
   568.1  224.37  586.58  225.49  595.64  225.51  595.78  225.52  596.18  225.52
  618.26  225.33   637.6  225.28  673.69   224.9  681.72  224.83  684.65  224.78
  690.94  224.81  714.76  224.78  725.85  224.74  756.27  224.52  769.97   224.4
  774.97  224.53   785.7  224.61  805.07  224.77   814.1  224.71  838.85  224.89
  858.22  225.04  866.52 225.311  872.03  225.49  894.54  225.99  904.06  226.29
  907.49  226.41  908.11  226.36  914.77  226.32  946.47  225.92  950.33  225.96

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .15       0     .15  866.52     .15

Bank Sta: Left   Right    Coeff Contr.   Expan.
             0  866.52            .1       .3
Ineffective Flow     num=       1
   Sta L   Sta R    Elev  Permanent
       0  449.81              F


SUMMARY OF MANNING'S N VALUES

River:Alignment 4

      Reach          River Sta.       n1        n2        n3

 Channel 4            4418.6             .15       .15       .15
 Channel 4            3568.07            .15       .15       .15
 Channel 4            3350.63            .15       .15       .15
 Channel 4            3227.66            .15       .15       .15
 Channel 4            2813.47            .15       .15       .15
 Channel 4            1620.95            .15       .15       .15
 Channel 4            1494.79            .15       .15       .15
 Channel 4            1422.96            .15       .15       .15
 Channel 4            1399.08      Culvert
 Channel 4            1337.24            .15       .15       .15
 Channel 4            1196.93            .15       .15       .15
```



```
SUMMARY OF REACH LENGTHS

River: Alignment 4

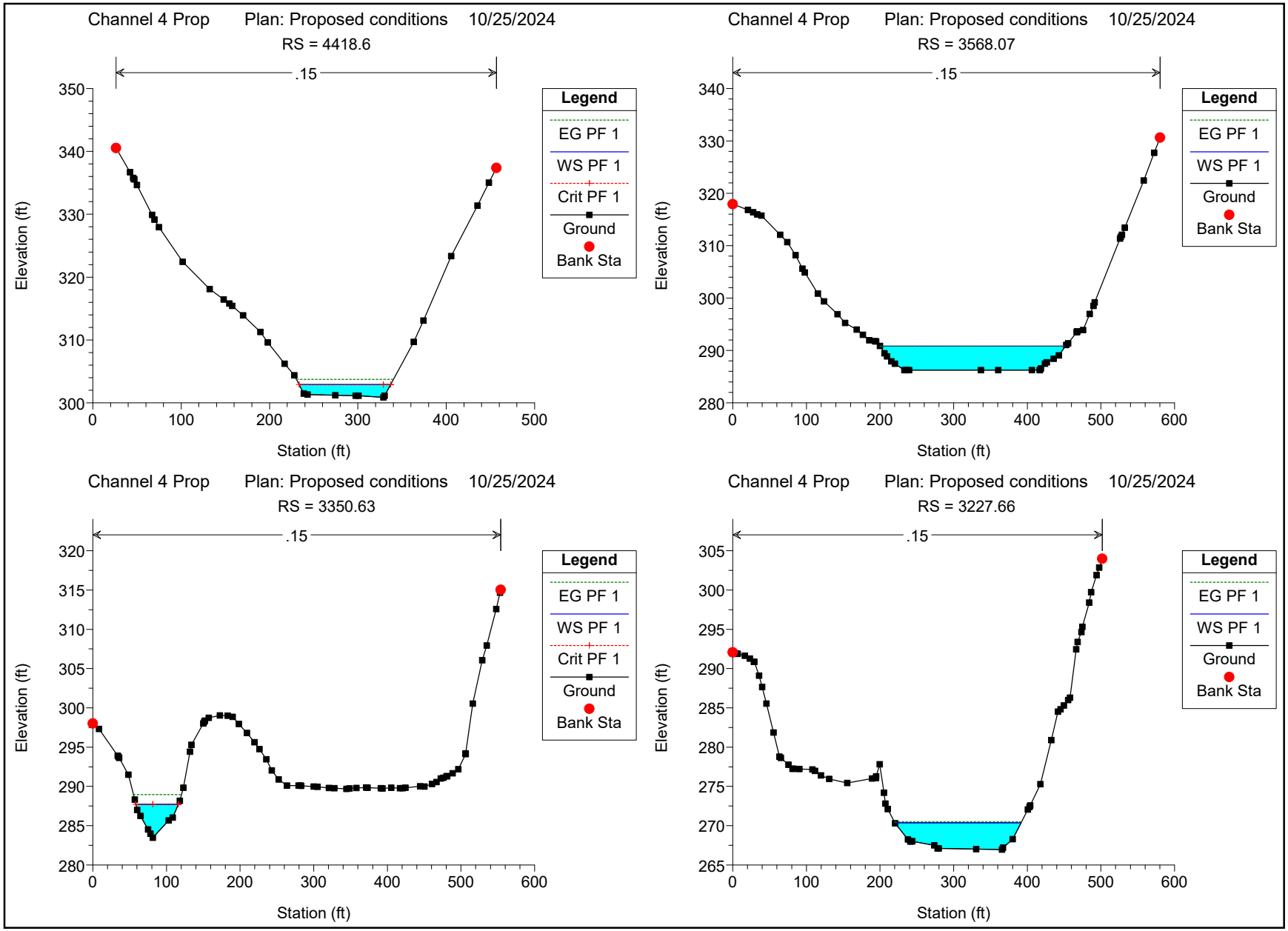
      Reach          River Sta.      Left     Channel    Right

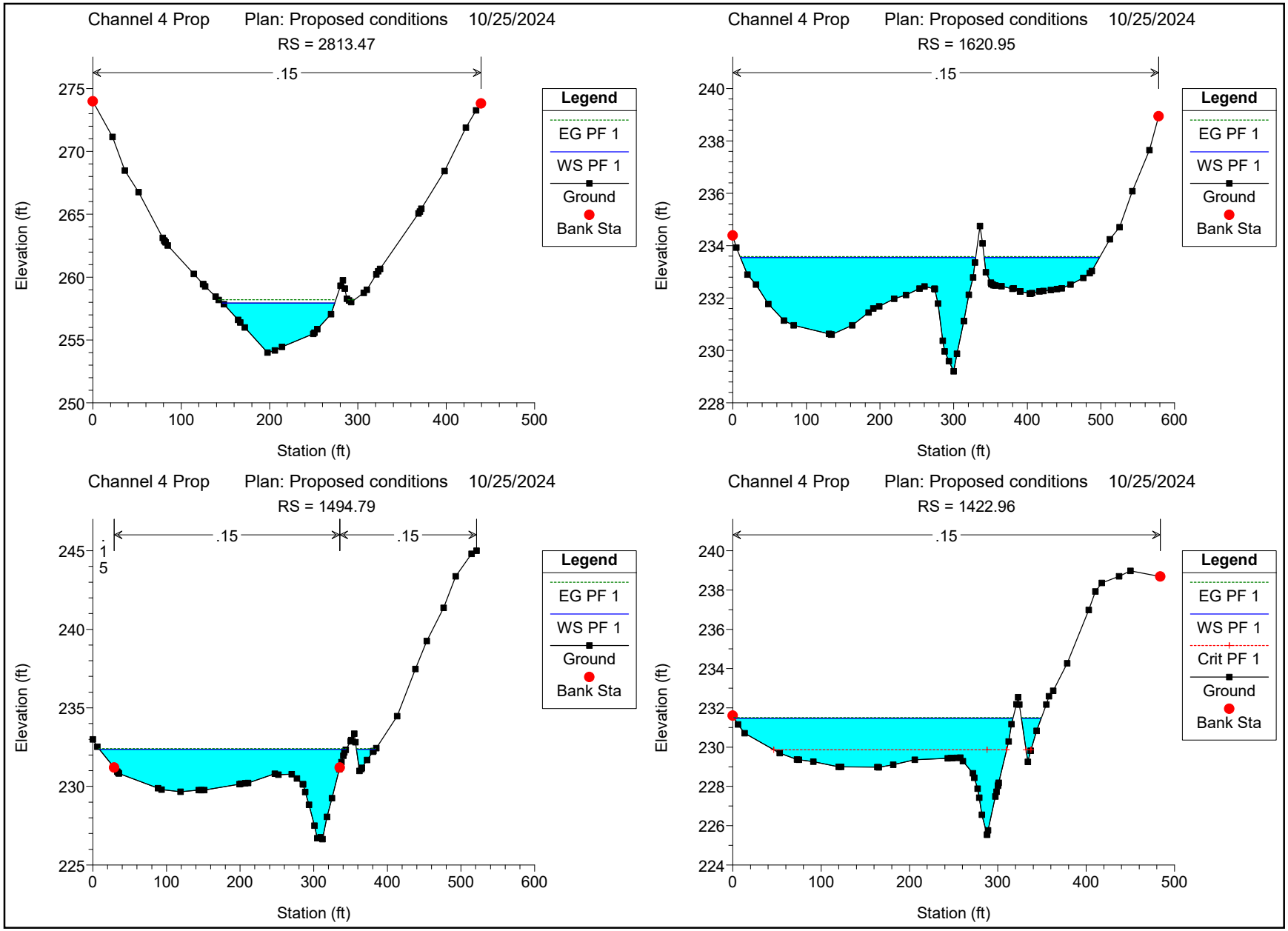
 Channel 4            4418.6          685.44    850.53    895.56
 Channel 4            3568.07         299.41    217.44    166.82
 Channel 4            3350.63         391.23    122.97     61.48
 Channel 4            3227.66         240.21    414.19     436.7
 Channel 4            2813.47        1205.77   1192.52   1377.92
 Channel 4            1620.95          43.26    126.16    118.33
 Channel 4            1494.79          95.75     95.75     95.75
 Channel 4            1422.96         132.21     85.72     92.05
 Channel 4            1399.08      Culvert
 Channel 4            1337.24         143.96    140.31     94.21
 Channel 4            1196.93

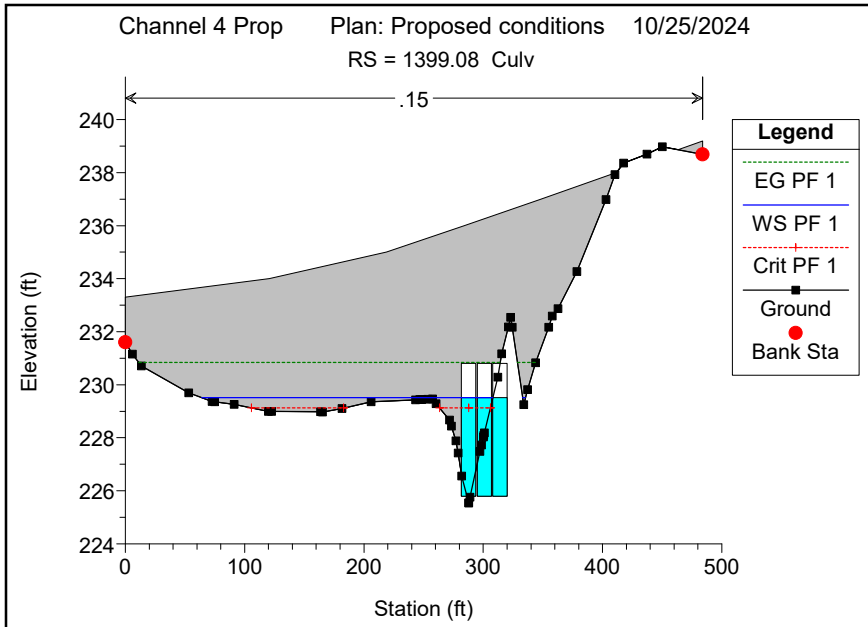

SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS
River: Alignment 4

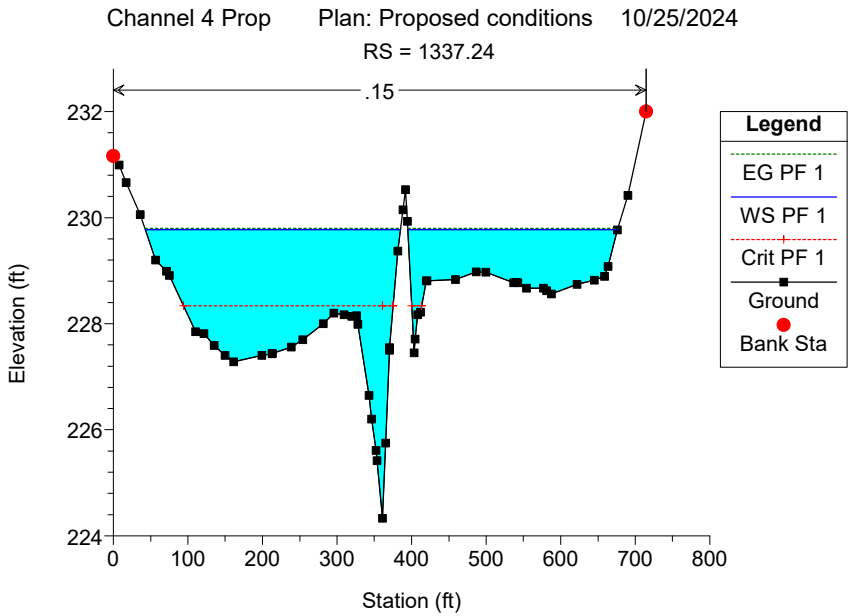
      Reach          River Sta.     Contr.    Expan.

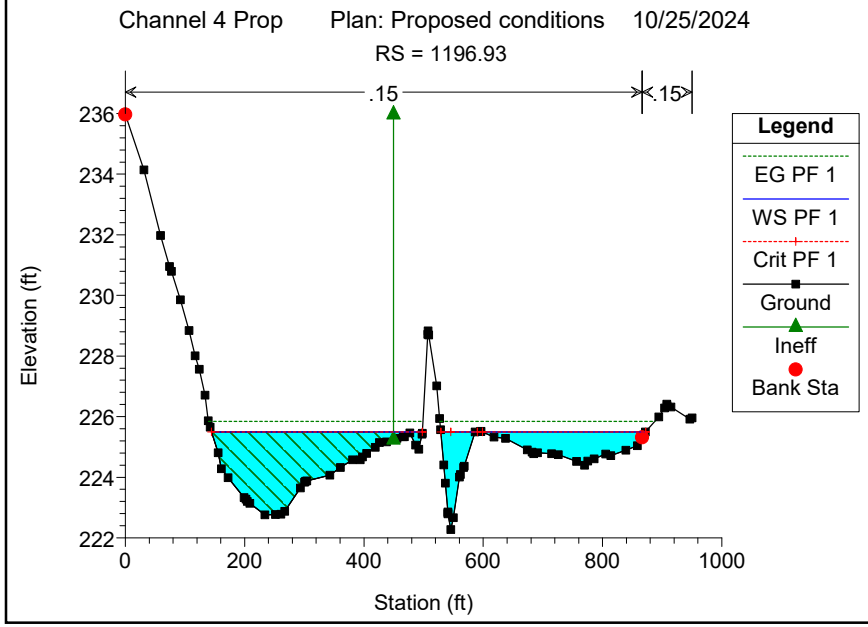
 Channel 4            4418.6           .1        .3
 Channel 4            3568.07          .1        .3
 Channel 4            3350.63          .1        .3
 Channel 4            3227.66          .1        .3
 Channel 4            2813.47          .1        .3
 Channel 4            1620.95          .1        .3
 Channel 4            1494.79          .1        .3
 Channel 4            1422.96          .1        .3
 Channel 4            1399.08  Culvert
 Channel 4            1337.24          .1        .3
 Channel 4            1196.93          .1        .3
```


Channel 4 Prop
Plan: Proposed conditions
10/25/2024
RS = 4418.6
.15
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Channel 4 Prop
Plan: Proposed conditions
10/25/2024
RS = 3568.07
.15
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Channel 4 Prop
Plan: Proposed conditions
10/25/2024
RS = 3350.63
.15
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Channel 4 Prop
Plan: Proposed conditions
10/25/2024
RS = 3227.66
.15
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta


Channel 4 Prop
Plan: Proposed conditions
10/25/2024
RS = 2813.47
.15
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Channel 4 Prop
Plan: Proposed conditions
10/25/2024
RS = 1620.95
.15
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Channel 4 Prop
Plan: Proposed conditions
10/25/2024
RS = 1494.79
.15
.15
.15
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Channel 4 Prop
Plan: Proposed conditions
10/25/2024
RS = 1422.96
.15
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta


Channel 4 Prop
Plan: Proposed conditions
10/25/2024
RS = 1399.08 Culv
.15
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta


Channel 4 Prop
Plan: Proposed conditions
10/25/2024
RS = 1337.24
.15
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta


Channel 4 Prop
Plan: Proposed conditions
10/25/2024
RS = 1196.93
.15
.15
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Ineff
Bank Sta

HEC-RAS Plan: Prop River: Alignment 4 Reach: Channel 4 Profile: PF 1

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Channel 4	4418.6	PF 1	1237.50	300.85	302.90	302.90	303.73	0.281925	7.29	169.79	103.65	1.00
Channel 4	3568.07	PF 1	1237.50	286.25	290.80		290.82	0.002417	1.23	1008.62	251.55	0.11
Channel 4	3350.63	PF 1	1237.50	283.47	287.73	287.73	288.96	0.254197	8.90	139.11	57.78	1.01
Channel 4	3227.66	PF 1	1237.50	266.97	270.38		270.49	0.018656	2.64	468.63	171.47	0.28
Channel 4	2813.47	PF 1	1237.50	254.00	257.94		258.20	0.054178	4.10	301.88	127.02	0.47
Channel 4	1620.95	PF 1	1237.50	229.20	233.55		233.58	0.010756	1.49	831.40	476.01	0.20
Channel 4	1494.79	PF 1	1237.50	226.64	232.36		232.40	0.008244	1.63	780.74	360.63	0.18
Channel 4	1422.96	PF 1	1237.50	225.54	231.47	229.86	231.51	0.010669	1.70	727.25	337.61	0.20
Channel 4	1399.08		Culvert									
Channel 4	1337.24	PF 1	1237.50	224.33	229.77	228.34	229.80	0.009398	1.28	964.54	623.27	0.18
Channel 4	1196.93	PF 1	1237.50	222.27	225.50	225.50	225.84	0.367260	4.71	263.22	688.84	1.00

APPENDIX 8

Hydraulics Calculations

Inlet Calculations

F-type Catch Basins Cw= 3

Location	Node	Proposed Condition 100 Year Discharge (cfs)	Number of Openings	Length of Opening (ft)	Weir Flow Analysis Head (ft)	Comment
PA1	1024	1.6	2	3	0.20	Regular
	1025	3.1	1	4	0.41	Regular
	1084	1.2	1	3	0.26	Regular
	1028	4	1	3	0.58	Regular
	1082	2.1	1	3	0.38	Regular
	1062	3.8	1	3	0.56	Regular
	1203	2.3	2	3	0.25	Regular
	1309	5.5	2	3	0.45	Regular
	1333	6.5	1	4	0.66	MOD
	1314	8.9	2	3	0.63	Regular
	1339	0.6	1	3	0.16	MOD
PA2	2322	4	1	3	0.58	Regular
	2009	11.6	2	4	0.62	MOD
	2039	15.8	2	5	0.65	MOD
PA3	3135	4.6	1	3	0.64	Regular
	3134	0.7	2	3	0.11	Regular
	3132	15	3	4	0.56	MOD
	3102	40.6	See note	See note	0.86	MOD, two 4' openings plus one 9' opening, deeper opening (one ft deep)
	3052	7.7	2	3	0.57	Regular
	3902	10.7	2	3	0.71	MOD
	3802	23.9	3	5	0.66	MOD
	3702	13.4	2	4	0.68	MOD
	3402	31.4	3	5	0.79	MOD
	3405	1.9	2	3	0.22	Regular
	3336	3.6	2	3	0.34	Regular
	3230	0.7	1	3	0.18	Regular
	3019	1.4	1	3	0.29	Regular
	3161	4.8	2	4	0.34	MOD
	3166	2	2	3	0.23	Regular
	3452	12.5	2	3.5	0.71	MOD, 1-3' OPENING, 1-4' OPENING
	3230	0.7	1	3	0.18	Regular
	3229	1.4	1	3	0.29	Regular
	3223	12.1	2	4	0.63	MOD
	3220	2.6	1	3	0.44	Regular
	3343	6.7	2	3	0.52	Regular
	3341	7.9	2	3	0.58	Regular
	3334	13.3	2	4	0.67	MOD
	3348	7.7	2	3	0.57	Regular
LILAC	4010	7.5	2	3	0.56	Regular
	4032	25	4	4	0.65	MOD
	4034	5.9	1	4	0.62	MOD
	4042	8.4	1	5	0.68	MOD
	4052	4	2	5	0.26	MOD
	4057	5.3	2	3	0.44	Regular
	5004	9.5	1	5	0.74	MOD
	5002	19.9	3	4	0.67	MOD

GRATE INLET SIZING

Riser Grate Inlets with no Detention

C_W= 3 C_O= 0.6

C_L= 0 C_A= 0

Inlet Location	Node	Proposed Condition 100 Year Discharge (cfs)	Actual Grate Perimeter	Effective grate perimeter length	d	Qweir	Area of grate, A	Effective Grate Area, Ae	Qorifice	Qcapacity= Min(Qweir, Qorifice)	Comment
1B		13.5	15.6	15.6	0.44	13.5	14.1	14.1	44.8	13.5	G-3
2D		12.5	12.4	12.4	0.49	12.8	9.4	9.4	31.7	12.8	G-2
2E		9.8	15.6	15.6	0.36	10.1	14.1	14.1	40.7	10.1	G-3
2F		11.8	15.6	15.6	0.4	11.8	14.1	14.1	42.9	11.8	G-3
2G		16.6	15.6	15.6	0.5	16.5	14.1	14.1	48.0	16.5	G-3
2I		11.2	15.6	15.6	0.39	11.2	14.1	14.1	42.1	11.2	G-2
3B		5.1	9.2	9.2	0.33	5.1	4.7	4.7	12.9	5.1	G-1
3F		9.1	9.2	9.2	0.48	9.1	4.7	4.7	15.6	9.1	G-1
3H		6.2	15.6	15.6	0.26	6.2	4.7	4.7	11.5	6.2	G-1
3J		3.0	9.2	9.2	0.23	3.0	4.7	4.7	10.9	3.0	G-1
3K		3.5	9.2	9.2	0.25	3.5	4.7	4.7	11.3	3.5	G-1
3I		9.4	15.6	15.6	0.35	9.7	14.1	14.1	40.2	9.7	G-3

Grate Inlets

C_W= 3 C_O= 0.6

C_L= 0.5 C_A= 0.5

Inlet Location	Node	Proposed Condition 100 Year Discharge (cfs)	Actual Grate Perimeter	Effective grate perimeter length	d	Qweir	Area of grate, A	Effective Grate Area, Ae	Qorifice	Qcapacity= Min(Qweir, Qorifice)	Comment
PA2	2121	1.4	9.2	4.6	0.22	1.4	4.7	2.35	5.3	1.4	Type I
	2305	4.1	9.2	4.6	0.44	4.1	4.7	2.35	7.5	4.1	Type I
	2412	1.8	9.2	4.6	0.26	1.8	4.7	2.35	5.8	1.8	Type I
	2414	1.3	9.2	4.6	0.21	1.3	4.7	2.35	5.2	1.3	Type I
	2221	0.8	9.2	4.6	0.15	0.8	4.7	2.35	4.4	0.8	Type I
	2219	1.0	9.2	4.6	0.46	4.3	4.7	2.35	7.7	4.3	Type I
	2222	0.7	9.2	4.6	0.14	0.7	4.7	2.35	4.2	0.7	Type I
	2205	0.9	9.2	4.6	0.16	0.9	4.7	2.35	4.5	0.9	Type I
	2013	28.4	15.6	7.8	1.14	28.5	14.1	7.05	36.2	28.5	Type G-3
	2033	15.2	15.6	7.8	0.75	15.2	14.1	7.05	29.4	15.2	Type G-3
	2035	2.4	9.2	4.6	0.31	2.4	4.7	2.35	6.3	2.4	Type I

OCEAN BREEZE RANCH

Curb Inlets at Sags Cw= 3.0 (based on Table 2-1 (Page 2-7 County Hydraulic Manual))

Inlet Location	System	Node	Proposed Condition100 Year Discharge (cfs)	h, Height of Opening (in)	Lw, Length Required for Full Capture[1] (ft)	Length of Opening (ft)	Notes (including emergency overflow location)
PA1	1000	1015	13.5	6	13.1	14	Emergency overflow will drain towards HOA Lot I.
		1032	5.7	6	5.5	6	Emergency overflow will drain towards HOA Lot T.
		1034	7.7	6	7.5	8	Emergency overflow will drain towards HOA Lot T.
	1100	1104	3.0	6	2.9	5	Emergency overflow will drain towards basin.
		1105	4.5	6	4.4	5	Emergency overflow will drain towards basin.
	1200	1211	14.3	6	13.9	14	Q1211+Q1209 BYPASS = 12.3+2.02 = 14.32 CFS, Emergency overflow will drain towards basin.
PA2	2000	2002	16.3	6	15.8	16	Emergency overflow will drain towards basin.
	2015	2017	11.6	6	11.3	12	Emergency overflow will drain towards basin.
	2023	2025	11.0	6	10.7	11	Emergency overflow will drain towards basin.
	2027	2026	12.2	6	11.8	12	Emergency overflow will drain towards basin.
	2040	2051	8.4	6	8.1	9	Q2051+Q2049 BYPASS =8.0+0.4 =8.4 CFS. Emergency overflow will drain towards basin.
	2058	2060	9.7	6	9.4	10	Emergency overflow will drain towards basin.
	2100	2115	8.8	6	8.8	9	Emergency overflow will drain towards basin.
		2117	5.9	6	5.7	6	Emergency overflow will drain towards basin.
		2120	4.5	6	4.4	5	Emergency overflow will drain towards basin.
	2200	2214	5.0	6	4.9	7	Emergency overflow will drain towards basin.
		2215	4.3	6	4.2	5	Emergency overflow will drain towards basin.
	2300	2315	8.4	6	8.2	10	Emergency overflow will drain towards basin.
		2316	4.0	6	3.9	4	Emergency overflow will drain towards basin.
	2400	2405	6.8	6	6.6	7	Emergency overflow will drain down Street G and drain towards basin.
PA3	3000	3008	3.2	6	3.1	4	Emergency overflow will drain towards basin.
		3009	2.6	6	2.5	4	Emergency overflow will drain towards basin.
	3150	3152	2.9	6	2.8	4	Emergency overflow will drain towards open space.
		3155	1.9	6	1.8	4	Emergency overflow will drain towards open space.
	3200	3210	1.7	6	1.6	4	Emergency overflow will drain towards basin.
		3212	3.6	6	3.5	4	Emergency overflow will drain towards basin.
	3300	3321	2.8	6	2.7	4	Emergency overflow will drain towards basin.
		3322	4.3	6	4.2	5	Emergency overflow will drain towards basin.
	3350	3358	3.8	6	3.7	4	Emergency overflow will drain towards basin.
		3360	3.8	6	3.7	4	Emergency overflow will drain towards basin.
	3950	3952	3.2	6	3.1	4	Emergency overflow will drain towards basin.
		3953	4.0	6	3.9	4	Emergency overflow will drain towards basin.
Notes:							

(1) Based on weir calculation from San Diego County Hydraulic Design Manual (Page 2-6), assuming capacity of 1.03 cfs/foot

$$Q = C_W L_W d^{3/2}$$

OCEAN BREEZE RANCH

Continuous Grade Curb Inlets a= 0.33 =depression (ft)

Inlet Location	System	Node	Proposed Condition 100-Year Discharge (cfs)	Channel Slope (ft/ft)	y, Actual Depth (ft)	L_T, Length required for full capture*	Length of opening	Efficiency	Bypass Flow (cfs)	Notes
PA-1										
ROAD B	1000	1002	5.1	0.0600	0.30	14.7	15	100%	0.00	
ROAD B		1004	2.4	0.0600	0.24	8.1	11	100%	0.00	
ROAD O		1008	5.4	0.0355	0.33	14.33	10	88%	0.62	BYPASS FLOW TO NODE 1013 INLET
ROAD O		1009	5.2	0.0355	0.32	14.2	14	100%	0.00	
ROAD O		1013	5.7	0.0250	0.35	14.6	15	100%	0.00	Q1013+Q1108 BYPASS = 5.1+0.62 = 5.72 CFS
ROAD O		1014	7.1	0.0250	0.37	17.3	17	100%	0.00	
ROAD B		1019	3.5	0.0834	0.26	11.0	11	100%	0.00	
ROAD B		1023	6.1	0.0834	0.30	17.4	18	100%	0.00	
ROAD B		1025	3.4	0.0834	0.26	10.7	12	100%	0.00	
ROAD B		1027	6.3	0.0600	0.32	17.1	18	100%	0.00	
ROAD B		1038	1.9	0.0649	0.23	6.3	7	100%	0.00	
ROAD B		1040	2.3	0.0600	0.24	7.5	8	100%	0.00	
ROAD M		1044	2.4	0.0324	0.26	7.7	8	100%	0.00	
ROAD M		1045	7.2	0.0324	0.36	17.8	17	100%	0.03	
ROAD M		1049	6.9	0.0230	0.37	16.9	17	100%	0.00	
ROAD M		1050	6.8	0.0230	0.37	16.6	17	100%	0.00	
ROAD M		1054	6.5	0.0675	0.31	18.2	18	100%	0.00	
ROAD M		1055	7.2	0.0675	0.32	19.7	20	100%	0.00	
ROAD B		1059	3.1	0.0600	0.26	9.8	12	100%	0.00	
ROAD B		1060	8.6	0.0600	0.35	21.9	20	99%	0.11	BYPASS FLOW TO NODE 1077
ROAD L		1066	6.2	0.0250	0.36	15.3	16	100%	0.00	
ROAD L		1068	8.6	0.0250	0.39	20.0	20	100%	0.00	
ROAD L		1072	5.9	0.0250	0.35	15.1	15	100%	0.00	
ROAD L		1073	5.9	0.0250	0.35	15.0	15	100%	0.00	
ROAD B		1077	8.7	0.0100	0.45	18.1	20	100%	0.00	Q1077+Q1060 BYPASS = 8.6+0.11 = 8.7 CFS
ROAD B		1078	1.5	0.0100	0.27	4.7	6	100%	0.00	
ROAD A	1100.00	1102	4.7	0.0600	0.29	13.8	14	100%	0.00	
ROAD A		1108-up	8.4	0.0600	0.34	22.0	20	99%	0.11	BYPASS FLOW GOES TO NODE 1108-down
ROAD A		1108-down	0.1	0.0600	0.08	0.6	9	100%	0.00	
ROAD B	1200.00	1202	3.9	0.0650	0.27	12.1	16	100%	0.00	
ROAD B		1205	3.4	0.0650	0.26	10.7	20	100%	0.00	
ROAD B		1209	13.2	0.0600	0.39	30.9	20	85%	2.02	BYPASS FLOW TO NODE 1211
ROAD B		1210	1.9	0.0600	0.23	6.4	8	100%	0.00	
PA-2										
ROAD D (18' HALFWIDTH)	2040	2042	6.5	0.0100	0.41	14.6	15	100%	0.00	
ROAD D (18' HALFWIDTH)		2044	0.7	0.0100	0.22	2.5	4	100%	0.00	
ROAD D (18' HALFWIDTH)		2045	3.5	0.0100	0.35	8.9	9	100%	0.00	
ROAD D (16' HALFWIDTH)		2049	3.9	0.0100	0.36	9.7	7	90%	0.39	BYPASS FLOW TO NODE 2051
ROAD C (18' HALFWIDTH)	2100	2102	4.7	0.0100	0.38	11.2	10	98%	0.08	BYPASS FLOW TO NODE 2108
ROAD C (18' HALFWIDTH)		2104	5.6	0.0100	0.40	12.7	13	100%	0.00	
ROAD C (18' HALFWIDTH)		2108	3.8	0.0100	0.35	9.6	10	100%	0.00	Q2108+Q2102=3.7+0.08 = 3.78
ROAD C (18' HALFWIDTH)		2109	3.5	0.0100	0.35	9.0	9	100%	0.00	
ROAD C (16' HALFWIDTH)		2113	3.5	0.0150	0.33	9.4	7	91%	0.31	BYPASS FLOW TO NODE 2123
ROAD C (16' HALFWIDTH)		2114	3.0	0.0150	0.31	8.3	9	100%	0.00	
ROAD C (16' HALFWIDTH)		2123	2.6	0.0100	0.32	7.1	7	100%	0.00	Q2123+Q2113=2.3+0.31 = 2.61
ROAD C (16' HALFWIDTH)		2124	2.3	0.0100	0.31	6.4	7	100%	0.00	
ROAD A	2200	2202	5.9	0.0100	0.40	13.6	12	98%	0.12	BYPASS FLOW TO NODE 2210

Continuous Grade Curb Inlets a= 0.33 =depression (ft)

Inlet Location	System	Node	Proposed Condition 100-Year Discharge (cfs)	Channel Slope (ft/ft)	y, Actual Depth (ft)	L_T, Length required for full capture*	Length of opening	Efficiency	Bypass Flow (cfs)	Notes
ROAD A		2204	2.4	0.0100	0.31	6.6	7	100%	0.00	
ROAD A		2224	4.9	0.0100	0.38	11.7	12	100%	0.00	
ROAD A		2209	1.7	0.0100	0.28	5.2	6	100%	0.00	
ROAD A		2210	3.1	0.0100	0.33	8.3	9	100%	0.00	
ROAD A	2300	2302	5.8	0.0300	0.34	15.1	15	100%	0.00	
ROAD A		2304	4.5	0.0300	0.32	12.1	13	100%	0.00	
ROAD B		2307	3.3	0.0200	0.31	9.3	12	100%	0.00	
ROAD A		2309	1.2	0.0100	0.26	3.8	4	100%	0.00	
ROAD A		2326	4.1	0.0100	0.36	10.2	11	100%	0.00	
ROAD A		2311	3.9	0.0100	0.36	9.7	13	100%	0.00	
ROAD A		2325	4.2	0.0250	0.32	11.4	19	100%	0.00	
ROAD G	2400	2402	3.7	0.0154	0.33	9.8	10	100%	0.00	
ROAD G		2404	6.0	0.0154	0.38	14.2	14	100%	0.00	
ROAD A		2409	5.9	0.0100	0.40	13.6	14	100%	0.00	
ROAD A		2411	2.5	0.0100	0.31	6.9	7	100%	0.00	
PA3										
DULIN	3000	3002	2.9	0.1121	0.24	9.6	12	100%	0.00	
DULIN		3004	3.4	0.1121	0.25	11.0	11	100%	0.00	
DULIN	3200	3202	1.2	0.0082	0.26	3.8	11	100%	0.00	
DULIN		3205	2.7	0.0082	0.33	7.2	10	100%	0.00	
ROAD P	3300	3302	2.0	0.0585	0.23	6.8	7	100%	0.00	
ROAD P		3305	1.8	0.0585	0.23	6.1	6	100%	0.00	
ROAD P		3307	1.4	0.0585	0.21	5.0	5	100%	0.00	
ROAD P		3308	1.0	0.0585	0.19	3.9	4	100%	0.00	
ROAD P		3310	0.6	0.0264	0.19	2.3	4	100%	0.00	
ROAD P		3311	1.6	0.0264	0.24	5.3	6	100%	0.00	
ROAD P		3373	2.1	0.0350	0.25	6.8	7	100%	0.00	
DULIN		3375	5.2	0.0109	0.38	12.4	13	100%	0.00	
W. LILAC	4000	4002	7.3	0.0250	0.37	17.8	19	100%	0.00	
W. LILAC		4054	3.8	0.0200	0.32	10.3	12	100%	0.00	
W. LILAC		4004	5.8	0.0481	0.32	15.8	16	100%	0.00	
W. LILAC		4059	5.7	0.0192	0.36	14.1	14	100%	0.00	
ROAD A		4018	2.7	0.0744	0.24	8.8	9	100%	0.00	
ROAD A		4019	1.9	0.0744	0.22	6.8	7	100%	0.00	
W. LILAC		4010	2.5	0.0429	0.26	7.9	20	100%	0.00	
W. LILAC	4060	4062	5.4	0.0431	0.32	14.7	15	100%	0.00	
W. LILAC	4070	4072	4.3	0.0540	0.29	12.6	15	100%	0.00	
W. LILAC (NEXT TO SCHOOL)	5000	5010	7.3	0.0368	0.35	18.5	18	100%	0.01	Q5010+Q5014 BYPASS=7.2+0.07 = 7.27 CFS
		5014	8.3	0.0688	0.34	21.5	20	99%	0.07	BYPASS FLOW TO 5010

* Equation for opening length required for full capture (Page 2-5 San Diego County Hydraulic Design Manual)

$$L_T = \frac{Q_{APPROACH}}{0.7(a+y)^{3/2}}$$

Culvert Calculations

Culvert Calculator Report
Y-1_West 5x2

Solve For: Headwater Elevation

Culvert Summary					
Allowable HW Elevation	200.93	ft	Headwater Depth/Height	2.02	
Computed Headwater Elevation	200.56	ft	Discharge	150.50	cfs
Inlet Control HW Elev.	200.56	ft	Tailwater Elevation	0.00	ft
Outlet Control HW Elev.	200.08	ft	Control Type	Inlet Control	

Grades					
Upstream Invert	196.53	ft	Downstream Invert	196.25	ft
Length	31.55	ft	Constructed Slope	0.007000	ft/ft

Hydraulic Profile					
Profile	S2		Depth, Downstream	1.69	ft
Slope Type	Steep		Normal Depth	1.60	ft
Flow Regime	Supercritical		Critical Depth	1.92	ft
Velocity Downstream	8.91	ft/s	Critical Slope	0.004234	ft/ft

Section					
Section Shape	Box		Mannings Coefficient	0.013	
Section Material	Concrete		Span	5.00	ft
Section Size	5 x 2 ft		Rise	2.00	ft
Number Sections	2				

Outlet Control Properties					
Outlet Control HW Elev.	200.08	ft	Upstream Velocity Head	0.96	ft
Ke	0.70		Entrance Loss	0.67	ft

Inlet Control Properties					
Inlet Control HW Elev.	200.56	ft	Flow Control	N/A	
Inlet Type	0° wingwall flares		Area Full	20.0	ft²
K	0.06100		HDS 5 Chart	8	
M	0.75000		HDS 5 Scale	3	
C	0.04230		Equation Form	1	
Y	0.82000				

Culvert Calculator Report
Y-2_2-18 Crossing West

Solve For: Headwater Elevation

Culvert Summary					
Allowable HW Elevation	210.33	ft	Headwater Depth/Height	1.14	
Computed Headwater Elevation	205.91	ft	Discharge	14.10	cfs
Inlet Control HW Elev.	205.84	ft	Tailwater Elevation	0.00	ft
Outlet Control HW Elev.	205.91	ft	Control Type	Outlet Control	

Grades					
Upstream Invert	204.20	ft	Downstream Invert	203.90	ft
Length	49.49	ft	Constructed Slope	0.006062	ft/ft

Hydraulic Profile					
Profile	M2		Depth, Downstream	1.03	ft
Slope Type	Mild		Normal Depth	1.07	ft
Flow Regime	Subcritical		Critical Depth	1.03	ft
Velocity Downstream	5.46	ft/s	Critical Slope	0.006797	ft/ft

Section					
Section Shape	Circular		Mannings Coefficient	0.013	
Section Material	Concrete		Span	1.50	ft
Section Size	18 inch		Rise	1.50	ft
Number Sections	2				

Outlet Control Properties					
Outlet Control HW Elev.	205.91	ft	Upstream Velocity Head	0.42	ft
Ke	0.50		Entrance Loss	0.21	ft

Inlet Control Properties					
Inlet Control HW Elev.	205.84	ft	Flow Control	N/A	
Inlet Type	Square edge w/headwall		Area Full	3.5	ft²
K	0.00980		HDS 5 Chart	1	
M	2.00000		HDS 5 Scale	1	
C	0.03980		Equation Form	1	
Y	0.67000				

Culvert Calculator Report
Y-3_3-18 West Node 3564

Solve For: Headwater Elevation

Culvert Summary					
Allowable HW Elevation	210.50	ft	Headwater Depth/Height	0.65	
Computed Headwater Elevation	207.37	ft	Discharge	16.50	cfs
Inlet Control HW Elev.	207.23	ft	Tailwater Elevation	0.00	ft
Outlet Control HW Elev.	207.37	ft	Control Type	Entrance Control	

Grades					
Upstream Invert	206.07	ft	Downstream Invert	205.82	ft
Length	45.70	ft	Constructed Slope	0.005470	ft/ft

Hydraulic Profile					
Profile	S2		Depth, Downstream	0.79	ft
Slope Type	Steep		Normal Depth	0.79	ft
Flow Regime	Supercritical		Critical Depth	0.83	ft
Velocity Downstream	4.77	ft/s	Critical Slope	0.004593	ft/ft

Section					
Section Shape	Circular		Mannings Coefficient	0.013	
Section Material	Concrete		Span	2.00	ft
Section Size	24 inch		Rise	2.00	ft
Number Sections	3				

Outlet Control Properties					
Outlet Control HW Elev.	207.37	ft	Upstream Velocity Head	0.31	ft
Ke	0.50		Entrance Loss	0.16	ft

Inlet Control Properties					
Inlet Control HW Elev.	207.23	ft	Flow Control	N/A	
Inlet Type	Square edge w/headwall		Area Full	9.4	ft²
K	0.00980		HDS 5 Chart	1	
M	2.00000		HDS 5 Scale	1	
C	0.03980		Equation Form	1	
Y	0.67000				

Culvert Calculator Report
Y-4_2-18 Crossing West

Solve For: Headwater Elevation

Culvert Summary					
Allowable HW Elevation	213.00	ft	Headwater Depth/Height	1.54	
Computed Headwater Elevation	208.65	ft	Discharge	18.90	cfs
Inlet Control HW Elev.	208.48	ft	Tailwater Elevation	0.00	ft
Outlet Control HW Elev.	208.65	ft	Control Type	Outlet Control	

Grades					
Upstream Invert	206.34	ft	Downstream Invert	206.08	ft
Length	53.15	ft	Constructed Slope	0.002407	ft/ft

Hydraulic Profile					
Profile	CompositeM2PressureProfile		Depth, Downstream	1.19	ft
Slope Type	Mild		Normal Depth	N/A	ft
Flow Regime	Subcritical		Critical Depth	1.19	ft
Velocity Downstream	6.30	ft/s	Critical Slope	0.008646	ft/ft

Section					
Section Shape	Circular		Mannings Coefficient	0.013	
Section Material	Concrete		Span	1.50	ft
Section Size	18 inch		Rise	1.50	ft
Number Sections	2				

Outlet Control Properties					
Outlet Control HW Elev.	208.65	ft	Upstream Velocity Head	0.44	ft
Ke	0.50		Entrance Loss	0.22	ft

Inlet Control Properties					
Inlet Control HW Elev.	208.48	ft	Flow Control	N/A	
Inlet Type	Square edge w/headwall		Area Full	3.5	ft²
K	0.00980		HDS 5 Chart	1	
M	2.00000		HDS 5 Scale	1	
C	0.03980		Equation Form	1	
Y	0.67000				

Culvert Calculator Report
Y-5_3-18 Crossing West

Solve For: Headwater Elevation

Culvert Summary					
Allowable HW Elevation	215.00	ft	Headwater Depth/Height	0.90	
Computed Headwater Elevation	213.02	ft	Discharge	14.40	cfs
Inlet Control HW Elev.	212.90	ft	Tailwater Elevation	0.00	ft
Outlet Control HW Elev.	213.02	ft	Control Type	Entrance Control	

Grades					
Upstream Invert	211.66	ft	Downstream Invert	210.76	ft
Length	45.65	ft	Constructed Slope	0.019715	ft/ft

Hydraulic Profile					
Profile	S2		Depth, Downstream	0.60	ft
Slope Type	Steep		Normal Depth	0.59	ft
Flow Regime	Supercritical		Critical Depth	0.84	ft
Velocity Downstream	7.27	ft/s	Critical Slope	0.005696	ft/ft

Section					
Section Shape	Circular		Mannings Coefficient	0.013	
Section Material	Concrete		Span	1.50	ft
Section Size	18 inch		Rise	1.50	ft
Number Sections	3				

Outlet Control Properties					
Outlet Control HW Elev.	213.02	ft	Upstream Velocity Head	0.34	ft
Ke	0.50		Entrance Loss	0.17	ft

Inlet Control Properties					
Inlet Control HW Elev.	212.90	ft	Flow Control	N/A	
Inlet Type	Square edge w/headwall		Area Full	5.3	ft²
K	0.00980		HDS 5 Chart	1	
M	2.00000		HDS 5 Scale	1	
C	0.03980		Equation Form	1	
Y	0.67000				

Culvert Calculator Report
Y-6_Center East 5x2 Node 3171

Solve For: Headwater Elevation

Culvert Summary					
Allowable HW Elevation	215.05	ft	Headwater Depth/Height	1.39	
Computed Headwater Elevation	212.97	ft	Discharge	120.40	cfs
Inlet Control HW Elev.	212.97	ft	Tailwater Elevation	0.00	ft
Outlet Control HW Elev.	212.84	ft	Control Type	Inlet Control	

Grades					
Upstream Invert	210.20	ft	Downstream Invert	210.00	ft
Length	40.00	ft	Constructed Slope	0.005000	ft/ft

Hydraulic Profile					
Profile	S2		Depth, Downstream	1.55	ft
Slope Type	Steep		Normal Depth	1.54	ft
Flow Regime	Supercritical		Critical Depth	1.65	ft
Velocity Downstream	7.78	ft/s	Critical Slope	0.004097	ft/ft

Section					
Section Shape	Box		Mannings Coefficient	0.013	
Section Material	Concrete		Span	5.00	ft
Section Size	5 x 2 ft		Rise	2.00	ft
Number Sections	2				

Outlet Control Properties					
Outlet Control HW Elev.	212.84	ft	Upstream Velocity Head	0.83	ft
Ke	0.20		Entrance Loss	0.17	ft

Inlet Control Properties					
Inlet Control HW Elev.	212.97	ft	Flow Control	N/A	
Inlet Type	90° headwall w 45° bevels		Area Full	20.0	ft²
K	0.49500		HDS 5 Chart	10	
M	0.66700		HDS 5 Scale	2	
C	0.03140		Equation Form	2	
Y	0.82000				

Culvert Calculator Report
Y-7_East-2x36 Node 3225

Solve For: Headwater Elevation

Culvert Summary					
Allowable HW Elevation	221.00	ft	Headwater Depth/Height	1.87	
Computed Headwater Elevation	222.46	ft	Discharge	156.50	cfs
Inlet Control HW Elev.	222.46	ft	Tailwater Elevation	0.00	ft
Outlet Control HW Elev.	222.21	ft	Control Type	Inlet Control	

Grades					
Upstream Invert	216.86	ft	Downstream Invert	216.14	ft
Length	48.68	ft	Constructed Slope	0.014790	ft/ft

Hydraulic Profile					
Profile	S2		Depth, Downstream	2.54	ft
Slope Type	Steep		Normal Depth	2.37	ft
Flow Regime	Supercritical		Critical Depth	2.75	ft
Velocity Downstream	12.26	ft/s	Critical Slope	0.011963	ft/ft

Section					
Section Shape	Circular		Mannings Coefficient	0.013	
Section Material	Concrete		Span	3.00	ft
Section Size	36 inch		Rise	3.00	ft
Number Sections	2				

Outlet Control Properties					
Outlet Control HW Elev.	222.21	ft	Upstream Velocity Head	2.15	ft
Ke	0.20		Entrance Loss	0.43	ft

Inlet Control Properties					
Inlet Control HW Elev.	222.46	ft	Flow Control	N/A	
Inlet Type	Beveled ring, 33.7° bevels		Area Full	14.1	ft²
K	0.00180		HDS 5 Chart	3	
M	2.50000		HDS 5 Scale	B	
C	0.02430		Equation Form	1	
Y	0.83000				

Culvert Calculator Report
Y-8_2-18 East Node 3234

Solve For: Headwater Elevation

Culvert Summary					
Allowable HW Elevation	218.59	ft	Headwater Depth/Height	0.88	
Computed Headwater Elevation	217.15	ft	Discharge	9.20	cfs
Inlet Control HW Elev.	217.03	ft	Tailwater Elevation	0.00	ft
Outlet Control HW Elev.	217.15	ft	Control Type	Entrance Control	

Grades					
Upstream Invert	215.83	ft	Downstream Invert	215.29	ft
Length	30.00	ft	Constructed Slope	0.018000	ft/ft

Hydraulic Profile					
Profile	S2		Depth, Downstream	0.61	ft
Slope Type	Steep		Normal Depth	0.59	ft
Flow Regime	Supercritical		Critical Depth	0.82	ft
Velocity Downstream	6.80	ft/s	Critical Slope	0.005620	ft/ft

Section					
Section Shape	Circular		Mannings Coefficient	0.013	
Section Material	Concrete		Span	1.50	ft
Section Size	18 inch		Rise	1.50	ft
Number Sections	2				

Outlet Control Properties					
Outlet Control HW Elev.	217.15	ft	Upstream Velocity Head	0.33	ft
Ke	0.50		Entrance Loss	0.17	ft

Inlet Control Properties					
Inlet Control HW Elev.	217.03	ft	Flow Control	N/A	
Inlet Type	Square edge w/headwall		Area Full	3.5	ft²
K	0.00980		HDS 5 Chart	1	
M	2.00000		HDS 5 Scale	1	
C	0.03980		Equation Form	1	
Y	0.67000				

Culvert Designer/Analyzer Report
East - RCB LINE P

Analysis Component			
Storm Event	Design	Discharge	1,237.50 cfs

Peak Discharge Method: User-Specified			
Design Discharge	1,237.50 cfs	Check Discharge	1,237.50 cfs

Tailwater Conditions: Constant Tailwater	
Tailwater Elevation	N/A ft

Name	Description	Discharge	HW Elev.	Velocity
Culvert-1	3-8 x 5 ft Box	1,237.57 cfs	233.53 ft	13.82 ft/s
Weir	Broad Crested	0.00 cfs	233.53 ft	N/A
Total	----------	1,237.57 cfs	233.53 ft	N/A

Culvert Designer/Analyzer Report
East - RCB LINE P

Component:Culvert-1

Culvert Summary					
Computed Headwater Elev	233.53	ft	Discharge	1,237.57	cfs
Inlet Control HW Elev.	233.53	ft	Tailwater Elevation	N/A	ft
Outlet Control HW Elev.	232.92	ft	Control Type	Inlet Control	
Headwater Depth/Height	1.65				

Grades					
Upstream Invert	225.30	ft	Downstream Invert	224.80	ft
Length	62.00	ft	Constructed Slope	0.008065	ft/ft

Hydraulic Profile					
Profile	S2		Depth, Downstream	3.73	ft
Slope Type	Steep		Normal Depth	3.36	ft
Flow Regime	Supercritical		Critical Depth	4.36	ft
Velocity Downstream	13.82	ft/s	Critical Slope	0.004027	ft/ft

Section					
Section Shape	Box		Mannings Coefficient	0.013	
Section Material	Concrete		Span	8.00	ft
Section Size	8 x 5 ft		Rise	5.00	ft
Number Sections	3				

Outlet Control Properties					
Outlet Control HW Elev.	232.92	ft	Upstream Velocity Head	2.18	ft
Ke	0.50		Entrance Loss	1.09	ft

Inlet Control Properties					
Inlet Control HW Elev.	233.53	ft	Flow Control	Submerged	
Inlet Type	90 and 15° wingwall flares		Area Full	120.0	ft²
K	0.06100		HDS 5 Chart	8	
M	0.75000		HDS 5 Scale	2	
C	0.04000		Equation Form	1	
Y	0.80000				

Culvert Designer/Analyzer Report
East - RCB LINE P

Component:Weir

Hydraulic Component(s): Broad Crested					
Discharge	0.00	cfs	Allowable HW Elevation	233.53	ft
Weir Coefficient	3.00	US	Length	100.00	ft
Crest Elevation	235.00	ft	Headwater Elevation	N/A	ft

Normal Depth Calculations for Channels

(See HEC-RAS for Channel adjacent to Street B in Planning Area 2)

Worksheet for Trapezoidal Channel - Node 2057

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.015
Channel Slope	0.020 ft/ft
Left Side Slope	2.000 H:V
Right Side Slope	2.000 H:V
Bottom Width	6.00 ft
Discharge	133.00 cfs

Results	
Normal Depth	14.6 in
Flow Area	10.2 ft²
Wetted Perimeter	11.4 ft
Hydraulic Radius	10.7 in
Top Width	10.85 ft
Critical Depth	23.7 in
Critical Slope	0.003 ft/ft
Velocity	13.01 ft/s
Velocity Head	2.63 ft
Specific Energy	3.84 ft
Froude Number	2.363
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	14.6 in
Critical Depth	23.7 in
Channel Slope	0.020 ft/ft
Critical Slope	0.003 ft/ft

WSPG OUTPUT

WSPG OUTPUT

PLANNING AREA 1

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	4		4.000														
CD	2	4	2		6.000														
CD	3	3	0	.000	6.000	22.000	.000	.000	.00										
CD	4	1	0	.000	6.500	30.000	3.000	3.000	.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -

LINE SD_B1

HEADING LINE NO 2 IS -

Q100

HEADING LINE NO 3 IS -

OBR

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1555.150	199.300	3	201.300

ELEMENT NO 2 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1555.150	199.300	1

ELEMENT NO 3 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1634.690	199.710	1	.013	.000	.000	.000	0

ELEMENT NO 4 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1634.690	199.710	1

WARNING - ADJACENT SECTIONS ARE NOT IDENTICAL - SEE SECTION NUMBERS AND CHANNEL DEFINITIONS

ELEMENT NO 5 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1923.620	200.850	4	.013	.000	.000	.000	0

WARNING - ADJACENT SECTIONS ARE NOT IDENTICAL - SEE SECTION NUMBERS AND CHANNEL DEFINITIONS

ELEMENT NO 6 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1965.120	201.060	2	.013	.000	.000	.000	0

ELEMENT NO 7 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1965.120	201.060	3	.200

ELEMENT NO 8 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1970.460	201.110	3	.013	.000	.000	.000	0

ELEMENT NO 9 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1970.460	201.110	2

ELEMENT NO 10 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	2035.560	201.430	2	.013	.000	.000	.000	0

ELEMENT NO 11 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	2035.560	201.430	3	.200

ELEMENT NO 12 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	2040.900	201.480	3	.013	.000	.000	.000	0

ELEMENT NO 13 IS A WALL EXIT *

WATER SURFACE PROFILE - ELEMENT CARD LISTING

U/S DATA STATION INVERT SECT
2040.900 201.480 2

ELEMENT NO 14 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	2101.110	201.790	2	.013	.000	.000	.000	0

ELEMENT NO 15 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	2138.010	201.970	2	.013	.000	.000	.000	0

ELEMENT NO 16 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	2138.010	201.970	3	.200

ELEMENT NO 17 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	2138.010	201.970	3	201.970

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:11- 6-2024 Time: 8:55:23

LINE SD_B1
Q100
OBR

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width	Height/Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1555.150	199.300	1.404	200.704	354.90	11.49	2.05	202.75	.00	2.01	22.00	6.000	22.000	.00	0 .0
WALL EXIT														
1555.150	199.300	2.855	202.155	354.90	9.25	1.33	203.48	.00	2.86	3.62	4.000	.000	.00	4 .0
8.031	.0052				.0052	.04	2.86	.50	2.86	.013	.00	.00	PIPE	
1563.181	199.341	2.860	202.201	354.90	9.23	1.32	203.52	.00	2.86	3.61	4.000	.000	.00	4 .0
71.509	.0052				.0051	.37	2.86	.50	2.86	.013	.00	.00	PIPE	
1634.690	199.710	2.860	202.570	354.90	9.23	1.32	203.89	.00	2.86	3.61	4.000	.000	.00	4 .0
1634.690	199.710	3.984	203.694	354.90	28.25	12.40	216.09	.00	3.98	.50	4.000	.000	.00	0 .0
WALL EXIT														
1634.690	199.710	3.985	203.695	354.90	2.12	.07	203.76	.00	1.55	53.91	6.500	30.000	3.00	0 .0
35.872	.0039				.0001	.00	3.99	.21	1.32	.013	.00	3.00	TRAP	
1670.562	199.852	3.840	203.691	354.90	2.23	.08	203.77	.00	1.55	53.04	6.500	30.000	3.00	0 .0
34.635	.0039				.0001	.00	3.84	.23	1.32	.013	.00	3.00	TRAP	
1705.197	199.988	3.699	203.687	354.90	2.33	.08	203.77	.00	1.55	52.19	6.500	30.000	3.00	0 .0
33.415	.0039				.0001	.00	3.70	.24	1.32	.013	.00	3.00	TRAP	
1738.613	200.120	3.562	203.682	354.90	2.45	.09	203.78	.00	1.55	51.37	6.500	30.000	3.00	0 .0
32.212	.0039				.0001	.00	3.56	.26	1.32	.013	.00	3.00	TRAP	
1770.824	200.247	3.430	203.677	354.90	2.57	.10	203.78	.00	1.55	50.58	6.500	30.000	3.00	0 .0
31.022	.0039				.0001	.00	3.43	.27	1.32	.013	.00	3.00	TRAP	

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:11- 6-2024 Time: 8:55:23

LINE SD_B1
Q100
OBR

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width	Height/Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1801.847	200.370	3.301	203.671	354.90	2.69	.11	203.78	.00	1.55	49.81	6.500	30.000	3.00	0 .0
29.845	.0039					.0002	.01	3.30	.29	1.32	.013	.00	3.00	TRAP
1831.692	200.487	3.177	203.665	354.90	2.83	.12	203.79	.00	1.55	49.06	6.500	30.000	3.00	0 .0
28.678	.0039					.0002	.01	3.18	.31	1.32	.013	.00	3.00	TRAP
1860.370	200.600	3.057	203.658	354.90	2.96	.14	203.79	.00	1.55	48.34	6.500	30.000	3.00	0 .0
27.520	.0039					.0002	.01	3.06	.33	1.32	.013	.00	3.00	TRAP
1887.890	200.709	2.941	203.650	354.90	3.11	.15	203.80	.00	1.55	47.65	6.500	30.000	3.00	0 .0
26.367	.0039					.0003	.01	2.94	.35	1.32	.013	.00	3.00	TRAP
1914.257	200.813	2.829	203.642	354.90	3.26	.16	203.81	.00	1.55	46.97	6.500	30.000	3.00	0 .0
9.363	.0039					.0003	.00	2.83	.38	1.32	.013	.00	3.00	TRAP
1923.620	200.850	2.789	203.639	354.90	3.32	.17	203.81	.00	1.55	46.73	6.500	30.000	3.00	0 .0
1923.620	200.850	3.405	204.255	354.90	10.72	1.78	206.04	.00	3.63	5.95	6.000	.000	.00	2 .0
30.981	.0051					.0045	.14	3.41	.80	3.31	.013	.00	.00	PIPE
1954.601	201.007	3.489	204.496	354.90	10.40	1.68	206.18	.00	3.63	5.92	6.000	.000	.00	2 .0
10.519	.0051					.0040	.04	3.49	.76	3.31	.013	.00	.00	PIPE
1965.120	201.060	3.632	204.692	354.90	9.91	1.53	206.22	.00	3.63	5.87	6.000	.000	.00	2 .0
WALL ENTRANCE														
1965.120	201.060	5.632	206.692	354.90	2.86	.13	206.82	.00	2.01	22.00	6.000	22.000	.00	0 .0
5.340	.0094					.0001	.00	5.63	.21	1.31	.013	.00	.00	BOX

---------- WARNING - Flow depth near top of box conduit ----------

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:11- 6-2024 Time: 8:55:23

LINE SD_B1
Q100
OBR

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width	Height/Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1970.460	201.110	5.581	206.691	354.90	2.89	.13	206.82	.00	2.01	22.00	6.000	22.000	.00	0 .0
WALL	EXIT													
		---------- WARNING - Flow depth near top of box conduit ----------												
1970.460	201.110	5.581	206.691	354.90	6.47	.65	207.34	.00	3.63	3.06	6.000	.000	.00	2 .0
65.100	.0049				.0015	.10	5.58	.27	3.34	.013		.00	.00	PIPE
2035.560	201.430	5.316	206.746	354.90	6.70	.70	207.44	.00	3.63	3.81	6.000	.000	.00	2 .0
WALL	ENTRANCE													
2035.560	201.430	6.017	207.447	354.90	2.69	.11	207.56	.00	2.01	22.00	6.000	22.000	.00	0 .0
1.870	.0094				.0002	.00	6.02	.19	1.31	.013		.00	.00	BOX
2037.430	201.448	6.000	207.448	354.90	2.69	.11	207.56	.00	2.01	22.00	6.000	22.000	.00	0 .0
3.470	.0094				.0001	.00	6.00	.19	1.31	.013		.00	.00	BOX
2040.900	201.480	5.966	207.446	354.90	2.70	.11	207.56	.00	2.01	22.00	6.000	22.000	.00	0 .0
WALL	EXIT													
		---------- WARNING - Flow depth near top of box conduit ----------												

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:11- 6-2024 Time: 8:55:23

LINE SD_B1
Q100
OBR

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT or "N"	Base Wt or I.D.	ZL	ZR	No Wth Prs/Pip	Type Ch
	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp		X-Fall				
2040.900	201.480	5.966	207.446	354.90	6.28	.61	208.06	.00	3.63	.90	6.000	.000	.00	2	.0	
60.210	.0051					.0016	.10	5.97	.14	3.29	.013	.00	.00	PIPE		
2101.110	201.790	5.733	207.523	354.90	6.38	.63	208.15	.00	3.63	2.48	6.000	.000	.00	2	.0	
36.900	.0049					.0015	.06	5.73	.24	3.35	.013	.00	.00	PIPE		
2138.010	201.970	5.591	207.561	354.90	6.47	.65	208.21	.00	3.63	3.02	6.000	.000	.00	2	.0	
WALL	ENTRANCE															
2138.010	201.970	6.236	208.206	354.90	2.69	.11	208.32	.00	2.01	22.00	6.000	22.000	.00	0	.0	

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.500														
CD	2	4	1		2.000														
CD	3	4	1		3.000														
CD	4	4	1		3.500														
CD	6	3	0	.000	4.000	4.000	.000	.000	.00										
CD	7	4	1		2.500														
CD	8	3	0	.000	4.000	5.000	.000	.000	.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
LINE_B2

HEADING LINE NO 2 IS -
Q100 06/04/2024

HEADING LINE NO 3 IS -
LINE_B2 LINE_B2_100.WSW

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	998.470	228.030	6	231.220

ELEMENT NO 2 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	998.470	228.030	4

ELEMENT NO 3 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1068.800	228.390	4	.013	.000	.000	42.549	0

ELEMENT NO 4 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1184.490	229.670	4	.013	.000	.000	.000	0

ELEMENT NO 5 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1184.490	229.670	8	.200

ELEMENT NO 6 IS A JUNCTION * * * * * * *

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	1189.490	229.670	8	2	0	.013	11.900	.000	230.460	.000	.000	.000

RADIUS	ANGLE
.000	.000

THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING
THE ABOVE ELEMENT CONTAINED AN INVERT ELEV WHICH WAS NOT GREATER THAN THE PREVIOUS INVERT ELEV -WARNING

ELEMENT NO 7 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1189.490	229.670	7

ELEMENT NO 8 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1237.050	229.910	7	.013	.000	.000	.000	0

ELEMENT NO 9 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1266.120	230.060	7	.013	45.004	37.010	.000	0

ELEMENT NO 10 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1277.020	230.110	7	.013	.000	.000	.000	0

ELEMENT NO 11 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP

WATER SURFACE PROFILE - ELEMENT CARD LISTING

		1277.020	230.110	6			.200						
ELEMENT NO	12 IS A JUNCTION	*	*	*	*		*		*		*		
	U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
		1281.020	230.290	6	0	0	.013	.000	.000	.000	.000	.000	.000
										RADIUS	ANGLE		
										.000	.000		
ELEMENT NO	13 IS A WALL EXIT			*									
	U/S DATA	STATION	INVERT	SECT									
		1281.020	230.290	7									
ELEMENT NO	14 IS A REACH	*	*	*									
	U/S DATA	STATION	INVERT	SECT			N			RADIUS	ANGLE	ANG PT	MAN H
		1383.110	230.800	7			.013			.000	.000	.000	0
ELEMENT NO	15 IS A REACH	*	*	*									
	U/S DATA	STATION	INVERT	SECT			N			RADIUS	ANGLE	ANG PT	MAN H
		1489.080	231.330	7			.013			189.030	32.120	.000	0
ELEMENT NO	16 IS A REACH	*	*	*									
	U/S DATA	STATION	INVERT	SECT			N			RADIUS	ANGLE	ANG PT	MAN H
		1509.190	231.430	7			.013			.000	.000	.000	0
ELEMENT NO	17 IS A WALL ENTRANCE			*									
	U/S DATA	STATION	INVERT	SECT			FP						
		1509.190	231.430	6			.200						
ELEMENT NO	18 IS A REACH	*	*	*									
	U/S DATA	STATION	INVERT	SECT			N			RADIUS	ANGLE	ANG PT	MAN H
		1513.190	231.930	6			.013			.000	.000	.000	0
ELEMENT NO	19 IS A WALL EXIT			*									
	U/S DATA	STATION	INVERT	SECT									
		1513.190	231.930	2									
ELEMENT NO	20 IS A REACH	*	*	*									
	U/S DATA	STATION	INVERT	SECT			N			RADIUS	ANGLE	ANG PT	MAN H
		1555.930	233.320	2			.013			.000	.000	.000	0
ELEMENT NO	21 IS A WALL ENTRANCE			*									
	U/S DATA	STATION	INVERT	SECT			FP						
		1555.930	233.320	6			.200						
ELEMENT NO	22 IS A JUNCTION	*	*	*	*		*		*		*		
	U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
		1559.930	233.650	6	1	1	.013	1.900	13.200	233.820	233.820	-90.000	.900
										RADIUS	ANGLE		
										.000	.000		

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO	23 IS A WALL EXIT			*									
	U/S DATA	STATION	INVERT	SECT									
		1559.930	233.650	2									
ELEMENT NO	24 IS A REACH	*	*	*									
	U/S DATA	STATION	INVERT	SECT			N			RADIUS	ANGLE	ANG PT	MAN H
		1574.800	234.130	2			.013			.000	.000	.000	0
ELEMENT NO	25 IS A REACH	*	*	*									
	U/S DATA	STATION	INVERT	SECT			N			RADIUS	ANGLE	ANG PT	MAN H
		1622.800	235.690	2			.013			641.072	-4.290	.000	0
ELEMENT NO	26 IS A WALL ENTRANCE			*									
	U/S DATA	STATION	INVERT	SECT			FP						
		1622.800	235.690	6			.200						
ELEMENT NO	27 IS A JUNCTION	*	*	*	*		*		*		*		
	U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
		1626.800	236.190	6	0	0	.013	.000	.000	.000	.000	.000	.000
										RADIUS	ANGLE		

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                                                                                                                .000    .000
ELEMENT NO  28 IS A  WALL  EXIT                        *
                  U/S DATA   STATION    INVERT  SECT
                             1626.800  236.190    1
ELEMENT NO  29 IS A REACH             *         *     *
                  U/S DATA   STATION    INVERT  SECT               N                          RADIUS    ANGLE     ANG PT  MAN H
                             1924.800  255.390    1              .013                        639.960  -26.680      .000     0
ELEMENT NO  30 IS A  WALL  ENTRANCE                    *
                  U/S DATA   STATION    INVERT  SECT              FP
                             1924.800  255.390    6              .200
ELEMENT NO  31 IS A JUNCTION          *         *     *     *                *                  *                *
                  U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3        Q4     INVERT-3 INVERT-4  PHI 3  PHI 4
                             1928.800  255.720    6     1     0   .013     3.400      .000   255.720      .000    .000    -.200
                                                                                             RADIUS    ANGLE
                                                                                             46.772   4.900
ELEMENT NO  32 IS A  WALL  EXIT                        *
                  U/S DATA   STATION    INVERT  SECT
                             1928.800  255.720    1
                                                 W S P G W                                                          PAGE NO   5
                          WATER SURFACE PROFILE - ELEMENT CARD LISTING
ELEMENT NO  33 IS A REACH             *         *     *
                  U/S DATA   STATION    INVERT  SECT               N                          RADIUS    ANGLE     ANG PT  MAN H
                             1957.570  256.010    1              .013                          .000     .000     3.834     0
ELEMENT NO  34 IS A  WALL  ENTRANCE                    *
                  U/S DATA   STATION    INVERT  SECT              FP
                             1957.570  256.010    6              .200
ELEMENT NO  35 IS A JUNCTION          *         *     *     *                *                  *                *
                  U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3        Q4     INVERT-3 INVERT-4  PHI 3  PHI 4
                             1961.570  256.340    6     6     0   .013     3.900      .000   256.340      .000    .000     .000
                                                                                             RADIUS    ANGLE
                                                                                               .000    .000
ELEMENT NO  36 IS A  WALL  EXIT                        *
                  U/S DATA   STATION    INVERT  SECT
                             1961.570  256.340    1
ELEMENT NO  37 IS A REACH             *         *     *
                  U/S DATA   STATION    INVERT  SECT               N                          RADIUS    ANGLE     ANG PT  MAN H
                             1989.440  256.620    1              .013                          .000     .000    60.000     0
ELEMENT NO  38 IS A  WALL  ENTRANCE                    *
                  U/S DATA   STATION    INVERT  SECT              FP
                             1989.440  256.620    1              .200
ELEMENT NO  39 IS A SYSTEM HEADWORKS                   *                    *
                  U/S DATA   STATION    INVERT  SECT                                  W S ELEV
                             1989.440  256.620    1                                     .000
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Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 4-2024 Time:12:18:31

LINE_B2
Q100 06/04/2024
LINE_B2 LINE_B2_100.WSW

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
998.470	228.030	3.190	231.220	36.60	2.87	.13	231.35	.00	1.38	4.00	4.000	4.000	.00	0 .0
WALL EXIT														
998.470	228.030	3.190	231.220	36.60	3.98	.25	231.47	.00	1.88	1.99	3.500	.000	.00	1 .0
42.682	.0051					.0012	.05	3.19	.33	1.77	.013	.00	.00	PIPE
1041.152	228.248	2.998	231.247	36.60	4.17	.27	231.52	.00	1.88	2.45	3.500	.000	.00	1 .0
27.648	.0051					.0013	.04	3.00	.39	1.77	.013	.00	.00	PIPE
1068.800	228.390	2.871	231.261	36.60	4.33	.29	231.55	.00	1.88	2.69	3.500	.000	.00	1 .0
11.503	.0111					.0014	.02	2.87	.43	1.42	.013	.00	.00	PIPE
1080.303	228.517	2.730	231.247	36.60	4.55	.32	231.57	.00	1.88	2.90	3.500	.000	.00	1 .0
9.861	.0111					.0015	.02	2.73	.48	1.42	.013	.00	.00	PIPE
1090.164	228.626	2.604	231.230	36.60	4.77	.35	231.58	.00	1.88	3.05	3.500	.000	.00	1 .0
8.527	.0111					.0017	.01	2.60	.53	1.42	.013	.00	.00	PIPE
1098.690	228.721	2.489	231.210	36.60	5.00	.39	231.60	.00	1.88	3.17	3.500	.000	.00	1 .0
7.347	.0111					.0019	.01	2.49	.58	1.42	.013	.00	.00	PIPE
1106.037	228.802	2.383	231.185	36.60	5.24	.43	231.61	.00	1.88	3.26	3.500	.000	.00	1 .0
2.317	.0111					.0021	.00	2.38	.63	1.42	.013	.00	.00	PIPE
1108.355	228.828	2.345	231.173	36.60	5.34	.44	231.62	.00	1.88	3.29	3.500	.000	.00	1 .0
HYDRAULIC JUMP														

LINE_B2
Q100 06/04/2024
LINE_B2 LINE_B2_100.WSW

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1108.355	228.828	1.481	230.309	36.60	9.45	1.39	231.70	.00	1.88	3.46	3.500	.000	.00	1 .0
18.362	.0111					.0093	.17	1.48	1.57	1.42	.013	.00	.00	PIPE
1126.717	229.031	1.502	230.533	36.60	9.28	1.34	231.87	.00	1.88	3.46	3.500	.000	.00	1 .0
25.725	.0111					.0085	.22	1.50	1.53	1.42	.013	.00	.00	PIPE
1152.442	229.315	1.557	230.873	36.60	8.84	1.21	232.09	.00	1.88	3.48	3.500	.000	.00	1 .0
14.513	.0111					.0075	.11	1.56	1.43	1.42	.013	.00	.00	PIPE
1166.956	229.476	1.615	231.091	36.60	8.43	1.10	232.20	.00	1.88	3.49	3.500	.000	.00	1 .0
8.731	.0111					.0066	.06	1.62	1.33	1.42	.013	.00	.00	PIPE
1175.687	229.573	1.676	231.249	36.60	8.04	1.00	232.25	.00	1.88	3.50	3.500	.000	.00	1 .0
5.333	.0111					.0058	.03	1.68	1.24	1.42	.013	.00	.00	PIPE
1181.020	229.632	1.739	231.371	36.60	7.67	.91	232.28	.00	1.88	3.50	3.500	.000	.00	1 .0
2.665	.0111					.0051	.01	1.74	1.16	1.42	.013	.00	.00	PIPE
1183.685	229.661	1.806	231.467	36.60	7.31	.83	232.30	.00	1.88	3.50	3.500	.000	.00	1 .0
.805	.0111					.0045	.00	1.81	1.08	1.42	.013	.00	.00	PIPE
1184.490	229.670	1.877	231.547	36.60	6.96	.75	232.30	.00	1.88	3.49	3.500	.000	.00	1 .0
WALL ENTRANCE														
1184.490	229.670	2.877	232.547	36.60	2.54	.10	232.65	.00	1.19	5.00	4.000	5.000	.00	0 .0
JUNCT STR	.0000					.0002	.00	2.88	.26		.013	.00	.00	BOX

LINE_B2
Q100 06/04/2024
LINE_B2 LINE_B2_100.WSW

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1189.490	229.670	2.891	232.561	24.70	1.71	.05	232.61	.00	.91	5.00	4.000	5.000	.00	0 .0
WALL EXIT														
1189.490	229.670	2.891	232.561	24.70	5.03	.39	232.95	.00	1.69	.00	2.500	.000	.00	1 .0
47.560	.0050					.0036	.17	2.89	.00	1.77	.013	.00	.00	PIPE
1237.050	229.910	2.824	232.734	24.70	5.03	.39	233.13	.00	1.69	.00	2.500	.000	.00	1 .0
29.070	.0052					.0036	.11	.00	.00	1.75	.013	.00	.00	PIPE
1266.120	230.060	2.829	232.889	24.70	5.03	.39	233.28	.00	1.69	.00	2.500	.000	.00	1 .0
10.900	.0046					.0036	.04	2.83	.00	1.84	.013	.00	.00	PIPE
1277.020	230.110	2.819	232.929	24.70	5.03	.39	233.32	.00	1.69	.00	2.500	.000	.00	1 .0
WALL ENTRANCE														
1277.020	230.110	3.222	233.332	24.70	1.92	.06	233.39	.00	1.06	4.00	4.000	4.000	.00	0 .0
JUNCT STR	.0450					.0002	.00	3.22	.19		.013	.00	.00	BOX
1281.020	230.290	3.036	233.326	24.70	2.03	.06	233.39	.00	1.06	4.00	4.000	4.000	.00	0 .0
WALL EXIT														
1281.020	230.290	3.036	233.326	24.70	5.03	.39	233.72	.00	1.69	.00	2.500	.000	.00	1 .0
102.090	.0050					.0036	.37	3.04	.00	1.77	.013	.00	.00	PIPE
1383.110	230.800	2.896	233.696	24.70	5.03	.39	234.09	.00	1.69	.00	2.500	.000	.00	1 .0
105.970	.0050					.0036	.38	.00	.00	1.77	.013	.00	.00	PIPE

LINE_B2
Q100 06/04/2024
LINE_B2 LINE_B2_100.WSW

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1489.080	231.330	2.798	234.128	24.70	5.03	.39	234.52	.00	1.69	.00	2.500	.000	.00	1 .0
20.110	.0050					.0036	.07	2.80	.00	1.78	.013	.00	.00	PIPE
1509.190	231.430	2.771	234.201	24.70	5.03	.39	234.59	.00	1.69	.00	2.500	.000	.00	1 .0
WALL ENTRANCE														
1509.190	231.430	3.171	234.601	24.70	1.95	.06	234.66	.00	1.06	4.00	4.000	4.000	.00	0 .0
1.136	.1250					.0002	.00	3.17	.19	.35	.013	.00	.00	BOX
1510.326	231.572	3.024	234.596	24.70	2.04	.06	234.66	.00	1.06	4.00	4.000	4.000	.00	0 .0
1.076	.1250					.0002	.00	3.02	.21	.35	.013	.00	.00	BOX
1511.402	231.706	2.883	234.590	24.70	2.14	.07	234.66	.00	1.06	4.00	4.000	4.000	.00	0 .0
1.019	.1250					.0003	.00	2.88	.22	.35	.013	.00	.00	BOX
1512.421	231.834	2.749	234.583	24.70	2.25	.08	234.66	.00	1.06	4.00	4.000	4.000	.00	0 .0
.769	.1250					.0003	.00	2.75	.24	.35	.013	.00	.00	BOX
1513.190	231.930	2.647	234.577	24.70	2.33	.08	234.66	.00	1.06	4.00	4.000	4.000	.00	0 .0
WALL EXIT														
1513.190	231.930	2.647	234.577	24.70	7.86	.96	235.54	.00	1.75	.00	2.000	.000	.00	1 .0
23.161	.0325					.0119	.28	2.65	.00	1.12	.013	.00	.00	PIPE
1536.351	232.683	2.169	234.852	24.70	7.86	.96	235.81	.00	1.75	.00	2.000	.000	.00	1 .0
HYDRAULIC JUMP														

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 4-2024 Time:12:18:31

LINE_B2
Q100 06/04/2024
LINE_B2 LINE_B2_100.WSW

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1536.351	232.683	1.357	234.040	24.70	10.89	1.84	235.88	.00	1.75	1.87	2.000	.000	.00	1 .0
2.491	.0325					.0182	.05	1.36	1.74	1.12	.013	.00	.00	PIPE
1538.843	232.764	1.373	234.137	24.70	10.74	1.79	235.93	.00	1.75	1.86	2.000	.000	.00	1 .0
6.524	.0325					.0169	.11	1.37	1.70	1.12	.013	.00	.00	PIPE
1545.366	232.976	1.434	234.411	24.70	10.24	1.63	236.04	.00	1.75	1.80	2.000	.000	.00	1 .0
4.656	.0325					.0151	.07	1.43	1.56	1.12	.013	.00	.00	PIPE
1550.022	233.128	1.501	234.629	24.70	9.76	1.48	236.11	.00	1.75	1.73	2.000	.000	.00	1 .0
3.250	.0325					.0136	.04	1.50	1.42	1.12	.013	.00	.00	PIPE
1553.271	233.234	1.574	234.808	24.70	9.31	1.35	236.15	.00	1.75	1.64	2.000	.000	.00	1 .0
1.942	.0325					.0123	.02	1.57	1.29	1.12	.013	.00	.00	PIPE
1555.214	233.297	1.657	234.954	24.70	8.87	1.22	236.18	.00	1.75	1.51	2.000	.000	.00	1 .0
.716	.0325					.0112	.01	1.66	1.15	1.12	.013	.00	.00	PIPE
1555.930	233.320	1.754	235.074	24.70	8.46	1.11	236.18	.00	1.75	1.31	2.000	.000	.00	1 .0
WALL	ENTRANCE													
1555.930	233.320	3.754	237.074	24.70	1.64	.04	237.12	.00	1.06	4.00	4.000	4.000	.00	0 .0
JUNCT STR	.0825					.0001	.00	3.75	.15		.013	.00	.00	BOX

---------- WARNING - Flow depth near top of box conduit ----------

LINE_B2
Q100 06/04/2024
LINE_B2 LINE_B2_100.WSW

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1559.930	233.650	3.460	237.110	9.60	.69	.01	237.12	.00	.56	4.00	4.000	4.000	.00	0 .0
WALL	EXIT													
1559.930	233.650	3.461	237.111	9.60	3.06	.14	237.26	.00	1.11	.00	2.000	.000	.00	1 .0
14.870	.0323					.0018	.03	3.46	.00	.66	.013	.00	.00	PIPE
1574.800	234.130	3.007	237.137	9.60	3.06	.14	237.28	.00	1.11	.00	2.000	.000	.00	1 .0
32.985	.0325					.0018	.06	.00	.00	.66	.013	.00	.00	PIPE
1607.785	235.202	2.000	237.202	9.60	3.06	.14	237.35	2.00	1.11	.00	2.000	.000	.00	1 .0
5.527	.0325					.0017	.01	2.00	.00	.66	.013	.00	.00	PIPE
1613.313	235.382	1.814	237.196	9.60	3.20	.16	237.36	.00	1.11	1.16	2.000	.000	.00	1 .0
2.982	.0325					.0016	.00	1.81	.35	.66	.013	.00	.00	PIPE
1616.294	235.479	1.706	237.185	9.60	3.36	.18	237.36	.00	1.11	1.42	2.000	.000	.00	1 .0
2.292	.0325					.0018	.00	1.71	.42	.66	.013	.00	.00	PIPE
1618.587	235.553	1.618	237.171	9.60	3.53	.19	237.36	.00	1.11	1.57	2.000	.000	.00	1 .0
1.921	.0325					.0019	.00	1.62	.47	.66	.013	.00	.00	PIPE
1620.508	235.615	1.540	237.156	9.60	3.70	.21	237.37	.00	1.11	1.68	2.000	.000	.00	1 .0
1.607	.0325					.0022	.00	1.54	.52	.66	.013	.00	.00	PIPE
1622.115	235.668	1.470	237.138	9.60	3.88	.23	237.37	.00	1.11	1.77	2.000	.000	.00	1 .0
.685	.0325					.0023	.00	1.47	.58	.66	.013	.00	.00	PIPE

LINE_B2
Q100 06/04/2024
LINE_B2 LINE_B2_100.WSW

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1622.800	235.690	1.439	237.129	9.60	3.97	.24	237.37	.00	1.11	1.80	2.000	.000	.00	1 .0
WALL ENTRANCE														
1622.800	235.690	2.439	238.129	9.60	.98	.02	238.14	.00	.56	4.00	4.000	4.000	.00	0 .0
JUNCT STR	.1250					.0001	.00	2.44	.11		.013	.00	.00	BOX
1626.800	236.190	1.930	238.120	9.60	1.24	.02	238.14	.00	.56	4.00	4.000	4.000	.00	0 .0
HYDRAULIC JUMP														
1626.800	236.190	.622	236.812	9.60	13.86	2.98	239.79	.01	1.20	1.48	1.500	.000	.00	1 .0
145.457	.0644					.0644	9.37	.64	3.57	.62	.013	.00	.00	PIPE
1772.257	245.562	.622	246.184	9.60	13.86	2.98	249.17	.01	1.20	1.48	1.500	.000	.00	1 .0
61.847	.0644					.0630	3.90	.64	3.57	.62	.013	.00	.00	PIPE
1834.104	249.547	.629	250.176	9.60	13.63	2.88	253.06	.01	1.20	1.48	1.500	.000	.00	1 .0
36.034	.0644					.0578	2.08	.64	3.48	.62	.013	.00	.00	PIPE
1870.139	251.868	.653	252.521	9.60	13.00	2.62	255.14	.01	1.20	1.49	1.500	.000	.00	1 .0
15.757	.0644					.0508	.80	.67	3.25	.62	.013	.00	.00	PIPE
1885.896	252.883	.677	253.561	9.60	12.39	2.38	255.94	.01	1.20	1.49	1.500	.000	.00	1 .0
9.700	.0644					.0447	.43	.69	3.03	.62	.013	.00	.00	PIPE
1895.596	253.508	.702	254.211	9.60	11.81	2.17	256.38	.01	1.20	1.50	1.500	.000	.00	1 .0
6.764	.0644					.0393	.27	.71	2.83	.62	.013	.00	.00	PIPE

LINE_B2
Q100 06/04/2024
LINE_B2 LINE_B2_100.WSW

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1902.360	253.944	.729	254.673	9.60	11.26	1.97	256.64	.01	1.20	1.50	1.500	.000	.00	1 .0
5.096	.0644					.0346	.18	.74	2.63	.62	.013	.00	.00	PIPE
1907.456	254.273	.756	255.029	9.60	10.74	1.79	256.82	.01	1.20	1.50	1.500	.000	.00	1 .0
3.938	.0644					.0304	.12	.76	2.45	.62	.013	.00	.00	PIPE
1911.394	254.526	.785	255.311	9.60	10.24	1.63	256.94	.01	1.20	1.50	1.500	.000	.00	1 .0
3.114	.0644					.0268	.08	.79	2.28	.62	.013	.00	.00	PIPE
1914.508	254.727	.816	255.543	9.60	9.76	1.48	257.02	.01	1.20	1.49	1.500	.000	.00	1 .0
2.518	.0644					.0237	.06	.82	2.12	.62	.013	.00	.00	PIPE
1917.026	254.889	.848	255.737	9.60	9.31	1.35	257.08	.01	1.20	1.49	1.500	.000	.00	1 .0
2.031	.0644					.0209	.04	.85	1.97	.62	.013	.00	.00	PIPE
1919.056	255.020	.882	255.902	9.60	8.88	1.22	257.13	.01	1.20	1.48	1.500	.000	.00	1 .0
1.638	.0644					.0185	.03	.89	1.83	.62	.013	.00	.00	PIPE
1920.694	255.125	.918	256.044	9.60	8.46	1.11	257.16	.01	1.20	1.46	1.500	.000	.00	1 .0
1.314	.0644					.0164	.02	.92	1.69	.62	.013	.00	.00	PIPE
1922.008	255.210	.956	256.166	9.60	8.07	1.01	257.18	.00	1.20	1.44	1.500	.000	.00	1 .0
1.021	.0644					.0145	.01	.96	1.57	.62	.013	.00	.00	PIPE
1923.029	255.276	.997	256.273	9.60	7.69	.92	257.19	.00	1.20	1.42	1.500	.000	.00	1 .0
.788	.0644					.0129	.01	1.00	1.44	.62	.013	.00	.00	PIPE

LINE_B2
Q100 06/04/2024
LINE_B2 LINE_B2_100.WSW

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT) / SF Ave	Water Elev / HF	Q (CFS) / SE Dpth	Vel (FPS) / Froude N	Vel Head / Norm Dp	Energy Grd.El. / "N"	Super Elev / X-Fall	Critical Depth / ZR	Flow Top Width / Type Ch	Height/ Dia.-FT / No Wth Prs/Pip
1923.816	255.327	1.040	256.367	9.60	7.34	.84	257.20	.00	1.20	1.38	1.500
.547	.0644					.0115	.01	1.04	1.33	.62	.013
1924.364	255.362	1.087	256.449	9.60	6.99	.76	257.21	.00	1.20	1.34	1.500
.334	.0644					.0103	.00	1.09	1.22	.62	.013
1924.698	255.383	1.138	256.521	9.60	6.67	.69	257.21	.00	1.20	1.28	1.500
.102	.0644					.0093	.00	1.14	1.11	.62	.013
1924.800	255.390	1.196	256.586	9.60	6.35	.63	257.21	.00	1.20	1.21	1.500
WALL	ENTRANCE										
1924.800	255.390	3.196	258.586	9.60	.75	.01	258.59	.00	.56	4.00	4.000
JUNCT STR	.0825					.0000	.00	3.20	.07		.013
1928.800	255.720	2.859	258.579	6.20	.54	.00	258.58	.00	.42	4.00	4.000
WALL	EXIT										
1928.800	255.720	2.860	258.580	6.20	3.51	.19	258.77	.00	.96	.00	1.500
28.770	.0101					.0035	.10	2.86	.00	.83	.013
1957.570	256.010	2.673	258.683	6.20	3.51	.19	258.87	.00	.96	.00	1.500
WALL	ENTRANCE										
1957.570	256.010	2.897	258.907	6.20	.53	.00	258.91	.00	.42	4.00	4.000
JUNCT STR	.0825					.0000	.00	2.90	.06		.013

Station / L/Elem	Base Wt or I.D. / X-Fall	ZL / ZR
1923.816	.000	.00
.547	.00	.00
1924.364	.000	.00
.334	.00	.00
1924.698	.000	.00
.102	.00	.00
1924.800	.000	.00
WALL		
1924.800	4.000	.00
JUNCT STR	.00	.00
1928.800	4.000	.00
WALL		
1928.800	.000	.00
28.770	.00	.00
1957.570	.000	.00
WALL		
1957.570	4.000	.00
JUNCT STR	.00	.00

LINE_B2
Q100 06/04/2024
LINE_B2 LINE_B2_100.WSW

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1961.570	256.340	2.571	258.911	2.30	.22	.00	258.91	.00	.22	4.00	4.000	4.000	.00	0 .0
WALL EXIT														
1961.570	256.340	2.571	258.911	2.30	1.30	.03	258.94	.00	.57	.00	1.500	.000	.00	1 .0
27.870	.0100					.0005	.01	2.57	.00	.48	.013	.00	.00	PIPE
WALL ENTRANCE														
1989.440	256.620	2.310	258.930	2.30	1.30	.03	258.96	.00	.57	.00	1.500	.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.500														
CD	2	3	0	.000	4.000	4.000	.000	.000	.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
SD-B2-1

HEADING LINE NO 2 IS -
Q100 OBR

HEADING LINE NO 3 IS -
SD-B2-1 Q100

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1000.000	255.720	1	258.590

ELEMENT NO 2 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1006.250	257.570	1	.013	.000	.000	.000	0

ELEMENT NO 3 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1006.250	257.570	2	.500

ELEMENT NO 4 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1006.250	257.570	2	257.570

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 4-2024 Time: 2:50:30

SD-B2-1
Q100 OBR
SD-B2-1 Q100

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1000.000	255.720	2.870	258.590	3.40	1.92	.06	258.65	.00	.70	.00	1.500	.000	.00	1 .0
4.645	.2960					.0010	.00	2.87	.00	.25	.013	.00	.00	PIPE
1004.645	257.095	1.500	258.595	3.40	1.92	.06	258.65	.00	.70	.00	1.500	.000	.00	1 .0
.451	.2960					.0010	.00	1.50	.00	.25	.013	.00	.00	PIPE
1005.096	257.228	1.360	258.589	3.40	2.02	.06	258.65	.00	.70	.87	1.500	.000	.00	1 .0
.250	.2960					.0009	.00	1.36	.26	.25	.013	.00	.00	PIPE
1005.346	257.302	1.280	258.582	3.40	2.12	.07	258.65	.00	.70	1.06	1.500	.000	.00	1 .0
.204	.2960					.0010	.00	1.28	.30	.25	.013	.00	.00	PIPE
1005.549	257.363	1.213	258.576	3.40	2.22	.08	258.65	.00	.70	1.18	1.500	.000	.00	1 .0
.171	.2960					.0011	.00	1.21	.34	.25	.013	.00	.00	PIPE
1005.720	257.413	1.155	258.568	3.40	2.33	.08	258.65	.00	.70	1.26	1.500	.000	.00	1 .0
.151	.2960					.0013	.00	1.16	.38	.25	.013	.00	.00	PIPE
1005.871	257.458	1.102	258.560	3.40	2.44	.09	258.65	.00	.70	1.32	1.500	.000	.00	1 .0
.132	.2960					.0014	.00	1.10	.42	.25	.013	.00	.00	PIPE
1006.003	257.497	1.054	258.551	3.40	2.56	.10	258.65	.00	.70	1.37	1.500	.000	.00	1 .0
.115	.2960					.0016	.00	1.05	.46	.25	.013	.00	.00	PIPE
1006.118	257.531	1.010	258.541	3.40	2.69	.11	258.65	.00	.70	1.41	1.500	.000	.00	1 .0
.105	.2960					.0018	.00	1.01	.50	.25	.013	.00	.00	PIPE

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 4-2024 Time: 2:50:30

SD-B2-1
Q100
SD-B2-1 OBR
Q100

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1006.222	257.562	.968	258.530	3.40	2.82	.12	258.65	.00	.70	1.44	1.500	.000	.00	1 .0
.028	.2960					.0019	.00	.97	.54	.25	.013	.00	.00	PIPE
1006.250	257.570	.957	258.527	3.40	2.86	.13	258.65	.00	.70	1.44	1.500	.000	.00	1 .0
WALL	ENTRANCE													
1006.250	257.570	1.957	259.527	3.40	.43	.00	259.53	.00	.28	4.00	4.000	4.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING PAGE 1

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.500														
CD	2	3	0	.000	4.000	4.000	.000	.000	.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
SD-B2-2

HEADING LINE NO 2 IS -
Q100 OBR

HEADING LINE NO 3 IS -
SD-B2-2 Q100

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1000.000	233.820	1	234.600

ELEMENT NO 2 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1006.250	234.000	1	.013	.000	.000	.000	0

ELEMENT NO 3 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1006.250	234.000	2	.500

ELEMENT NO 4 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1006.250	234.000	2	234.000

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 4-2024 Time: 3: 2:31

SD-B2-2
Q100 OBR
SD-B2-2 Q100

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1000.000	233.820	.780	234.600	1.90	2.05	.07	234.67	.00	.52	1.50	1.500	.000	.00	1 .0
.812	.0288					.0012	.00	.78	.46	.33	.013	.00	.00	PIPE
1000.812	233.843	.751	234.594	1.90	2.15	.07	234.67	.00	.52	1.50	1.500	.000	.00	1 .0
.761	.0288					.0014	.00	.75	.49	.33	.013	.00	.00	PIPE
1001.573	233.865	.723	234.588	1.90	2.25	.08	234.67	.00	.52	1.50	1.500	.000	.00	1 .0
.666	.0288					.0016	.00	.72	.53	.33	.013	.00	.00	PIPE
1002.239	233.884	.697	234.582	1.90	2.36	.09	234.67	.00	.52	1.50	1.500	.000	.00	1 .0
.605	.0288					.0018	.00	.70	.57	.33	.013	.00	.00	PIPE
1002.844	233.902	.672	234.574	1.90	2.48	.10	234.67	.00	.52	1.49	1.500	.000	.00	1 .0
.541	.0288					.0020	.00	.67	.61	.33	.013	.00	.00	PIPE
1003.386	233.918	.648	234.566	1.90	2.60	.10	234.67	.00	.52	1.49	1.500	.000	.00	1 .0
.307	.0288					.0023	.00	.65	.65	.33	.013	.00	.00	PIPE
1003.693	233.926	.625	234.551	1.90	2.73	.12	234.67	.00	.52	1.48	1.500	.000	.00	1 .0
HYDRAULIC JUMP														
1003.693	233.926	.407	234.333	1.90	4.90	.37	234.71	.00	.52	1.33	1.500	.000	.00	1 .0
.044	.0288					.0118	.00	.41	1.60	.33	.013	.00	.00	PIPE
1003.737	233.928	.421	234.349	1.90	4.67	.34	234.69	.00	.52	1.35	1.500	.000	.00	1 .0
.909	.0288					.0103	.01	.42	1.50	.33	.013	.00	.00	PIPE

SD-B2-2
Q100 OBR
SD-B2-2 Q100

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1004.645	233.954	.435	234.389	1.90	4.45	.31	234.70	.00	.52	1.36	1.500	.000	.00	1 .0
.607	.0288					.0090	.01	.44	1.40	.33	.013	.00	.00	PIPE
1005.252	233.971	.451	234.422	1.90	4.25	.28	234.70	.00	.52	1.38	1.500	.000	.00	1 .0
.452	.0288					.0079	.00	.45	1.31	.33	.013	.00	.00	PIPE
1005.704	233.984	.467	234.451	1.90	4.05	.25	234.71	.00	.52	1.39	1.500	.000	.00	1 .0
.326	.0288					.0069	.00	.47	1.23	.33	.013	.00	.00	PIPE
1006.030	233.994	.483	234.477	1.90	3.86	.23	234.71	.00	.52	1.40	1.500	.000	.00	1 .0
.177	.0288					.0061	.00	.48	1.15	.33	.013	.00	.00	PIPE
1006.208	233.999	.500	234.499	1.90	3.68	.21	234.71	.00	.52	1.41	1.500	.000	.00	1 .0
.042	.0288					.0053	.00	.50	1.07	.33	.013	.00	.00	PIPE
1006.250	234.000	.519	234.519	1.90	3.50	.19	234.71	.00	.52	1.43	1.500	.000	.00	1 .0
WALL	ENTRANCE													
1006.250	234.000	1.519	235.519	1.90	.31	.00	235.52	.00	.19	4.00	4.000	4.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.500														
CD	2	3	0	.000	4.000	4.000	.000	.000	.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
SD-B2-3

HEADING LINE NO 2 IS -
Q100 OBR

HEADING LINE NO 3 IS -
SD-B2-3 Q100

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1002.000	233.650	1	234.600

ELEMENT NO 2 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1028.250	234.220	1	.013	.000	.000	.000	0

ELEMENT NO 3 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1028.250	234.220	2	.500

ELEMENT NO 4 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1028.250	234.220	2	234.220

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 4-2024 Time: 2:51:50

SD-B2-3
Q100 OBR
SD-B2-3 Q100

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1002.000	233.650	1.138	234.788	13.20	9.18	1.31	236.10	.00	1.36	1.28	1.500	.000	.00	1 .0
5.286	.0217					.0182	.10	1.14	1.53	1.07	.013	.00	.00	PIPE
1007.286	233.765	1.152	234.917	13.20	9.06	1.27	236.19	.00	1.36	1.27	1.500	.000	.00	1 .0
12.540	.0217					.0171	.21	1.15	1.49	1.07	.013	.00	.00	PIPE
1019.826	234.037	1.210	235.247	13.20	8.64	1.16	236.41	.00	1.36	1.18	1.500	.000	.00	1 .0
6.361	.0217					.0155	.10	1.21	1.34	1.07	.013	.00	.00	PIPE
1026.187	234.175	1.276	235.451	13.20	8.24	1.05	236.50	.00	1.36	1.07	1.500	.000	.00	1 .0
2.063	.0217					.0143	.03	1.28	1.19	1.07	.013	.00	.00	PIPE
1028.250	234.220	1.358	235.578	13.20	7.85	.96	236.53	.00	1.36	.88	1.500	.000	.00	1 .0
WALL	ENTRANCE													
1028.250	234.220	3.358	237.578	13.20	.98	.01	237.59	.00	.70	4.00	4.000	4.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		2.000														
CD	2	3	0	.000	4.000	4.000	.000	.000	.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
SD-B2-3

HEADING LINE NO 2 IS -
Q100 OBR

HEADING LINE NO 3 IS -
SD-B2-4 Q100

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1000.000	230.460	1	232.561

ELEMENT NO 2 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1021.210	230.670	1	.013	.000	.000	.000	0

ELEMENT NO 3 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1021.210	230.670	2	.500

ELEMENT NO 4 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1021.210	230.670	2	230.670

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 4-2024 Time:12:27:17

SD-B2-3
Q100
OBR
SD-B2-4 Q100

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1000.000	230.460	2.101	232.561	12.30	3.92	.24	232.80	.00	1.26	.00	2.000	.000	.00	1 .0
14.544	.0099					.0029	.04	2.10	.00	1.05	.013	.00	.00	PIPE
1014.544	230.604	2.000	232.604	12.30	3.92	.24	232.84	.00	1.26	.00	2.000	.000	.00	1 .0
6.666	.0099					.0028	.02	2.00	.00	1.05	.013	.00	.00	PIPE
1021.210	230.670	1.948	232.618	12.30	3.94	.24	232.86	.00	1.26	.64	2.000	.000	.00	1 .0
WALL	ENTRANCE													
1021.210	230.670	2.948	233.618	12.30	1.04	.02	233.63	.00	.66	4.00	4.000	4.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		5.000														
CD	2	4	1		4.500														
CD	3	2	0	.000	10.000	6.000			.00										
CD	4	2	0	.000	10.000	7.000			.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -

OCEAN BREEZE RANCH

HEADING LINE NO 2 IS -

100 YR

HEADING LINE NO 3 IS -

LINE-B-3

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	895.410	221.090	1	221.090

ELEMENT NO 2 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	895.410	221.090	1

ELEMENT NO 3 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	959.500	221.730	1	.013	.000	.000	.000	0

ELEMENT NO 4 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	959.500	221.730	3	.200

ELEMENT NO 5 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	965.500	222.060	3	.013	13.222	-26.000	.000	0

ELEMENT NO 6 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	965.500	222.060	1

ELEMENT NO 7 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1028.500	222.690	1	.013	.000	.000	.000	0

ELEMENT NO 8 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1028.500	222.690	4	.200

ELEMENT NO 9 IS A JUNCTION * * * * * * *

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	1034.500	223.020	4	2	0	.013	87.600	.000	224.020	.000	-90.000	.000

RADIUS	ANGLE
6.486	53.000

ELEMENT NO 10 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1034.500	223.020	1

ELEMENT NO 11 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1113.240	224.110	1	.013	.000	.000	53.000	0

ELEMENT NO 12 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1113.240	224.110	3	.200

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 13 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1113.240	224.110	3	224.110

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:11- 5-2024 Time: 9:30:52

OCEAN BREEZE RANCH
100 YR
LINE-B-3

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
895.410	221.090	4.706	225.796	310.50	16.20	4.07	229.87	.00	4.71	2.35	5.000	.000	.00	0 .0
WALL	EXIT													
895.410	221.090	4.706	225.796	310.50	16.20	4.07	229.87	.00	4.71	2.35	5.000	.000	.00	1 .0
34.250	.0100					.0130	.44	4.71	1.00	5.00	.013	.00	.00	PIPE
929.660	221.432	5.000	226.432	310.50	15.81	3.88	230.32	.00	4.71	.00	5.000	.000	.00	1 .0
29.840	.0100					.0139	.42	5.00	.00	5.00	.013	.00	.00	PIPE
959.500	221.730	5.126	226.856	310.50	15.81	3.88	230.74	.00	4.71	.00	5.000	.000	.00	1 .0
WALL	ENTRANCE													
959.500	221.730	9.196	230.926	310.50	5.63	.49	231.42	.45	4.37	6.00	10.000	6.000	.00	0 .0
6.000	.0550					.0009	.01	9.64	.33	1.79	.013	.00	.00	RECTANG
965.500	222.060	8.830	230.890	310.50	5.86	.53	231.42	.00	4.37	6.00	10.000	6.000	.00	0 .0
WALL	EXIT													
965.500	222.060	8.830	230.890	310.50	15.81	3.88	234.77	.00	4.71	.00	5.000	.000	.00	1 .0
63.000	.0100					.0142	.90	8.83	.00	5.00	.013	.00	.00	PIPE
1028.500	222.690	9.095	231.785	310.50	15.81	3.88	235.67	.00	4.71	.00	5.000	.000	.00	1 .0
WALL	ENTRANCE													
1028.500	222.690	13.555	236.245	310.50	3.27	.17	236.41	.36	3.94	7.00	10.000	7.000	.00	0 .0
JUNCT STR	.0550					.0002	.00	13.91	.16		.013	.00	.00	RECTANG

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:11- 5-2024 Time: 9:30:52

OCEAN BREEZE RANCH
100 YR
LINE-B-3

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1034.500	223.020	13.456	236.476	222.90	2.37	.09	236.56	.00	3.16	7.00	10.000	7.000	.00	0 .0
WALL	EXIT													
1034.500	223.020	13.456	236.476	222.90	11.35	2.00	238.48	.00	4.23	.00	5.000	.000	.00	1 .0
78.740	.0138					.0073	.58	13.46	.00	3.16	.013	.00	.00	PIPE
1113.240	224.110	13.293	237.403	222.90	11.35	2.00	239.40	.00	4.23	.00	5.000	.000	.00	1 .0
WALL	ENTRANCE													
1113.240	224.110	15.589	239.699	222.90	2.38	.09	239.79	.00	3.50	6.00	10.000	6.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.500														
CD	2	2	0	.000	10.000	3.000			.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -

OCEAN BREEZE RANCH

HEADING LINE NO 2 IS -

Q100

HEADING LINE NO 3 IS -

LINE B4

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	993.240	228.150	2	231.220

ELEMENT NO 2 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	993.240	228.150	1

ELEMENT NO 3 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1025.110	231.820	1	.013	.000	.000	.000	0

ELEMENT NO 4 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1025.110	231.820	2	.200

ELEMENT NO 5 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1029.110	232.150	2	.013	.000	.000	.000	0

ELEMENT NO 6 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1029.110	232.150	1

ELEMENT NO 7 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1041.360	233.380	1	.013	.000	.000	.000	0

ELEMENT NO 8 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1041.360	233.380	2	.200

ELEMENT NO 9 IS A JUNCTION * * * * * * *

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	1045.360	233.710	2	1	0	.013	3.000	.000	233.710	.000	.000	.000

RADIUS	ANGLE
.000	.000

ELEMENT NO 10 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1045.360	233.710	1

ELEMENT NO 11 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1051.610	234.330	1	.013	.000	.000	.000	0

ELEMENT NO 12 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1051.610	234.330	2	.200

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 13 IS A JUNCTION * * * * * * *

```
                  U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3        Q4     INVERT-3 INVERT-4  PHI 3  PHI 4
                             1055.610  234.660    2     1     0   .013     2.300      .000   234.660      .000    .000     .000
                                                                                              RADIUS    ANGLE
                                                                                               2.546  90.000
ELEMENT NO  14 IS A  WALL  EXIT                        *
                  U/S DATA   STATION    INVERT  SECT
                             1055.610  234.660    1
ELEMENT NO  15 IS A REACH             *         *     *
                  U/S DATA   STATION    INVERT  SECT               N                          RADIUS    ANGLE     ANG PT  MAN H
                             1286.640  241.650    1              .013                           .000     .000      .000     0
ELEMENT NO  16 IS A  WALL  ENTRANCE                    *
                  U/S DATA   STATION    INVERT  SECT              FP
                             1286.640  241.650    2              .200
ELEMENT NO  17 IS A REACH             *         *     *
                  U/S DATA   STATION    INVERT  SECT               N                          RADIUS    ANGLE     ANG PT  MAN H
                             1290.640  241.980    2              .013                           .000     .000      .000     0
ELEMENT NO  18 IS A  WALL  EXIT                        *
                  U/S DATA   STATION    INVERT  SECT
                             1290.640  241.980    1
ELEMENT NO  19 IS A REACH             *         *     *
                  U/S DATA   STATION    INVERT  SECT               N                          RADIUS    ANGLE     ANG PT  MAN H
                             1541.150  250.590    1              .013                           .000     .000      .000     0
ELEMENT NO  20 IS A  WALL  ENTRANCE                    *
                  U/S DATA   STATION    INVERT  SECT              FP
                             1541.150  250.590    2              .200
ELEMENT NO  21 IS A REACH             *         *     *
                  U/S DATA   STATION    INVERT  SECT               N                          RADIUS    ANGLE     ANG PT  MAN H
                             1545.150  250.920    2              .013                          2.546  -90.000      .000     0
ELEMENT NO  22 IS A  WALL  EXIT                        *
                  U/S DATA   STATION    INVERT  SECT
                             1545.150  250.920    1
ELEMENT NO  23 IS A REACH             *         *     *
                  U/S DATA   STATION    INVERT  SECT               N                          RADIUS    ANGLE     ANG PT  MAN H
                             1603.370  252.670    1              .013                           .000     .000      .000     0
ELEMENT NO  24 IS A  WALL  ENTRANCE                    *
                  U/S DATA   STATION    INVERT  SECT              FP
                             1603.370  252.670    2              .200
                                                  W S P G W                                                          PAGE NO   4
                          WATER SURFACE PROFILE - ELEMENT CARD LISTING
ELEMENT NO  25 IS A JUNCTION          *         *     *     *                 *                  *                *
                  U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3        Q4     INVERT-3 INVERT-4  PHI 3  PHI 4
                             1607.370  253.000    2     1     0   .013     4.700      .000   253.000      .000  90.000     .000
                                                                                              RADIUS    ANGLE
                                                                                                .000     .000
ELEMENT NO  26 IS A  WALL  EXIT                        *
                  U/S DATA   STATION    INVERT  SECT
                             1607.370  253.000    1
ELEMENT NO  27 IS A REACH             *         *     *
                  U/S DATA   STATION    INVERT  SECT               N                          RADIUS    ANGLE     ANG PT  MAN H
                             1623.390  257.000    1              .013                           .000     .000      .000     0
ELEMENT NO  28 IS A  WALL  ENTRANCE                    *
                  U/S DATA   STATION    INVERT  SECT              FP
                             1623.390  257.000    2              .200
ELEMENT NO  29 IS A SYSTEM HEADWORKS                   *                    *
                  U/S DATA   STATION    INVERT  SECT                                W S ELEV
                             1623.390  257.000    2                               257.000
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Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 5-29-2024 Time:11:18:11

OCEAN BREEZE RANCH
Q100
LINE B4

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
993.240	228.150	3.070	231.220	18.40	2.00	.06	231.28	.00	1.05	3.00	10.000	3.000	.00	0 .0
WALL EXIT														
993.240	228.150	3.070	231.220	18.40	10.41	1.68	232.90	.00	1.46	.00	1.500	.000	.00	1 .0
.412	.1152					.0307	.01	3.07	.00	.76	.013	.00	.00	PIPE
993.652	228.197	3.034	231.232	18.40	10.41	1.68	232.92	.00	1.46	.00	1.500	.000	.00	1 .0
HYDRAULIC JUMP														
993.652	228.197	.893	229.090	18.40	16.78	4.37	233.46	.00	1.46	1.47	1.500	.000	.00	1 .0
5.612	.1152					.0663	.37	.89	3.43	.76	.013	.00	.00	PIPE
999.264	228.844	.922	229.766	18.40	16.13	4.04	233.81	.00	1.46	1.46	1.500	.000	.00	1 .0
5.893	.1152					.0594	.35	.92	3.22	.76	.013	.00	.00	PIPE
1005.157	229.522	.961	230.483	18.40	15.38	3.67	234.16	.00	1.46	1.44	1.500	.000	.00	1 .0
4.696	.1152					.0528	.25	.96	2.97	.76	.013	.00	.00	PIPE
1009.853	230.063	1.002	231.065	18.40	14.67	3.34	234.41	.00	1.46	1.41	1.500	.000	.00	1 .0
3.820	.1152					.0469	.18	1.00	2.74	.76	.013	.00	.00	PIPE
1013.673	230.503	1.045	231.548	18.40	13.98	3.04	234.58	.00	1.46	1.38	1.500	.000	.00	1 .0
3.111	.1152					.0418	.13	1.05	2.52	.76	.013	.00	.00	PIPE
1016.783	230.861	1.093	231.954	18.40	13.33	2.76	234.71	.00	1.46	1.33	1.500	.000	.00	1 .0
2.574	.1152					.0375	.10	1.09	2.31	.76	.013	.00	.00	PIPE

OCEAN BREEZE RANCH
Q100
LINE B4

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1019.357	231.158	1.144	232.302	18.40	12.71	2.51	234.81	.00	1.46	1.28	1.500	.000	.00	1 .0
2.089	.1152					.0337	.07	1.14	2.10	.76	.013	.00	.00	PIPE
1021.447	231.398	1.202	232.600	18.40	12.12	2.28	234.88	.00	1.46	1.20	1.500	.000	.00	1 .0
1.696	.1152					.0306	.05	1.20	1.90	.76	.013	.00	.00	PIPE
1023.142	231.593	1.266	232.860	18.40	11.56	2.07	234.93	.00	1.46	1.09	1.500	.000	.00	1 .0
1.271	.1152					.0281	.04	1.27	1.68	.76	.013	.00	.00	PIPE
1024.413	231.740	1.344	233.084	18.40	11.02	1.89	234.97	.00	1.46	.92	1.500	.000	.00	1 .0
.697	.1152					.0271	.02	1.34	1.44	.76	.013	.00	.00	PIPE
1025.110	231.820	1.455	233.275	18.40	10.50	1.71	234.99	.00	1.46	.51	1.500	.000	.00	1 .0
WALL ENTRANCE														
1025.110	231.820	5.455	237.275	18.40	1.12	.02	237.29	.00	1.05	3.00	10.000	3.000	.00	0 .0
3.057	.0825					.0001	.00	5.46	.08	.40	.013	.00	.00	RECTANG
1028.167	232.072	5.201	237.273	18.40	1.18	.02	237.29	.00	1.05	3.00	10.000	3.000	.00	0 .0
.943	.0825					.0001	.00	5.20	.09	.40	.013	.00	.00	RECTANG
1029.110	232.150	5.123	237.273	18.40	1.20	.02	237.30	.00	1.05	3.00	10.000	3.000	.00	0 .0
WALL EXIT														
1029.110	232.150	5.123	237.273	18.40	10.41	1.68	238.96	.00	1.46	.00	1.500	.000	.00	1 .0
12.250	.1004					.0307	.38	5.12	.00	.80	.013	.00	.00	PIPE

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 5-29-2024 Time:11:18:11

OCEAN BREEZE RANCH
Q100
LINE B4

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1041.360	233.380	4.269	237.649	18.40	10.41	1.68	239.33	.00	1.46	.00	1.500	.000	.00	1 .0
WALL	ENTRANCE													
1041.360	233.380	6.271	239.651	18.40	.98	.01	239.67	.00	1.05	3.00	10.000	3.000	.00	0 .0
JUNCT STR	.0825					.0001	.00	6.27	.07		.013	.00	.00	RECTANG
1045.360	233.710	5.940	239.650	15.40	.86	.01	239.66	.00	.94	3.00	10.000	3.000	.00	0 .0
WALL	EXIT													
1045.360	233.710	5.941	239.651	15.40	8.71	1.18	240.83	.00	1.41	.00	1.500	.000	.00	1 .0
6.250	.0992					.0215	.13	5.94	.00	.72	.013	.00	.00	PIPE
1051.610	234.330	5.455	239.785	15.40	8.71	1.18	240.96	.00	1.41	.00	1.500	.000	.00	1 .0
WALL	ENTRANCE													
1051.610	234.330	6.859	241.189	15.40	.75	.01	241.20	.02	.94	3.00	10.000	3.000	.00	0 .0
JUNCT STR	.0825					.0000	.00	6.88	.05		.013	.00	.00	RECTANG
1055.610	234.660	6.542	241.202	13.10	.67	.01	241.21	.00	.84	3.00	10.000	3.000	.00	0 .0
WALL	EXIT													
1055.610	234.660	6.543	241.203	13.10	7.41	.85	242.06	.00	1.35	.00	1.500	.000	.00	1 .0
231.030	.0303					.0156	3.59	6.54	.00	.94	.013	.00	.00	PIPE
1286.640	241.650	3.146	244.796	13.10	7.41	.85	245.65	.00	1.35	.00	1.500	.000	.00	1 .0
WALL	ENTRANCE													

OCEAN BREEZE RANCH
Q100
LINE B4

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1286.640	241.650	4.149	245.799	13.10	1.05	.02	245.82	.00	.84	3.00	10.000	3.000	.00	0 .0
2.322	.0825					.0001	.00	4.15	.09	.32	.013	.00	.00	RECTANG
1288.962	241.842	3.956	245.797	13.10	1.10	.02	245.82	.00	.84	3.00	10.000	3.000	.00	0 .0
1.678	.0825					.0001	.00	3.96	.10	.32	.013	.00	.00	RECTANG
1290.640	241.980	3.816	245.796	13.10	1.14	.02	245.82	.00	.84	3.00	10.000	3.000	.00	0 .0
WALL EXIT														
1290.640	241.980	3.817	245.797	13.10	7.41	.85	246.65	.00	1.35	.00	1.500	.000	.00	1 .0
96.136	.0344					.0156	1.50	3.82	.00	.90	.013	.00	.00	PIPE
1386.776	245.284	2.008	247.292	13.10	7.41	.85	248.15	.00	1.35	.00	1.500	.000	.00	1 .0
HYDRAULIC JUMP														
1386.776	245.284	.901	246.185	13.10	11.82	2.17	248.35	.00	1.35	1.47	1.500	.000	.00	1 .0
79.815	.0344					.0329	2.63	.90	2.40	.90	.013	.00	.00	PIPE
1466.591	248.027	.926	248.954	13.10	11.43	2.03	250.98	.00	1.35	1.46	1.500	.000	.00	1 .0
31.289	.0344					.0297	.93	.93	2.27	.90	.013	.00	.00	PIPE
1497.880	249.103	.965	250.068	13.10	10.90	1.84	251.91	.00	1.35	1.44	1.500	.000	.00	1 .0
15.863	.0344					.0264	.42	.97	2.10	.90	.013	.00	.00	PIPE
1513.743	249.648	1.006	250.654	13.10	10.39	1.68	252.33	.00	1.35	1.41	1.500	.000	.00	1 .0
9.946	.0344					.0235	.23	1.01	1.94	.90	.013	.00	.00	PIPE

OCEAN BREEZE RANCH
Q100
LINE B4

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1523.688	249.990	1.050	251.040	13.10	9.91	1.52	252.56	.00	1.35	1.37	1.500	.000	.00	1 .0
6.743	.0344					.0209	.14	1.05	1.78	.90	.013	.00	.00	PIPE
1530.431	250.222	1.098	251.320	13.10	9.44	1.39	252.70	.00	1.35	1.33	1.500	.000	.00	1 .0
4.737	.0344					.0188	.09	1.10	1.63	.90	.013	.00	.00	PIPE
1535.168	250.384	1.150	251.535	13.10	9.00	1.26	252.79	.00	1.35	1.27	1.500	.000	.00	1 .0
3.232	.0344					.0169	.05	1.15	1.48	.90	.013	.00	.00	PIPE
1538.400	250.495	1.208	251.704	13.10	8.59	1.14	252.85	.00	1.35	1.19	1.500	.000	.00	1 .0
2.001	.0344					.0154	.03	1.21	1.33	.90	.013	.00	.00	PIPE
1540.401	250.564	1.274	251.838	13.10	8.19	1.04	252.88	.00	1.35	1.07	1.500	.000	.00	1 .0
.749	.0344					.0142	.01	1.27	1.18	.90	.013	.00	.00	PIPE
1541.150	250.590	1.355	251.945	13.10	7.80	.94	252.89	1.50	1.35	.89	1.500	.000	.00	1 .0
WALL ENTRANCE														
1541.150	250.590	3.355	253.945	13.10	1.30	.03	253.97	.06	.84	3.00	10.000	3.000	.00	0 .0
1.863	.0825					.0001	.00	3.42	.13	.32	.013	.00	.00	RECTANG
1543.013	250.744	3.198	253.942	13.10	1.37	.03	253.97	.07	.84	3.00	10.000	3.000	.00	0 .0
1.772	.0825					.0001	.00	3.27	.13	.32	.013	.00	.00	RECTANG
1544.786	250.890	3.050	253.940	13.10	1.43	.03	253.97	.08	.84	3.00	10.000	3.000	.00	0 .0
.364	.0825					.0002	.00	3.12	.14	.32	.013	.00	.00	RECTANG

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 5-29-2024 Time:11:18:11

OCEAN BREEZE RANCH
Q100
LINE B4

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1545.150	250.920	3.019	253.939	13.10	1.45	.03	253.97	.00	.84	3.00	10.000	3.000	.00	0 .0
WALL EXIT														
1545.150	250.920	3.020	253.940	13.10	7.41	.85	254.79	.00	1.35	.00	1.500	.000	.00	1 .0
58.220	.0301					.0156	.91	3.02	.00	.94	.013	.00	.00	PIPE
1603.370	252.670	2.175	254.845	13.10	7.41	.85	255.70	.00	1.35	.00	1.500	.000	.00	1 .0
WALL ENTRANCE														
1603.370	252.670	3.163	255.833	13.10	1.38	.03	255.86	.00	.84	3.00	10.000	3.000	.00	0 .0
JUNCT STR	.0825					.0001	.00	3.16	.14		.013	.00	.00	RECTANG
1607.370	253.000	2.868	255.868	8.40	.98	.01	255.88	.00	.62	3.00	10.000	3.000	.00	0 .0
WALL EXIT														
1607.370	253.000	2.868	255.868	8.40	4.75	.35	256.22	.00	1.12	.00	1.500	.000	.00	1 .0
1.715	.2497					.0064	.01	2.87	.00	.41	.013	.00	.00	PIPE
1609.085	253.428	2.451	255.879	8.40	4.75	.35	256.23	.00	1.12	.00	1.500	.000	.00	1 .0
HYDRAULIC JUMP														
1609.085	253.428	.509	253.937	8.40	15.91	3.93	257.87	.00	1.12	1.42	1.500	.000	.00	1 .0
1.401	.2497					.0995	.14	.51	4.60	.41	.013	.00	.00	PIPE
1610.487	253.778	.521	254.299	8.40	15.38	3.67	257.97	.00	1.12	1.43	1.500	.000	.00	1 .0
1.958	.2497					.0889	.17	.52	4.38	.41	.013	.00	.00	PIPE

OCEAN BREEZE RANCH
Q100
LINE B4

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1612.444	254.267	.540	254.807	8.40	14.66	3.34	258.14	.00	1.12	1.44	1.500	.000	.00	1 .0
1.656	.2497					.0780	.13	.54	4.10	.41	.013	.00	.00	PIPE
1614.100	254.680	.559	255.239	8.40	13.98	3.03	258.27	.00	1.12	1.45	1.500	.000	.00	1 .0
1.411	.2497					.0683	.10	.56	3.83	.41	.013	.00	.00	PIPE
1615.511	255.033	.579	255.612	8.40	13.33	2.76	258.37	.00	1.12	1.46	1.500	.000	.00	1 .0
1.211	.2497					.0600	.07	.58	3.58	.41	.013	.00	.00	PIPE
1616.722	255.335	.600	255.935	8.40	12.71	2.51	258.44	.00	1.12	1.47	1.500	.000	.00	1 .0
1.045	.2497					.0526	.05	.60	3.34	.41	.013	.00	.00	PIPE
1617.767	255.596	.622	256.218	8.40	12.12	2.28	258.50	.00	1.12	1.48	1.500	.000	.00	1 .0
.905	.2497					.0462	.04	.62	3.12	.41	.013	.00	.00	PIPE
1618.672	255.822	.645	256.467	8.40	11.55	2.07	258.54	.00	1.12	1.49	1.500	.000	.00	1 .0
.786	.2497					.0406	.03	.65	2.91	.41	.013	.00	.00	PIPE
1619.458	256.018	.669	256.687	8.40	11.01	1.88	258.57	.00	1.12	1.49	1.500	.000	.00	1 .0
.683	.2497					.0357	.02	.67	2.71	.41	.013	.00	.00	PIPE
1620.142	256.189	.694	256.883	8.40	10.50	1.71	258.60	.00	1.12	1.50	1.500	.000	.00	1 .0
.594	.2497					.0314	.02	.69	2.53	.41	.013	.00	.00	PIPE
1620.736	256.337	.720	257.057	8.40	10.01	1.56	258.61	.00	1.12	1.50	1.500	.000	.00	1 .0
.516	.2497					.0276	.01	.72	2.36	.41	.013	.00	.00	PIPE

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 5-29-2024 Time:11:18:11

OCEAN BREEZE RANCH
Q100
LINE B4

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1621.252	256.466	.747	257.213	8.40	9.55	1.42	258.63	.00	1.12	1.50	1.500	.000	.00	1 .0
.442	.2497					.0243	.01	.75	2.20	.41	.013	.00	.00	PIPE
1621.694	256.576	.776	257.353	8.40	9.10	1.29	258.64	.00	1.12	1.50	1.500	.000	.00	1 .0
.381	.2497					.0214	.01	.78	2.04	.41	.013	.00	.00	PIPE
1622.075	256.672	.806	257.478	8.40	8.68	1.17	258.65	.00	1.12	1.50	1.500	.000	.00	1 .0
.326	.2497					.0189	.01	.81	1.90	.41	.013	.00	.00	PIPE
1622.401	256.753	.837	257.590	8.40	8.28	1.06	258.65	.00	1.12	1.49	1.500	.000	.00	1 .0
.269	.2497					.0167	.00	.84	1.77	.41	.013	.00	.00	PIPE
1622.670	256.820	.871	257.691	8.40	7.89	.97	258.66	.00	1.12	1.48	1.500	.000	.00	1 .0
.225	.2497					.0148	.00	.87	1.64	.41	.013	.00	.00	PIPE
1622.895	256.877	.906	257.783	8.40	7.52	.88	258.66	.00	1.12	1.47	1.500	.000	.00	1 .0
.181	.2497					.0131	.00	.91	1.52	.41	.013	.00	.00	PIPE
1623.077	256.922	.943	257.865	8.40	7.17	.80	258.66	.00	1.12	1.45	1.500	.000	.00	1 .0
.137	.2497					.0116	.00	.94	1.41	.41	.013	.00	.00	PIPE
1623.214	256.956	.983	257.939	8.40	6.84	.73	258.67	.00	1.12	1.43	1.500	.000	.00	1 .0
.096	.2497					.0103	.00	.98	1.30	.41	.013	.00	.00	PIPE
1623.310	256.980	1.026	258.006	8.40	6.52	.66	258.67	.00	1.12	1.39	1.500	.000	.00	1 .0
.063	.2497					.0092	.00	1.03	1.20	.41	.013	.00	.00	PIPE

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 5-29-2024 Time:11:18:11

OCEAN BREEZE RANCH
Q100
LINE B4

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1623.372	256.996	1.071	258.067	8.40	6.22	.60	258.67	.00	1.12	1.36	1.500	.000	.00	1 .0
.018	.2497					.0082	.00	1.07	1.10	.41	.013	.00	.00	PIPE
1623.390	257.000	1.122	258.122	8.40	5.92	.54	258.67	.00	1.12	1.30	1.500	.000	.00	1 .0
WALL	ENTRANCE													
1623.390	257.000	2.122	259.122	8.40	1.32	.03	259.15	.00	.62	3.00	10.000	3.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.500														
CD	2	2	0	.000	10.000	3.000			.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -

OCEAN BREEZE RANCH

HEADING LINE NO 2 IS -

Q100

HEADING LINE NO 3 IS -

LINE B4-1

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1000.000	234.660	2	239.650

ELEMENT NO 2 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1000.000	234.660	1

ELEMENT NO 3 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1026.250	236.810	1	.013	.000	.000	.000	0

ELEMENT NO 4 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1026.250	236.810	2	.200

ELEMENT NO 5 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1026.250	236.810	2	236.810

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 5-30-2024 Time: 9: 4:15

OCEAN BREEZE RANCH
Q100
LINE B4-1

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1000.000	234.660	4.990	239.650	3.00	.20	.00	239.65	.00	.31	3.00	10.000	3.000	.00	0 .0
WALL EXIT														
1000.000	234.660	4.990	239.650	3.00	1.70	.04	239.70	.00	.66	.00	1.500	.000	.00	1 .0
26.250	.0819					.0008	.02	4.99	.00	.32	.013	.00	.00	PIPE
1026.250	236.810	2.862	239.672	3.00	1.70	.04	239.72	.00	.66	.00	1.500	.000	.00	1 .0
WALL ENTRANCE														
1026.250	236.810	2.913	239.723	3.00	.34	.00	239.72	.00	.31	3.00	10.000	3.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.500														
CD	2	2	0	.000	10.000	3.000			.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
OCEAN BREEZE RANCH
HEADING LINE NO 2 IS -
Q100
HEADING LINE NO 3 IS -
LINE B4-2

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1002.000	253.000	2	255.870

ELEMENT NO 2 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1002.000	253.000	1

ELEMENT NO 3 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1042.500	253.650	1	.013	.000	.000	.000	0

ELEMENT NO 4 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1042.500	253.650	2	.200

ELEMENT NO 5 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1042.500	253.650	2	236.810

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 5-29-2024 Time:11:25:27

OCEAN BREEZE RANCH
Q100
LINE B4-2

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1002.000	253.000	2.870	255.870	4.70	.55	.00	255.87	.00	.42	3.00	10.000	3.000	.00	0 .0
WALL	EXIT													
1002.000	253.000	2.871	255.871	4.70	2.66	.11	255.98	.00	.83	.00	1.500	.000	.00	1 .0
40.500	.0160					.0020	.08	2.87	.00	.62	.013	.00	.00	PIPE
1042.500	253.650	2.302	255.952	4.70	2.66	.11	256.06	.00	.83	.00	1.500	.000	.00	1 .0
WALL	ENTRANCE													

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		4.500														
CD	2	2	0	.000	12.000	6.000			.00										
CD	3	4	1		4.000														

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -

OCEAN BREEZE RANCH

HEADING LINE NO 2 IS -

Q100

HEADING LINE NO 3 IS -

LINE B5

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1090.590	224.020	2	236.480

ELEMENT NO 2 IS A WALL EXIT

U/S DATA	STATION	INVERT	SECT
	1090.590	224.020	1

ELEMENT NO 3 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1124.860	224.360	1	.013	196.353	-10.000	.000	0

ELEMENT NO 4 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1355.180	226.670	1	.013	.000	.000	.000	0

ELEMENT NO 5 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1380.490	226.920	1	.013	.000	.000	.000	0

ELEMENT NO 6 IS A WALL ENTRANCE

U/S DATA	STATION	INVERT	SECT	FP
	1380.490	226.920	2	.200

ELEMENT NO 7 IS A JUNCTION

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	1384.490	227.020	2	1	0	.013	.300	.000	227.250	.000	90.000	.000

RADIUS	ANGLE
.000	.000

ELEMENT NO 8 IS A WALL EXIT

U/S DATA	STATION	INVERT	SECT
	1384.490	227.020	1

ELEMENT NO 9 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1628.650	231.660	1	.013	1217.523	11.490	.000	0

ELEMENT NO 10 IS A WALL ENTRANCE

U/S DATA	STATION	INVERT	SECT	FP
	1628.650	231.660	2	.200

ELEMENT NO 11 IS A JUNCTION

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	1632.650	231.760	2	1	0	.013	9.600	.000	231.760	.000	90.000	.000

RADIUS	ANGLE
.000	.000

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 12 IS A WALL EXIT

```
                  U/S DATA   STATION    INVERT  SECT
                             1632.650  231.760    1
ELEMENT NO  13 IS A REACH            *         *     *
                  U/S DATA   STATION    INVERT  SECT               N                          RADIUS    ANGLE     ANG PT  MAN H
                             1876.710  236.670    1              .013                        23.000  607.983      .000     0
ELEMENT NO  14 IS A  WALL  ENTRANCE                  *
                  U/S DATA   STATION    INVERT  SECT              FP
                             1876.710  236.670    2              .200
ELEMENT NO  15 IS A REACH            *         *     *
                  U/S DATA   STATION    INVERT  SECT               N                          RADIUS    ANGLE     ANG PT  MAN H
                             1880.810  236.770    2              .013                          .000     .000      .000     0
ELEMENT NO  16 IS A  WALL  EXIT                      *
                  U/S DATA   STATION    INVERT  SECT
                             1880.810  236.770    3
ELEMENT NO  17 IS A REACH            *         *     *
                  U/S DATA   STATION    INVERT  SECT               N                          RADIUS    ANGLE     ANG PT  MAN H
                             1966.130  238.050    3              .013                        56.000   87.294      .000     0
ELEMENT NO  18 IS A  WALL  ENTRANCE                  *
                  U/S DATA   STATION    INVERT  SECT              FP
                             1966.130  238.050    2              .200
ELEMENT NO  19 IS A JUNCTION         *         *     *     *               *                  *               *
                  U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3        Q4     INVERT-3 INVERT-4  PHI 3  PHI 4
                             1970.810  238.380    2     1     0   .013     3.300      .000   238.380      .000  90.000     .000
                                                                                             RADIUS    ANGLE
                                                                                               .000     .000
ELEMENT NO  20 IS A  WALL  EXIT                      *
                  U/S DATA   STATION    INVERT  SECT
                             1970.810  238.380    3
ELEMENT NO  21 IS A REACH            *         *     *
                  U/S DATA   STATION    INVERT  SECT               N                          RADIUS    ANGLE     ANG PT  MAN H
                             1989.600  238.640    3              .013                          .000     .000      .000     0
ELEMENT NO  22 IS A  WALL  ENTRANCE                  *
                  U/S DATA   STATION    INVERT  SECT              FP
                             1989.600  238.640    2              .200
ELEMENT NO  23 IS A SYSTEM HEADWORKS                 *                    *
                  U/S DATA   STATION    INVERT  SECT                              W S ELEV
                             1989.600  238.640    2                              238.640
                                              W S P G W                                                    PAGE NO   4
                       WATER SURFACE PROFILE - ELEMENT CARD LISTING
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Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:11- 5-2024 Time: 8:48:48

OCEAN BREEZE RANCH
Q100
LINE B5

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT) /	Water Elev /	Q (CFS) /	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width / "N"	Height/Dia.-FT / X-Fall	Base Wt or I.D. / ZR	ZL /	No Wth Prs/Pip / Type Ch
1090.590	224.020	12.460	236.480	115.20	1.54	.04	236.52	.00	2.25	6.00	12.000	6.000	.00	0 .0
WALL	EXIT													
1090.590	224.020	12.460	236.480	115.20	7.24	.81	237.29	.00	3.16	.00	4.500	.000	.00	1 .0
34.270	.0099				.0034	.12	.00	.00	2.48	.013	.00	.00	PIPE	
1124.860	224.360	12.292	236.652	115.20	7.24	.81	237.47	.00	3.16	.00	4.500	.000	.00	1 .0
230.320	.0100				.0034	.79	12.29	.00	2.47	.013	.00	.00	PIPE	
1355.180	226.670	10.772	237.442	115.20	7.24	.81	238.26	.00	3.16	.00	4.500	.000	.00	1 .0
25.310	.0099				.0034	.09	10.77	.00	2.48	.013	.00	.00	PIPE	
1380.490	226.920	10.609	237.529	115.20	7.24	.81	238.34	.00	3.16	.00	4.500	.000	.00	1 .0
WALL	ENTRANCE													
1380.490	226.920	11.535	238.455	115.20	1.66	.04	238.50	.00	2.25	6.00	12.000	6.000	.00	0 .0
JUNCT STR	.0250				.0001	.00	11.53	.09			.013	.00	.00	RECTANG
1384.490	227.020	11.435	238.455	114.90	1.67	.04	238.50	.00	2.25	6.00	12.000	6.000	.00	0 .0
WALL	EXIT													
1384.490	227.020	11.435	238.455	114.90	7.22	.81	239.27	.00	3.15	.00	4.500	.000	.00	1 .0
244.160	.0190				.0034	.83	.00	.00	2.05	.013	.00	.00	PIPE	
1628.650	231.660	7.687	239.347	114.90	7.22	.81	240.16	.00	3.15	.00	4.500	.000	.00	1 .0
WALL	ENTRANCE													

OCEAN BREEZE RANCH
Q100
LINE B5

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width	Height/Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1628.650	231.660	8.567	240.227	114.90	2.24	.08	240.30	.00	2.25	6.00	12.000	6.000	.00	0 .0
JUNCT STR	.0250					.0001	.00	8.57	.13		.013	.00	.00	RECTANG
1632.650	231.760	8.491	240.251	105.30	2.07	.07	240.32	.03	2.12	6.00	12.000	6.000	.00	0 .0
WALL	EXIT													
1632.650	231.760	8.491	240.251	105.30	6.62	.68	240.93	.00	3.02	.00	4.500	.000	.00	1 .0
244.060	.0201					.0029	.70	.00	.00	1.92	.013	.00	.00	PIPE
1876.710	236.670	4.635	241.305	105.30	6.62	.68	241.99	.00	3.02	.00	4.500	.000	.00	1 .0
WALL	ENTRANCE													
1876.710	236.670	5.243	241.913	105.30	3.35	.17	242.09	.00	2.12	6.00	12.000	6.000	.00	0 .0
4.100	.0244					.0004	.00	5.24	.26	1.12	.013	.00	.00	RECTANG
1880.810	236.770	5.137	241.907	105.30	3.42	.18	242.09	.04	2.12	6.00	12.000	6.000	.00	0 .0
WALL	EXIT													
1880.810	236.770	5.138	241.908	105.30	8.38	1.09	243.00	.00	3.11	.00	4.000	.000	.00	1 .0
85.320	.0150					.0054	.46	.00	.00	2.23	.013	.00	.00	PIPE
1966.130	238.050	4.531	242.581	105.30	8.38	1.09	243.67	.00	3.11	.00	4.000	.000	.00	1 .0
WALL	ENTRANCE													
1966.130	238.050	5.661	243.711	105.30	3.10	.15	243.86	.00	2.12	6.00	12.000	6.000	.00	0 .0
JUNCT STR	.0705					.0003	.00	5.69	.23		.013	.00	.00	RECTANG

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:11- 5-2024 Time: 8:48:48

OCEAN BREEZE RANCH
Q100
LINE B5

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT or "N"	Base Wt I.D. X-Fall	ZL ZR	No Wth Prs/Pip Type Ch
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp				
1970.810	238.380	5.333	243.713	102.00	3.19	.16	243.87	.00	2.08	6.00	12.000	6.000	.00	0 .0
WALL	EXIT													
1970.810	238.380	5.334	243.714	102.00	8.12	1.02	244.74	.00	3.06	.00	4.000	.000	.00	1 .0
18.790	.0138					.0050	.09	5.33	.00	2.24	.013	.00	.00	PIPE
1989.600	238.640	5.168	243.808	102.00	8.12	1.02	244.83	.00	3.06	.00	4.000	.000	.00	1 .0
WALL	ENTRANCE													
1989.600	238.640	6.258	244.898	102.00	2.72	.11	245.01	.00	2.08	6.00	12.000	6.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		3.000														
CD	2	2	0	.000	10.000	3.000			.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -

OCEAN BREEZE RANCH

HEADING LINE NO 2 IS -

Q100

HEADING LINE NO 3 IS -

LINE B5-1

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1003.000	233.080	2	240.230

ELEMENT NO 2 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1003.000	233.080	1

ELEMENT NO 3 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1011.440	233.250	1	.013	.000	.000	.000	0

ELEMENT NO 4 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1011.440	233.250	2	.200

ELEMENT NO 5 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1011.440	233.250	2	233.250

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:11- 5-2024 Time: 9:50: 7

OCEAN BREEZE RANCH
Q100
LINE B5-1

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1003.000	233.080	7.150	240.230	17.40	.81	.01	240.24	.00	1.01	3.00	10.000	3.000	.00	0 .0
WALL	EXIT													
1003.000	233.080	7.150	240.230	17.40	2.46	.09	240.32	.00	1.33	.00	3.000	.000	.00	1 .0
8.440	.0201					.0007	.01	7.15	.00	.87	.013	.00	.00	PIPE
1011.440	233.250	6.986	240.236	17.40	2.46	.09	240.33	.00	1.33	.00	3.000	.000	.00	1 .0
WALL	ENTRANCE													
1011.440	233.250	7.086	240.336	17.40	.82	.01	240.35	.00	1.01	3.00	10.000	3.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		4.000														
CD	2	4	1		3.500														
CD	3	4	1		3.000														
CD	4	4	1		2.500														
CD	5	4	1		1.500														
CD	6	3	0	.000	6.000	4.000	.000	.000	.00										
CD	7	4	1		4.500														

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
LINE_B6
HEADING LINE NO 2 IS -
Q100
HEADING LINE NO 3 IS -
OBR

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1034.620	228.040	7	231.220

ELEMENT NO 2 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1034.620	228.040	7

ELEMENT NO 3 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1054.120	229.020	7	.013	.000	.000	.000	0

ELEMENT NO 4 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1088.570	231.110	7	.013	.000	.000	.000	0

ELEMENT NO 5 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1088.570	231.110	6	.200

ELEMENT NO 6 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1092.570	231.110	6	.013	172.318	1.330	.000	0

ELEMENT NO 7 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1092.570	231.110	7

ELEMENT NO 8 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1112.090	231.300	7	.013	.000	.000	.000	0

ELEMENT NO 9 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1147.820	231.660	7	.013	.000	.000	.000	0

ELEMENT NO 10 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1176.990	231.950	7	.013	1256.632	1.330	.000	0

ELEMENT NO 11 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1176.990	231.950	6	.200

ELEMENT NO 12 IS A JUNCTION * * * * * * *

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	1180.990	232.050	6	5	5	.013	6.800	1.200	233.990	233.990	-88.600	88.600

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 13 IS A WALL EXIT

U/S DATA	STATION	INVERT	SECT	RADIUS	ANGLE
	1180.990	232.050	1	.000	.000

ELEMENT NO 14 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1238.590	232.630	1	.013	1264.458	2.610	.000	0

ELEMENT NO 15 IS A WALL ENTRANCE

U/S DATA	STATION	INVERT	SECT	FP
	1238.590	232.630	6	.200

ELEMENT NO 16 IS A JUNCTION

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	1242.590	233.130	6	4	0	.013	21.800	.000	234.130	.000	-84.000	.300

RADIUS	ANGLE
.000	.000

ELEMENT NO 17 IS A WALL EXIT

U/S DATA	STATION	INVERT	SECT
	1242.590	233.130	2

ELEMENT NO 18 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1391.510	238.340	2	.013	1260.338	6.770	.000	0

ELEMENT NO 19 IS A WALL ENTRANCE

U/S DATA	STATION	INVERT	SECT	FP
	1391.510	238.340	6	.200

ELEMENT NO 20 IS A JUNCTION

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	1395.510	238.670	6	5	0	.013	1.700	.000	239.840	.000	-88.000	.200

RADIUS	ANGLE
.000	.000

ELEMENT NO 21 IS A WALL EXIT

U/S DATA	STATION	INVERT	SECT
	1395.510	238.670	2

ELEMENT NO 22 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1501.660	242.390	2	.013	1248.860	4.870	.000	0

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 23 IS A WALL ENTRANCE

U/S DATA	STATION	INVERT	SECT	FP
	1501.660	242.390	6	.200

ELEMENT NO 24 IS A JUNCTION

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	1505.660	242.720	6	5	5	.013	7.600	2.800	243.890	243.890	-88.500	88.600

RADIUS	ANGLE
.000	.000

ELEMENT NO 25 IS A WALL EXIT

U/S DATA	STATION	INVERT	SECT
	1505.660	242.720	2

ELEMENT NO 26 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1565.140	246.370	2	.013	1262.204	2.700	.000	0

ELEMENT NO 27 IS A WALL ENTRANCE

U/S DATA	STATION	INVERT	SECT	FP
	1565.140	246.370	6	.200

ELEMENT NO 28 IS A JUNCTION

```
                  U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3        Q4     INVERT-3 INVERT-4  PHI 3  PHI 4
                             1569.140  246.870    6     4     0   .013    44.200      .000   247.370      .000 -88.000     .800
                                                                                          RADIUS    ANGLE
                                                                                            .000    .000
ELEMENT NO  29 IS A  WALL  EXIT                        *
                  U/S DATA   STATION    INVERT  SECT
                             1569.140  246.870    3
ELEMENT NO  30 IS A REACH             *         *     *
                  U/S DATA   STATION    INVERT  SECT               N                        RADIUS    ANGLE     ANG PT  MAN H
                             1644.010  251.970    3               .013                     1261.687    3.400      .000     0
ELEMENT NO  31 IS A  WALL  ENTRANCE                    *
                  U/S DATA   STATION    INVERT  SECT              FP
                             1644.010  251.970    6               .200
ELEMENT NO  32 IS A JUNCTION          *         *     *     *               *                  *               *
                  U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3        Q4     INVERT-3 INVERT-4  PHI 3  PHI 4
                             1648.010  252.120    6     5     0   .013     2.000      .000   252.970      .000  90.000     .000
                                                                                          RADIUS    ANGLE
                                                                                            .000    .000
                                                      W S P G W                                                    PAGE NO   5
                          WATER SURFACE PROFILE - ELEMENT CARD LISTING
ELEMENT NO  33 IS A  WALL  EXIT                        *
                  U/S DATA   STATION    INVERT  SECT
                             1648.010  252.120    3
ELEMENT NO  34 IS A REACH             *         *     *
                  U/S DATA   STATION    INVERT  SECT               N                        RADIUS    ANGLE     ANG PT  MAN H
                             1709.680  256.830    3               .013                       .000    .000      .000     0
ELEMENT NO  35 IS A  WALL  ENTRANCE                    *
                  U/S DATA   STATION    INVERT  SECT              FP
                             1709.680  256.830    6               .200
ELEMENT NO  36 IS A JUNCTION          *         *     *     *               *                  *               *
                  U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3        Q4     INVERT-3 INVERT-4  PHI 3  PHI 4
                             1713.680  257.330    6     5     0   .013     8.100      .000   252.970      .000  90.000     .000
                                                                                          RADIUS    ANGLE
                                                                                            .000    .000
ELEMENT NO  37 IS A  WALL  EXIT                        *
                  U/S DATA   STATION    INVERT  SECT
                             1713.680  257.330    4
ELEMENT NO  38 IS A REACH             *         *     *
                  U/S DATA   STATION    INVERT  SECT               N                        RADIUS    ANGLE     ANG PT  MAN H
                             1811.080  264.760    4               .013                       .000    .000      .000     0
ELEMENT NO  39 IS A  WALL  ENTRANCE                    *
                  U/S DATA   STATION    INVERT  SECT              FP
                             1811.080  264.760    6               .200
ELEMENT NO  40 IS A REACH             *         *     *
                  U/S DATA   STATION    INVERT  SECT               N                        RADIUS    ANGLE     ANG PT  MAN H
                             1815.080  265.090    6               .013                       .000    .000      .000     0
ELEMENT NO  41 IS A  WALL  EXIT                        *
                  U/S DATA   STATION    INVERT  SECT
                             1815.080  265.090    4
ELEMENT NO  42 IS A REACH             *         *     *
                  U/S DATA   STATION    INVERT  SECT               N                        RADIUS    ANGLE     ANG PT  MAN H
                             2073.780  286.660    4               .013                       .000    .000      .000     0
ELEMENT NO  43 IS A  WALL  ENTRANCE                    *
                  U/S DATA   STATION    INVERT  SECT              FP
                             2073.780  286.660    6               .200
ELEMENT NO  44 IS A REACH             *         *     *
                  U/S DATA   STATION    INVERT  SECT               N                        RADIUS    ANGLE     ANG PT  MAN H
                             2077.780  286.990    6               .013                       .000    .000      .000     0
```

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 45 IS A WALL EXIT

U/S DATA	STATION	INVERT	SECT
	2077.780	286.990	4

ELEMENT NO 46 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	2147.630	292.820	4	.013	.000	.000	.000	0

ELEMENT NO 47 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	2168.290	294.540	4	.013	.000	.000	.000	0

ELEMENT NO 48 IS A WALL ENTRANCE

U/S DATA	STATION	INVERT	SECT	FP
	2168.290	294.540	6	.200

ELEMENT NO 49 IS A JUNCTION

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	2172.290	295.540	6	4	5	.013	39.600	6.200	294.870	295.600	-90.000	9.000

RADIUS	ANGLE
.000	.000

ELEMENT NO 50 IS A WALL EXIT

U/S DATA	STATION	INVERT	SECT
	2172.290	295.540	5

ELEMENT NO 51 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	2240.990	301.270	5	.013	.000	.000	.000	0

ELEMENT NO 52 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	2414.770	315.760	5	.013	.000	.000	.000	0

ELEMENT NO 53 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	2454.420	319.070	5	.013	.000	.000	.000	0

ELEMENT NO 54 IS A WALL ENTRANCE

U/S DATA	STATION	INVERT	SECT	FP
	2454.420	319.070	6	.200

ELEMENT NO 55 IS A JUNCTION

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	2458.420	319.400	6	5	0	.013	6.100	.000	319.400	.000	-90.000	.000

RADIUS	ANGLE
.000	.000

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 56 IS A WALL EXIT

U/S DATA	STATION	INVERT	SECT
	2458.420	319.400	5

ELEMENT NO 57 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	2634.000	334.040	5	.013	.000	.000	.000	0

ELEMENT NO 58 IS A WALL ENTRANCE

U/S DATA	STATION	INVERT	SECT	FP
	2634.000	334.040	6	.200

ELEMENT NO 59 IS A JUNCTION

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	2638.000	334.370	6	0	0	.013	.000	.000	.000	.000	.000	.000

RADIUS	ANGLE
.000	.000

ELEMENT NO 60 IS A WALL EXIT

U/S DATA	STATION	INVERT	SECT
	2638.000	334.370	5

```
ELEMENT NO  61 IS A REACH              *         *     *
                U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                           2662.600  335.030    5              .013                           .000     .000      .000     0
ELEMENT NO  62 IS A REACH              *         *     *
                U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                           2753.730  337.490    5              .013                           .000     .000      .000     0
ELEMENT NO  63 IS A REACH              *         *     *
                U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                           2812.410  338.370    5              .013                           .000     .000    15.120     0
ELEMENT NO  64 IS A  WALL  ENTRANCE                     *
                U/S DATA   STATION    INVERT  SECT             FP
                           2812.410  338.370    5              .500
ELEMENT NO  65 IS A SYSTEM HEADWORKS                    *                     *
                U/S DATA   STATION    INVERT  SECT                                  W S ELEV
                           2812.410  338.370    5                                  338.370
```

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:11- 6-2024 Time: 8:34:22

LINE B6
Q100
OBR

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1034.620	228.040	2.267	230.307	149.70	18.64	5.40	235.70	.00	3.59	4.50	4.500	.000	.00	0 .0
WALL EXIT														
1034.620	228.040	2.265	230.305	149.70	18.66	5.41	235.71	.00	3.59	4.50	4.500	.000	.00	1 .0
6.871	.0503					.0220	.15	2.27	2.46	1.81	.013	.00	.00	PIPE
1041.491	228.385	2.305	230.690	149.70	18.25	5.17	235.86	.00	3.59	4.50	4.500	.000	.00	1 .0
12.629	.0503					.0201	.25	2.31	2.38	1.81	.013	.00	.00	PIPE
1054.120	229.020	2.394	231.414	149.70	17.40	4.70	236.12	.00	3.59	4.49	4.500	.000	.00	1 .0
4.909	.0607					.0181	.09	2.39	2.22	1.72	.013	.00	.00	PIPE
1059.029	229.318	2.450	231.768	149.70	16.91	4.44	236.21	.00	3.59	4.48	4.500	.000	.00	1 .0
6.924	.0607					.0164	.11	2.45	2.12	1.72	.013	.00	.00	PIPE
1065.953	229.738	2.547	232.285	149.70	16.12	4.03	236.32	.00	3.59	4.46	4.500	.000	.00	1 .0
5.735	.0607					.0145	.08	2.55	1.97	1.72	.013	.00	.00	PIPE
1071.688	230.086	2.649	232.735	149.70	15.37	3.67	236.40	.00	3.59	4.43	4.500	.000	.00	1 .0
4.712	.0607					.0128	.06	2.65	1.83	1.72	.013	.00	.00	PIPE
1076.400	230.372	2.757	233.129	149.70	14.65	3.33	236.46	.00	3.59	4.38	4.500	.000	.00	1 .0
3.835	.0607					.0114	.04	2.76	1.69	1.72	.013	.00	.00	PIPE
1080.235	230.604	2.871	233.475	149.70	13.97	3.03	236.51	.00	3.59	4.33	4.500	.000	.00	1 .0
3.035	.0607					.0101	.03	2.87	1.56	1.72	.013	.00	.00	PIPE

LINE_B6
Q100
OBR

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width	Height/Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1083.270	230.788	2.993	233.782	149.70	13.32	2.76	236.54	.00	3.59	4.25	4.500	.000	.00	1 .0
2.311	.0607					.0090	.02	2.99	1.44	1.72	.013	.00	.00	PIPE
1085.581	230.929	3.124	234.053	149.70	12.70	2.51	236.56	.00	3.59	4.15	4.500	.000	.00	1 .0
1.646	.0607					.0080	.01	3.12	1.33	1.72	.013	.00	.00	PIPE
1087.228	231.029	3.265	234.294	149.70	12.11	2.28	236.57	.00	3.59	4.02	4.500	.000	.00	1 .0
1.010	.0607					.0072	.01	3.27	1.22	1.72	.013	.00	.00	PIPE
1088.238	231.090	3.418	234.508	149.70	11.55	2.07	236.58	.00	3.59	3.85	4.500	.000	.00	1 .0
.332	.0607					.0064	.00	3.42	1.11	1.72	.013	.00	.00	PIPE
1088.570	231.110	3.589	234.699	149.70	11.01	1.88	236.58	.08	3.59	3.62	4.500	.000	.00	1 .0
WALL	ENTRANCE													
1088.570	231.110	5.589	236.699	149.70	6.70	.70	237.40	.03	3.52	4.00	6.000	4.000	.00	0 .0
4.000	.0000					.0020	.01	5.62	.50	.00	.013	.00	.00	BOX
		---------- WARNING - Flow depth near top of box conduit ----------												
1092.570	231.110	5.600	236.710	149.70	6.68	.69	237.40	.00	3.52	4.00	6.000	4.000	.00	0 .0
WALL	EXIT													
		---------- WARNING - Flow depth near top of box conduit ----------												

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:11- 6-2024 Time: 8:34:22

LINE B6
Q100
OBR

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1092.570	231.110	5.601	236.711	149.70	9.41	1.38	238.09	.00	3.59	.00	4.500	.000	.00	1 .0
19.520	.0097				.0058	.11	5.60	.00	2.97	.013		.00	.00	PIPE
1112.090	231.300	5.524	236.824	149.70	9.41	1.38	238.20	.00	3.59	.00	4.500	.000	.00	1 .0
35.730	.0101				.0058	.21	5.52	.00	2.93	.013		.00	.00	PIPE
1147.820	231.660	5.371	237.031	149.70	9.41	1.38	238.41	.00	3.59	.00	4.500	.000	.00	1 .0
29.170	.0099				.0058	.17	.00	.00	2.94	.013		.00	.00	PIPE
1176.990	231.950	5.284	237.234	149.70	9.41	1.38	238.61	.00	3.59	.00	4.500	.000	.00	1 .0
WALL	ENTRANCE													
1176.990	231.950	6.210	238.160	149.70	6.24	.60	238.76	.00	3.52	4.00	6.000	4.000	.00	0 .0
JUNCT STR	.0250				.0021	.01	.00	.45		.013		.00	.00	BOX
1180.990	232.050	6.244	238.294	141.70	5.90	.54	238.83	.00	3.39	4.00	6.000	4.000	.00	0 .0
WALL	EXIT													
1180.990	232.050	6.244	238.294	141.70	11.28	1.97	240.27	.00	3.53	.00	4.000	.000	.00	1 .0
57.600	.0101				.0097	.56	.00	.00	3.22	.013		.00	.00	PIPE
1238.590	232.630	6.291	238.921	141.70	11.28	1.97	240.90	.00	3.53	.00	4.000	.000	.00	1 .0
WALL	ENTRANCE													
1238.590	232.630	8.011	240.641	141.70	5.90	.54	241.18	.00	3.39	4.00	6.000	4.000	.00	0 .0
JUNCT STR	.1250				.0021	.01	.00	.42		.013		.00	.00	BOX

LINE B6
Q100
OBR

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT) /	Water Elev /	Q (CFS) /	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width / "N"	Height/ Dia.-FT or X-Fall	Base Wt or I.D. / ZR	ZL /	No Wth Prs/Pip / Type Ch
1242.590	233.130	7.813	240.943	119.90	5.00	.39	241.33	.00	3.03	4.00	6.000	4.000	.00	0 .0
WALL	EXIT													
1242.590	233.130	7.813	240.943	119.90	12.46	2.41	243.35	.00	3.25	.00	3.500	.000	.00	1 .0
148.920	.0350					.0142	2.12	.00	.00	2.03	.013	.00	.00	PIPE
1391.510	238.340	4.850	243.190	119.90	12.46	2.41	245.60	.00	3.25	.00	3.500	.000	.00	1 .0
WALL	ENTRANCE													
1391.510	238.340	7.279	245.619	119.90	5.00	.39	246.01	.00	3.03	4.00	6.000	4.000	.00	0 .0
JUNCT STR	.0825					.0015	.01	.00	.36		.013	.00	.00	BOX
1395.510	238.670	6.977	245.647	118.20	4.93	.38	246.02	.00	3.00	4.00	6.000	4.000	.00	0 .0
WALL	EXIT													
1395.510	238.670	6.977	245.647	118.20	12.29	2.34	247.99	.00	3.24	.00	3.500	.000	.00	1 .0
106.150	.0350					.0138	1.47	.00	.00	2.01	.013	.00	.00	PIPE
1501.660	242.390	4.831	247.221	118.20	12.29	2.34	249.56	.00	3.24	.00	3.500	.000	.00	1 .0
WALL	ENTRANCE													
1501.660	242.390	7.192	249.582	118.20	4.93	.38	249.96	.00	3.00	4.00	6.000	4.000	.00	0 .0
JUNCT STR	.0825					.0015	.01	.00	.35		.013	.00	.00	BOX
1505.660	242.720	6.992	249.712	107.80	4.49	.31	250.03	.00	2.83	4.00	6.000	4.000	.00	0 .0
WALL	EXIT													

LINE B6
Q100
OBR

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width / "N"	Height/Dia.-FT / X-Fall	Base Wt or I.D. / ZR	ZL	No Wth Prs/Pip / Type Ch
1505.660	242.720	6.993	249.713	107.80	11.20	1.95	251.66	.00	3.15	.00	3.500	.000	.00	1 .0
59.480	.0614				.0115	.68	.00	.00	1.61	.013	.00	.00		PIPE
1565.140	246.370	4.094	250.464	107.80	11.20	1.95	252.41	.00	3.15	.00	3.500	.000	.00	1 .0
WALL ENTRANCE														
1565.140	246.370	6.057	252.427	107.80	4.49	.31	252.74	.00	2.83	4.00	6.000	4.000	.00	0 .0
JUNCT STR	.1250				.0012	.00	.00	.32		.013	.00	.00		BOX
1569.140	246.870	5.950	252.820	63.60	2.67	.11	252.93	.00	1.99	4.00	6.000	4.000	.00	0 .0
WALL EXIT														
---------- WARNING - Flow depth near top of box conduit ----------														
1569.140	246.870	5.951	252.821	63.60	9.00	1.26	254.08	.00	2.56	.00	3.000	.000	.00	1 .0
31.739	.0681				.0091	.29	.00	.00	1.25	.013	.00	.00		PIPE
1600.879	249.032	4.101	253.133	63.60	9.00	1.26	254.39	.00	2.56	.00	3.000	.000	.00	1 .0
HYDRAULIC JUMP														
1600.879	249.032	1.561	250.593	63.60	17.11	4.54	255.14	.02	2.56	3.00	3.000	.000	.00	1 .0
4.213	.0681				.0308	.13	1.58	2.71	1.25	.013	.00	.00		PIPE
1605.093	249.319	1.590	250.909	63.60	16.71	4.34	255.25	.02	2.56	2.99	3.000	.000	.00	1 .0
8.305	.0681				.0281	.23	1.61	2.61	1.25	.013	.00	.00		PIPE

LINE_B6
Q100
OBR

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1613.398	249.885	1.652	251.537	63.60	15.93	3.94	255.48	.02	2.56	2.98	3.000	.000	.00	1 .0
6.753	.0681					.0248	.17	1.67	2.43	1.25	.013	.00	.00	PIPE
1620.151	250.345	1.718	252.063	63.60	15.19	3.58	255.65	.02	2.56	2.97	3.000	.000	.00	1 .0
5.561	.0681					.0219	.12	1.73	2.25	1.25	.013	.00	.00	PIPE
1625.712	250.724	1.787	252.511	63.60	14.49	3.26	255.77	.02	2.56	2.94	3.000	.000	.00	1 .0
4.582	.0681					.0194	.09	1.80	2.09	1.25	.013	.00	.00	PIPE
1630.294	251.036	1.860	252.896	63.60	13.81	2.96	255.86	.01	2.56	2.91	3.000	.000	.00	1 .0
3.756	.0681					.0172	.06	1.87	1.94	1.25	.013	.00	.00	PIPE
1634.050	251.292	1.938	253.230	63.60	13.17	2.69	255.92	.01	2.56	2.87	3.000	.000	.00	1 .0
3.061	.0681					.0153	.05	1.95	1.79	1.25	.013	.00	.00	PIPE
1637.111	251.500	2.021	253.521	63.60	12.56	2.45	255.97	.01	2.56	2.81	3.000	.000	.00	1 .0
2.449	.0681					.0136	.03	2.03	1.65	1.25	.013	.00	.00	PIPE
1639.560	251.667	2.110	253.777	63.60	11.97	2.23	256.00	.01	2.56	2.74	3.000	.000	.00	1 .0
1.899	.0681					.0121	.02	2.12	1.52	1.25	.013	.00	.00	PIPE
1641.459	251.796	2.206	254.002	63.60	11.41	2.02	256.03	.01	2.56	2.65	3.000	.000	.00	1 .0
1.378	.0681					.0109	.01	2.21	1.39	1.25	.013	.00	.00	PIPE
1642.837	251.890	2.311	254.201	63.60	10.88	1.84	256.04	.01	2.56	2.52	3.000	.000	.00	1 .0
.861	.0681					.0098	.01	2.32	1.26	1.25	.013	.00	.00	PIPE

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OBR

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1643.698	251.949	2.428	254.377	63.60	10.38	1.67	256.05	.01	2.56	2.36	3.000	.000	.00	1 .0
.312	.0681					.0089	.00	2.43	1.13	1.25	.013	.00	.00	PIPE
1644.010	251.970	2.563	254.533	63.60	9.89	1.52	256.05	.01	2.56	2.12	3.000	.000	.00	1 .0
WALL ENTRANCE														
1644.010	251.970	5.563	257.533	63.60	2.86	.13	257.66	.00	1.99	4.00	6.000	4.000	.00	0 .0
JUNCT STR	.0375					.0004	.00	5.56	.21		.013	.00	.00	BOX
		---------- WARNING - Flow depth near top of box conduit ----------												
1648.010	252.120	5.423	257.543	61.60	2.84	.13	257.67	.00	1.95	4.00	6.000	4.000	.00	0 .0
WALL EXIT														
		---------- WARNING - Flow depth near top of box conduit ----------												
1648.010	252.120	5.424	257.544	61.60	8.71	1.18	258.72	.00	2.53	.00	3.000	.000	.00	1 .0
17.731	.0764					.0085	.15	5.42	.00	1.19	.013	.00	.00	PIPE
1665.741	253.474	4.220	257.694	61.60	8.71	1.18	258.87	.00	2.53	.00	3.000	.000	.00	1 .0
HYDRAULIC JUMP														
1665.741	253.474	1.485	254.959	61.60	17.66	4.84	259.80	.00	2.53	3.00	3.000	.000	.00	1 .0
5.092	.0764					.0340	.17	1.48	2.89	1.19	.013	.00	.00	PIPE

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Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1670.833	253.863	1.517	255.380	61.60	17.17	4.58	259.96	.00	2.53	3.00	3.000	.000	.00	1 .0
7.840	.0764					.0308	.24	1.52	2.77	1.19	.013	.00	.00	PIPE
1678.673	254.462	1.576	256.038	61.60	16.37	4.16	260.20	.00	2.53	3.00	3.000	.000	.00	1 .0
6.449	.0764					.0272	.18	1.58	2.57	1.19	.013	.00	.00	PIPE
1685.122	254.954	1.637	256.591	61.60	15.61	3.78	260.37	.00	2.53	2.99	3.000	.000	.00	1 .0
5.323	.0764					.0240	.13	1.64	2.39	1.19	.013	.00	.00	PIPE
1690.445	255.361	1.702	257.063	61.60	14.88	3.44	260.50	.00	2.53	2.97	3.000	.000	.00	1 .0
4.433	.0764					.0212	.09	1.70	2.22	1.19	.013	.00	.00	PIPE
1694.878	255.699	1.770	257.470	61.60	14.19	3.13	260.60	.00	2.53	2.95	3.000	.000	.00	1 .0
3.682	.0764					.0187	.07	1.77	2.06	1.19	.013	.00	.00	PIPE
1698.560	255.981	1.842	257.823	61.60	13.53	2.84	260.66	.00	2.53	2.92	3.000	.000	.00	1 .0
3.034	.0764					.0166	.05	1.84	1.91	1.19	.013	.00	.00	PIPE
1701.594	256.212	1.919	258.132	61.60	12.90	2.58	260.72	.00	2.53	2.88	3.000	.000	.00	1 .0
2.496	.0764					.0147	.04	1.92	1.77	1.19	.013	.00	.00	PIPE
1704.091	256.403	2.000	258.403	61.60	12.30	2.35	260.75	.00	2.53	2.83	3.000	.000	.00	1 .0
1.984	.0764					.0131	.03	2.00	1.63	1.19	.013	.00	.00	PIPE
1706.075	256.555	2.088	258.643	61.60	11.73	2.14	260.78	.00	2.53	2.76	3.000	.000	.00	1 .0
1.548	.0764					.0117	.02	2.09	1.50	1.19	.013	.00	.00	PIPE

LINE_B6
Q100
OBR

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width / "N"	Height/Dia.-FT / X-Fall	Base Wt or I.D. / ZR	ZL	No Wth Prs/Pip / Type Ch
1707.622	256.673	2.182	258.855	61.60	11.18	1.94	260.80	.00	2.53	2.67	3.000	.000	.00	1 .0
1.115	.0764					.0105	.01	2.18	1.37	1.19	.013	.00	.00	PIPE
1708.737	256.758	2.285	259.043	61.60	10.66	1.76	260.81	.00	2.53	2.56	3.000	.000	.00	1 .0
.693	.0764					.0094	.01	2.29	1.25	1.19	.013	.00	.00	PIPE
1709.430	256.811	2.399	259.210	61.60	10.16	1.60	260.81	.00	2.53	2.40	3.000	.000	.00	1 .0
.250	.0764					.0085	.00	2.40	1.13	1.19	.013	.00	.00	PIPE
1709.680	256.830	2.529	259.359	61.60	9.69	1.46	260.82	.00	2.53	2.18	3.000	.000	.00	1 .0
WALL	ENTRANCE													
1709.680	256.830	5.529	262.359	61.60	2.79	.12	262.48	.00	1.95	4.00	6.000	4.000	.00	0 .0
JUNCT STR	.1250					.0004	.00	5.53	.21		.013	.00	.00	BOX
		---------- WARNING - Flow depth near top of box conduit ----------												
1713.680	257.330	5.075	262.405	53.50	2.64	.11	262.51	.00	1.77	4.00	6.000	4.000	.00	0 .0
WALL	EXIT													
1713.680	257.330	5.076	262.406	53.50	10.90	1.84	264.25	.00	2.34	.00	2.500	.000	.00	1 .0
6.021	.0763					.0170	.10	5.08	.00	1.21	.013	.00	.00	PIPE
1719.702	257.789	4.718	262.507	53.50	10.90	1.84	264.35	.00	2.34	.00	2.500	.000	.00	1 .0
HYDRAULIC JUMP														

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:11- 6-2024 Time: 8:34:22

LINE_B6
Q100
OBR

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width / "N"	Height/Dia.-FT / X-Fall	Base Wt or I.D. / ZR	ZL	No Wth Prs/Pip / Type Ch
1719.702	257.789	1.324	259.113	53.50	20.27	6.38	265.50	.00	2.34	2.50	2.500	.000	.00	1 .0
10.763	.0763					.0546	.59	1.32	3.47	1.21	.013	.00	.00	PIPE
1730.464	258.610	1.346	259.956	53.50	19.85	6.12	266.07	.00	2.34	2.49	2.500	.000	.00	1 .0
19.122	.0763					.0500	.96	1.35	3.36	1.21	.013	.00	.00	PIPE
1749.586	260.069	1.399	261.468	53.50	18.93	5.56	267.03	.00	2.34	2.48	2.500	.000	.00	1 .0
13.984	.0763					.0441	.62	1.40	3.13	1.21	.013	.00	.00	PIPE
1763.570	261.136	1.455	262.591	53.50	18.04	5.06	267.65	.00	2.34	2.47	2.500	.000	.00	1 .0
10.752	.0763					.0390	.42	1.46	2.90	1.21	.013	.00	.00	PIPE
1774.323	261.956	1.514	263.470	53.50	17.21	4.60	268.07	.00	2.34	2.44	2.500	.000	.00	1 .0
8.526	.0763					.0345	.29	1.51	2.69	1.21	.013	.00	.00	PIPE
1782.848	262.606	1.576	264.183	53.50	16.40	4.18	268.36	.00	2.34	2.41	2.500	.000	.00	1 .0
6.854	.0763					.0306	.21	1.58	2.49	1.21	.013	.00	.00	PIPE
1789.703	263.129	1.643	264.772	53.50	15.64	3.80	268.57	.00	2.34	2.37	2.500	.000	.00	1 .0
5.593	.0763					.0272	.15	1.64	2.30	1.21	.013	.00	.00	PIPE
1795.295	263.556	1.714	265.270	53.50	14.91	3.45	268.72	.00	2.34	2.32	2.500	.000	.00	1 .0
4.573	.0763					.0243	.11	1.71	2.11	1.21	.013	.00	.00	PIPE
1799.869	263.905	1.790	265.695	53.50	14.22	3.14	268.83	.00	2.34	2.25	2.500	.000	.00	1 .0
3.707	.0763					.0217	.08	1.79	1.94	1.21	.013	.00	.00	PIPE

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:11- 6-2024 Time: 8:34:22

LINE B6
Q100
OBR

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1803.575	264.188	1.873	266.061	53.50	13.56	2.85	268.91	.00	2.34	2.17	2.500	.000	.00	1 .0
2.965	.0763					.0195	.06	1.87	1.77	1.21	.013	.00	.00	PIPE
1806.540	264.414	1.964	266.378	53.50	12.93	2.59	268.97	.00	2.34	2.05	2.500	.000	.00	1 .0
2.264	.0763					.0176	.04	1.96	1.60	1.21	.013	.00	.00	PIPE
1808.804	264.586	2.067	266.654	53.50	12.32	2.36	269.01	.00	2.34	1.89	2.500	.000	.00	1 .0
1.585	.0763					.0161	.03	2.07	1.43	1.21	.013	.00	.00	PIPE
1810.389	264.707	2.186	266.893	53.50	11.75	2.14	269.04	.00	2.34	1.66	2.500	.000	.00	1 .0
.691	.0763					.0151	.01	2.19	1.25	1.21	.013	.00	.00	PIPE
1811.080	264.760	2.340	267.100	53.50	11.20	1.95	269.05	.00	2.34	1.22	2.500	.000	.00	1 .0
WALL ENTRANCE														
1811.080	264.760	4.514	269.274	53.50	2.96	.14	269.41	.00	1.77	4.00	6.000	4.000	.00	0 .0
2.395	.0825					.0004	.00	4.51	.25	.65	.013	.00	.00	BOX
1813.475	264.958	4.304	269.262	53.50	3.11	.15	269.41	.00	1.77	4.00	6.000	4.000	.00	0 .0
1.569	.0825					.0005	.00	4.30	.26	.65	.013	.00	.00	BOX
1815.044	265.087	4.166	269.253	53.50	3.21	.16	269.41	.00	1.77	4.00	6.000	4.000	.00	0 .0
HYDRAULIC JUMP														
1815.044	265.087	.564	265.651	53.50	23.72	8.74	274.39	.00	1.77	4.00	6.000	4.000	.00	0 .0
.036	.0825					.1287	.00	.56	5.57	.65	.013	.00	.00	BOX

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:11- 6-2024 Time: 8:34:22

LINE_B6
Q100
OBR

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1815.080	265.090	.564	265.654	53.50	23.72	8.74	274.39	.00	1.77	4.00	6.000	4.000	.00	0 .0
WALL	EXIT													
1815.080	265.090	1.187	266.277	53.50	23.30	8.43	274.71	.00	2.34	2.50	2.500	.000	.00	1 .0
70.561	.0834				.0795	5.61	1.19	4.28	1.18	.013	.00	.00	PIPE	
1885.641	270.973	1.202	272.175	53.50	22.90	8.14	280.32	.00	2.34	2.50	2.500	.000	.00	1 .0
66.748	.0834				.0730	4.87	1.20	4.17	1.18	.013	.00	.00	PIPE	
1952.389	276.539	1.248	277.787	53.50	21.83	7.40	285.19	.00	2.34	2.50	2.500	.000	.00	1 .0
32.721	.0834				.0643	2.10	1.25	3.89	1.18	.013	.00	.00	PIPE	
1985.109	279.267	1.296	280.563	53.50	20.82	6.73	287.29	.00	2.34	2.50	2.500	.000	.00	1 .0
21.018	.0834				.0566	1.19	1.30	3.62	1.18	.013	.00	.00	PIPE	
2006.127	281.019	1.346	282.365	53.50	19.85	6.12	288.48	.00	2.34	2.49	2.500	.000	.00	1 .0
15.061	.0834				.0500	.75	1.35	3.36	1.18	.013	.00	.00	PIPE	
2021.189	282.275	1.399	283.674	53.50	18.93	5.56	289.24	.00	2.34	2.48	2.500	.000	.00	1 .0
11.456	.0834				.0441	.51	1.40	3.13	1.18	.013	.00	.00	PIPE	
2032.645	283.230	1.455	284.685	53.50	18.04	5.06	289.74	.00	2.34	2.47	2.500	.000	.00	1 .0
9.032	.0834				.0390	.35	1.46	2.90	1.18	.013	.00	.00	PIPE	
2041.677	283.983	1.514	285.497	53.50	17.21	4.60	290.09	.00	2.34	2.44	2.500	.000	.00	1 .0
7.287	.0834				.0345	.25	1.51	2.69	1.18	.013	.00	.00	PIPE	

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:11- 6-2024 Time: 8:34:22

LINE B6
Q100
OBR

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
2048.964	284.591	1.576	286.167	53.50	16.40	4.18	290.35	.00	2.34	2.41	2.500	.000	.00	1 .0
5.932	.0834					.0306	.18	1.58	2.49	1.18	.013	.00	.00	PIPE
2054.896	285.086	1.643	286.729	53.50	15.64	3.80	290.53	.00	2.34	2.37	2.500	.000	.00	1 .0
4.886	.0834					.0272	.13	1.64	2.30	1.18	.013	.00	.00	PIPE
2059.782	285.493	1.714	287.207	53.50	14.91	3.45	290.66	.00	2.34	2.32	2.500	.000	.00	1 .0
4.025	.0834					.0243	.10	1.71	2.11	1.18	.013	.00	.00	PIPE
2063.807	285.828	1.790	287.619	53.50	14.22	3.14	290.76	.00	2.34	2.25	2.500	.000	.00	1 .0
3.281	.0834					.0217	.07	1.79	1.94	1.18	.013	.00	.00	PIPE
2067.088	286.102	1.873	287.975	53.50	13.56	2.85	290.83	.00	2.34	2.17	2.500	.000	.00	1 .0
2.636	.0834					.0195	.05	1.87	1.77	1.18	.013	.00	.00	PIPE
2069.723	286.322	1.964	288.286	53.50	12.93	2.59	290.88	.00	2.34	2.05	2.500	.000	.00	1 .0
2.020	.0834					.0176	.04	1.96	1.60	1.18	.013	.00	.00	PIPE
2071.743	286.490	2.067	288.557	53.50	12.32	2.36	290.92	.00	2.34	1.89	2.500	.000	.00	1 .0
1.418	.0834					.0161	.02	2.07	1.43	1.18	.013	.00	.00	PIPE
2073.161	286.608	2.186	288.794	53.50	11.75	2.14	290.94	.00	2.34	1.66	2.500	.000	.00	1 .0
.619	.0834					.0151	.01	2.19	1.25	1.18	.013	.00	.00	PIPE
2073.780	286.660	2.340	289.000	53.50	11.20	1.95	290.95	.00	2.34	1.22	2.500	.000	.00	1 .0
WALL	ENTRANCE													

LINE_B6
Q100
OBR

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width	Height/Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
2073.780	286.660	4.514	291.174	53.50	2.96	.14	291.31	.00	1.77	4.00	6.000	4.000	.00	0 .0
2.395	.0825				.0004	.00	4.51	.25	.65	.013	.00	.00	BOX	
2076.175	286.858	4.304	291.162	53.50	3.11	.15	291.31	.00	1.77	4.00	6.000	4.000	.00	0 .0
1.605	.0825				.0005	.00	4.30	.26	.65	.013	.00	.00	BOX	
2077.780	286.990	4.163	291.153	53.50	3.21	.16	291.31	.00	1.77	4.00	6.000	4.000	.00	0 .0
HYDRAULIC JUMP														
2077.780	286.990	1.292	288.282	53.50	20.90	6.78	295.06	.00	2.34	2.50	2.500	.000	.00	1 .0
17.276	.0835				.0580	1.00	1.29	3.64	1.18	.013	.00	.00	PIPE	
2095.055	288.432	1.330	289.762	53.50	20.14	6.30	296.06	.00	2.34	2.49	2.500	.000	.00	1 .0
16.499	.0835				.0519	.86	1.33	3.44	1.18	.013	.00	.00	PIPE	
2111.554	289.809	1.382	291.191	53.50	19.20	5.73	296.92	.00	2.34	2.49	2.500	.000	.00	1 .0
12.369	.0835				.0458	.57	1.38	3.20	1.18	.013	.00	.00	PIPE	
2123.924	290.841	1.437	292.278	53.50	18.31	5.21	297.48	.00	2.34	2.47	2.500	.000	.00	1 .0
9.666	.0835				.0405	.39	1.44	2.97	1.18	.013	.00	.00	PIPE	
2133.589	291.648	1.495	293.143	53.50	17.46	4.73	297.88	.00	2.34	2.45	2.500	.000	.00	1 .0
7.753	.0835				.0358	.28	1.50	2.75	1.18	.013	.00	.00	PIPE	
2141.342	292.295	1.556	293.851	53.50	16.65	4.30	298.15	.00	2.34	2.42	2.500	.000	.00	1 .0
6.288	.0835				.0318	.20	1.56	2.55	1.18	.013	.00	.00	PIPE	

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:11- 6-2024 Time: 8:34:22

LINE_B6
Q100
OBR

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width / "N"	Height/ Dia.-FT or X-Fall	Base Wt or I.D. / ZR	ZL	No Wth Prs/Pip / Type Ch
2147.630	292.820	1.622	294.442	53.50	15.87	3.91	298.35	.00	2.34	2.39	2.500	.000	.00	1 .0
1.737	.0833					.0293	.05	1.62	2.35	1.18	.013	.00	.00	PIPE
2149.367	292.965	1.643	294.608	53.50	15.64	3.80	298.41	.00	2.34	2.37	2.500	.000	.00	1 .0
4.897	.0833					.0272	.13	1.64	2.30	1.18	.013	.00	.00	PIPE
2154.264	293.372	1.714	295.086	53.50	14.91	3.45	298.54	.00	2.34	2.32	2.500	.000	.00	1 .0
4.033	.0833					.0243	.10	1.71	2.11	1.18	.013	.00	.00	PIPE
2158.298	293.708	1.790	295.498	53.50	14.22	3.14	298.64	.00	2.34	2.25	2.500	.000	.00	1 .0
3.287	.0833					.0217	.07	1.79	1.94	1.18	.013	.00	.00	PIPE
2161.585	293.982	1.873	295.855	53.50	13.56	2.85	298.71	.00	2.34	2.17	2.500	.000	.00	1 .0
2.641	.0833					.0195	.05	1.87	1.77	1.18	.013	.00	.00	PIPE
2164.226	294.202	1.964	296.166	53.50	12.93	2.59	298.76	.00	2.34	2.05	2.500	.000	.00	1 .0
2.024	.0833					.0176	.04	1.96	1.60	1.18	.013	.00	.00	PIPE
2166.250	294.370	2.067	296.437	53.50	12.32	2.36	298.80	.00	2.34	1.89	2.500	.000	.00	1 .0
1.421	.0833					.0161	.02	2.07	1.43	1.18	.013	.00	.00	PIPE
2167.670	294.488	2.186	296.674	53.50	11.75	2.14	298.82	.00	2.34	1.66	2.500	.000	.00	1 .0
.620	.0833					.0151	.01	2.19	1.25	1.18	.013	.00	.00	PIPE
2168.290	294.540	2.340	296.880	53.50	11.20	1.95	298.83	.00	2.34	1.22	2.500	.000	.00	1 .0
WALL	ENTRANCE													

LINE B6
Q100
OBR

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
2168.290	294.540	4.514	299.054	53.50	2.96	.14	299.19	.00	1.77	4.00	6.000	4.000	.00	0 .0
JUNCT STR	.2500					.0004	.00	4.51	.25		.013	.00	.00	BOX
2172.290	295.540	3.765	299.305	7.70	.51	.00	299.31	.00	.49	4.00	6.000	4.000	.00	0 .0
WALL	EXIT													
2172.290	295.540	3.765	299.305	7.70	4.36	.29	299.60	.00	1.08	.00	1.500	.000	.00	1 .0
20.511	.0834					.0054	.11	3.77	.00	.52	.013	.00	.00	PIPE
2192.801	297.251	2.164	299.415	7.70	4.36	.29	299.71	.00	1.08	.00	1.500	.000	.00	1 .0
HYDRAULIC JUMP														
2192.801	297.251	.515	297.766	7.70	14.33	3.19	300.96	.00	1.08	1.42	1.500	.000	.00	1 .0
48.189	.0834					.0834	4.02	.52	4.11	.52	.013	.00	.00	PIPE
2240.990	301.270	.515	301.785	7.70	14.33	3.19	304.97	.00	1.08	1.42	1.500	.000	.00	1 .0
104.085	.0834					.0834	8.68	.52	4.11	.52	.013	.00	.00	PIPE
2345.075	309.949	.515	310.464	7.70	14.33	3.19	313.65	.00	1.08	1.42	1.500	.000	.00	1 .0
52.497	.0834					.0785	4.12	.52	4.11	.52	.013	.00	.00	PIPE
2397.572	314.326	.532	314.858	7.70	13.70	2.92	317.77	.00	1.08	1.44	1.500	.000	.00	1 .0
17.198	.0834					.0691	1.19	.53	3.86	.52	.013	.00	.00	PIPE
2414.770	315.760	.552	316.312	7.70	13.06	2.65	318.96	.00	1.08	1.45	1.500	.000	.00	1 .0
4.935	.0835					.0627	.31	.55	3.61	.52	.013	.00	.00	PIPE

LINE B6
Q100
OBR

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
2419.705	316.172	.560	316.732	7.70	12.78	2.54	319.27	.00	1.08	1.45	1.500	.000	.00	1 .0
7.978	.0835					.0571	.46	.56	3.50	.52	.013	.00	.00	PIPE
2427.683	316.838	.580	317.418	7.70	12.19	2.31	319.73	.00	1.08	1.46	1.500	.000	.00	1 .0
5.647	.0835					.0501	.28	.58	3.27	.52	.013	.00	.00	PIPE
2433.330	317.309	.601	317.911	7.70	11.62	2.10	320.01	.00	1.08	1.47	1.500	.000	.00	1 .0
4.266	.0835					.0439	.19	.60	3.05	.52	.013	.00	.00	PIPE
2437.596	317.666	.623	318.289	7.70	11.08	1.91	320.20	.00	1.08	1.48	1.500	.000	.00	1 .0
3.349	.0835					.0386	.13	.62	2.85	.52	.013	.00	.00	PIPE
2440.945	317.945	.646	318.591	7.70	10.57	1.73	320.32	.00	1.08	1.49	1.500	.000	.00	1 .0
2.694	.0835					.0339	.09	.65	2.66	.52	.013	.00	.00	PIPE
2443.639	318.170	.670	318.840	7.70	10.07	1.58	320.42	.00	1.08	1.49	1.500	.000	.00	1 .0
2.203	.0835					.0298	.07	.67	2.48	.52	.013	.00	.00	PIPE
2445.842	318.354	.695	319.049	7.70	9.60	1.43	320.48	.00	1.08	1.50	1.500	.000	.00	1 .0
1.820	.0835					.0262	.05	.70	2.31	.52	.013	.00	.00	PIPE
2447.661	318.506	.721	319.227	7.70	9.16	1.30	320.53	.00	1.08	1.50	1.500	.000	.00	1 .0
1.512	.0835					.0231	.03	.72	2.15	.52	.013	.00	.00	PIPE
2449.174	318.632	.748	319.380	7.70	8.73	1.18	320.56	.00	1.08	1.50	1.500	.000	.00	1 .0
1.244	.0835					.0203	.03	.75	2.01	.52	.013	.00	.00	PIPE

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WATER SURFACE PROFILE LISTING Date:11- 6-2024 Time: 8:34:22

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Q100
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Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width / "N"	Height/Dia.-FT / X-Fall	Base Wt or I.D. / ZR	ZL	No Wth Prs/Pip / Type Ch
2450.418	318.736	.777	319.513	7.70	8.33	1.08	320.59	.00	1.08	1.50	1.500	.000	.00	1 .0
1.034	.0835				.0179	.02	.78	1.87	.52	.013	.00	.00		PIPE
2451.453	318.822	.807	319.629	7.70	7.94	.98	320.61	.00	1.08	1.50	1.500	.000	.00	1 .0
.841	.0835				.0158	.01	.81	1.74	.52	.013	.00	.00		PIPE
2452.294	318.893	.839	319.732	7.70	7.57	.89	320.62	.00	1.08	1.49	1.500	.000	.00	1 .0
.688	.0835				.0139	.01	.84	1.61	.52	.013	.00	.00		PIPE
2452.982	318.950	.872	319.822	7.70	7.22	.81	320.63	.00	1.08	1.48	1.500	.000	.00	1 .0
.527	.0835				.0123	.01	.87	1.50	.52	.013	.00	.00		PIPE
2453.509	318.994	.908	319.902	7.70	6.88	.74	320.64	.00	1.08	1.47	1.500	.000	.00	1 .0
.411	.0835				.0109	.00	.91	1.39	.52	.013	.00	.00		PIPE
2453.920	319.028	.945	319.973	7.70	6.56	.67	320.64	.00	1.08	1.45	1.500	.000	.00	1 .0
.281	.0835				.0097	.00	.95	1.28	.52	.013	.00	.00		PIPE
2454.201	319.052	.985	320.037	7.70	6.25	.61	320.64	.00	1.08	1.42	1.500	.000	.00	1 .0
.163	.0835				.0086	.00	.99	1.19	.52	.013	.00	.00		PIPE
2454.365	319.065	1.028	320.094	7.70	5.96	.55	320.65	.00	1.08	1.39	1.500	.000	.00	1 .0
.055	.0835				.0077	.00	1.03	1.09	.52	.013	.00	.00		PIPE
2454.420	319.070	1.075	320.145	7.70	5.68	.50	320.65	.00	1.08	1.35	1.500	.000	.00	1 .0
WALL	ENTRANCE													

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:11- 6-2024 Time: 8:34:22

LINE_B6
Q100
OBR

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
2454.420	319.070	2.075	321.145	7.70	.93	.01	321.16	.00	.49	4.00	6.000	4.000	.00	0 .0
JUNCT STR	.0825					.0000	.00	2.08	.11		.013	.00	.00	BOX
2458.420	319.400	1.773	321.173	1.60	.23	.00	321.17	.00	.17	4.00	6.000	4.000	.00	0 .0
WALL	EXIT													
2458.420	319.400	1.773	321.173	1.60	.91	.01	321.19	.00	.48	.00	1.500	.000	.00	1 .0
3.283	.0834					.0002	.00	1.77	.00	.23	.013	.00	.00	PIPE
2461.703	319.674	1.500	321.174	1.60	.91	.01	321.19	.00	.48	.00	1.500	.000	.00	1 .0
1.655	.0834					.0002	.00	1.50	.00	.23	.013	.00	.00	PIPE
2463.358	319.812	1.360	321.172	1.60	.95	.01	321.19	.00	.48	.87	1.500	.000	.00	1 .0
.945	.0834					.0002	.00	1.36	.12	.23	.013	.00	.00	PIPE
2464.303	319.891	1.280	321.171	1.60	1.00	.02	321.19	.00	.48	1.06	1.500	.000	.00	1 .0
.787	.0834					.0002	.00	1.28	.14	.23	.013	.00	.00	PIPE
2465.090	319.956	1.213	321.169	1.60	1.04	.02	321.19	.00	.48	1.18	1.500	.000	.00	1 .0
.677	.0834					.0003	.00	1.21	.16	.23	.013	.00	.00	PIPE
2465.768	320.013	1.155	321.168	1.60	1.10	.02	321.19	.00	.48	1.26	1.500	.000	.00	1 .0
.615	.0834					.0003	.00	1.16	.18	.23	.013	.00	.00	PIPE
2466.383	320.064	1.102	321.166	1.60	1.15	.02	321.19	.00	.48	1.32	1.500	.000	.00	1 .0
.553	.0834					.0003	.00	1.10	.20	.23	.013	.00	.00	PIPE

LINE B6
Q100
OBR

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width / "N"	Height/ Dia.-FT / X-Fall	Base Wt or I.D. / ZR	ZL	No Wth Prs/Pip / Type Ch
2466.936	320.110	1.054	321.164	1.60	1.21	.02	321.19	.00	.48	1.37	1.500	.000	.00	1 .0
.503	.0834				.0003	.00	1.05	.22	.23	.013	.00	.00		PIPE
2467.439	320.152	1.010	321.162	1.60	1.26	.02	321.19	.00	.48	1.41	1.500	.000	.00	1 .0
.476	.0834				.0004	.00	1.01	.23	.23	.013	.00	.00		PIPE
2467.915	320.192	.968	321.160	1.60	1.33	.03	321.19	.00	.48	1.44	1.500	.000	.00	1 .0
.437	.0834				.0004	.00	.97	.25	.23	.013	.00	.00		PIPE
2468.352	320.228	.929	321.157	1.60	1.39	.03	321.19	.00	.48	1.46	1.500	.000	.00	1 .0
.398	.0834				.0005	.00	.93	.28	.23	.013	.00	.00		PIPE
2468.750	320.261	.893	321.154	1.60	1.46	.03	321.19	.00	.48	1.47	1.500	.000	.00	1 .0
.304	.0834				.0006	.00	.89	.30	.23	.013	.00	.00		PIPE
2469.055	320.287	.858	321.145	1.60	1.53	.04	321.18	.00	.48	1.48	1.500	.000	.00	1 .0
HYDRAULIC JUMP														
2469.055	320.287	.234	320.521	1.60	9.09	1.28	321.80	.00	.48	1.09	1.500	.000	.00	1 .0
20.774	.0834				.0835	1.73	.23	3.99	.23	.013	.00	.00		PIPE
2489.829	322.019	.234	322.253	1.60	9.09	1.28	323.54	.00	.48	1.09	1.500	.000	.00	1 .0
102.193	.0834				.0834	8.52	.23	3.99	.23	.013	.00	.00		PIPE
2592.021	330.540	.234	330.774	1.60	9.08	1.28	332.06	.00	.48	1.09	1.500	.000	.00	1 .0
20.080	.0834				.0780	1.57	.23	3.98	.23	.013	.00	.00		PIPE

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WATER SURFACE PROFILE LISTING Date:11- 6-2024 Time: 8:34:22

LINE_B6
Q100
OBR

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width / "N"	Height/ Dia.-FT / X-Fall	Base Wt or I.D. / ZR	ZL	No Wth Prs/Pip / Type Ch
2612.101	332.214	.242	332.456	1.60	8.66	1.16	333.62	.00	.48	1.10	1.500	.000	.00	1 .0
6.407	.0834					.0681	.44	.24	3.73	.23	.013	.00	.00	PIPE
2618.508	332.748	.250	332.998	1.60	8.26	1.06	334.06	.00	.48	1.12	1.500	.000	.00	1 .0
3.686	.0834					.0594	.22	.25	3.50	.23	.013	.00	.00	PIPE
2622.194	333.056	.258	333.314	1.60	7.87	.96	334.28	.00	.48	1.13	1.500	.000	.00	1 .0
2.494	.0834					.0519	.13	.26	3.28	.23	.013	.00	.00	PIPE
2624.688	333.263	.267	333.531	1.60	7.51	.88	334.41	.00	.48	1.15	1.500	.000	.00	1 .0
1.855	.0834					.0454	.08	.27	3.07	.23	.013	.00	.00	PIPE
2626.543	333.418	.276	333.694	1.60	7.16	.80	334.49	.00	.48	1.16	1.500	.000	.00	1 .0
1.447	.0834					.0396	.06	.28	2.88	.23	.013	.00	.00	PIPE
2627.990	333.539	.285	333.824	1.60	6.82	.72	334.55	.00	.48	1.18	1.500	.000	.00	1 .0
1.143	.0834					.0346	.04	.29	2.70	.23	.013	.00	.00	PIPE
2629.133	333.634	.295	333.929	1.60	6.51	.66	334.59	.00	.48	1.19	1.500	.000	.00	1 .0
.937	.0834					.0302	.03	.30	2.53	.23	.013	.00	.00	PIPE
2630.070	333.712	.305	334.017	1.60	6.20	.60	334.62	.00	.48	1.21	1.500	.000	.00	1 .0
.779	.0834					.0264	.02	.31	2.37	.23	.013	.00	.00	PIPE
2630.848	333.777	.315	334.092	1.60	5.92	.54	334.64	.00	.48	1.22	1.500	.000	.00	1 .0
.637	.0834					.0231	.01	.32	2.22	.23	.013	.00	.00	PIPE

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WATER SURFACE PROFILE LISTING Date:11- 6-2024 Time: 8:34:22

LINE_B6
Q100
OBR

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width / "N"	Height/Dia.-FT / X-Fall	Base Wt or I.D. / ZR	ZL	No Wth Prs/Pip / Type Ch
2631.485	333.830	.326	334.156	1.60	5.64	.49	334.65	.00	.48	1.24	1.500	.000	.00	1 .0
.537	.0834				.0202	.01	.33	2.08	.23	.013	.00	.00		PIPE
2632.022	333.875	.337	334.212	1.60	5.38	.45	334.66	.00	.48	1.25	1.500	.000	.00	1 .0
.454	.0834				.0176	.01	.34	1.94	.23	.013	.00	.00		PIPE
2632.475	333.913	.348	334.261	1.60	5.13	.41	334.67	.00	.48	1.27	1.500	.000	.00	1 .0
.370	.0834				.0154	.01	.35	1.82	.23	.013	.00	.00		PIPE
2632.845	333.944	.360	334.304	1.60	4.89	.37	334.67	.00	.48	1.28	1.500	.000	.00	1 .0
.297	.0834				.0135	.00	.36	1.70	.23	.013	.00	.00		PIPE
2633.142	333.968	.373	334.342	1.60	4.66	.34	334.68	.00	.48	1.30	1.500	.000	.00	1 .0
.247	.0834				.0118	.00	.37	1.60	.23	.013	.00	.00		PIPE
2633.388	333.989	.386	334.375	1.60	4.44	.31	334.68	.00	.48	1.31	1.500	.000	.00	1 .0
.204	.0834				.0103	.00	.39	1.50	.23	.013	.00	.00		PIPE
2633.592	334.006	.399	334.405	1.60	4.24	.28	334.68	.00	.48	1.33	1.500	.000	.00	1 .0
.153	.0834				.0090	.00	.40	1.40	.23	.013	.00	.00		PIPE
2633.745	334.019	.413	334.432	1.60	4.04	.25	334.69	.00	.48	1.34	1.500	.000	.00	1 .0
.120	.0834				.0079	.00	.41	1.31	.23	.013	.00	.00		PIPE
2633.865	334.029	.427	334.456	1.60	3.85	.23	334.69	.00	.48	1.35	1.500	.000	.00	1 .0
.078	.0834				.0069	.00	.43	1.23	.23	.013	.00	.00		PIPE

LINE B6
Q100
OBR

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width	Height/Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
2633.943	334.035	.442	334.477	1.60	3.67	.21	334.69	.00	.48	1.37	1.500	.000	.00	1 .0
.052	.0834				.0060	.00	.44	1.15	.23	.013	.00	.00	PIPE	
2633.995	334.040	.457	334.497	1.60	3.50	.19	334.69	.00	.48	1.38	1.500	.000	.00	1 .0
.005	.0834				.0053	.00	.46	1.07	.23	.013	.00	.00	PIPE	
2634.000	334.040	.475	334.515	1.60	3.33	.17	334.69	.00	.48	1.40	1.500	.000	.00	1 .0
WALL	ENTRANCE													
2634.000	334.040	1.475	335.515	1.60	.27	.00	335.52	.00	.17	4.00	6.000	4.000	.00	0 .0
JUNCT STR	.0825				.0000	.00	1.48	.04			.013	.00	.00	BOX
2638.000	334.370	1.144	335.514	1.60	.35	.00	335.52	.00	.17	4.00	6.000	4.000	.00	0 .0
WALL	EXIT													
2638.000	334.370	1.145	335.515	1.60	1.11	.02	335.53	.00	.48	1.28	1.500	.000	.00	1 .0
1.884	.0268				.0003	.00	1.15	.18	.31	.013	.00	.00	PIPE	
2639.884	334.421	1.093	335.514	1.60	1.16	.02	335.53	.00	.48	1.33	1.500	.000	.00	1 .0
1.694	.0268				.0003	.00	1.09	.20	.31	.013	.00	.00	PIPE	
2641.578	334.466	1.046	335.512	1.60	1.22	.02	335.54	.00	.48	1.38	1.500	.000	.00	1 .0
1.575	.0268				.0004	.00	1.05	.22	.31	.013	.00	.00	PIPE	
2643.154	334.508	1.002	335.510	1.60	1.28	.03	335.54	.00	.48	1.41	1.500	.000	.00	1 .0
1.456	.0268				.0004	.00	1.00	.24	.31	.013	.00	.00	PIPE	

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Q100
OBR

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
2644.609	334.547	.961	335.508	1.60	1.34	.03	335.54	.00	.48	1.44	1.500	.000	.00	1 .0
1.373	.0268				.0004	.00	.96	.26	.31	.013	.00	.00		PIPE
2645.982	334.584	.922	335.506	1.60	1.40	.03	335.54	.00	.48	1.46	1.500	.000	.00	1 .0
1.251	.0268				.0005	.00	.92	.28	.31	.013	.00	.00		PIPE
2647.234	334.618	.886	335.504	1.60	1.47	.03	335.54	.00	.48	1.48	1.500	.000	.00	1 .0
1.167	.0268				.0006	.00	.89	.30	.31	.013	.00	.00		PIPE
2648.401	334.649	.852	335.501	1.60	1.54	.04	335.54	.00	.48	1.49	1.500	.000	.00	1 .0
1.081	.0268				.0006	.00	.85	.33	.31	.013	.00	.00		PIPE
2649.482	334.678	.820	335.498	1.60	1.62	.04	335.54	.00	.48	1.49	1.500	.000	.00	1 .0
1.032	.0268				.0007	.00	.82	.35	.31	.013	.00	.00		PIPE
2650.514	334.706	.789	335.495	1.60	1.70	.04	335.54	.00	.48	1.50	1.500	.000	.00	1 .0
.943	.0268				.0008	.00	.79	.38	.31	.013	.00	.00		PIPE
2651.458	334.731	.760	335.491	1.60	1.78	.05	335.54	.00	.48	1.50	1.500	.000	.00	1 .0
.892	.0268				.0009	.00	.76	.41	.31	.013	.00	.00		PIPE
2652.349	334.755	.732	335.487	1.60	1.87	.05	335.54	.00	.48	1.50	1.500	.000	.00	1 .0
.838	.0268				.0011	.00	.73	.44	.31	.013	.00	.00		PIPE
2653.187	334.777	.705	335.483	1.60	1.96	.06	335.54	.00	.48	1.50	1.500	.000	.00	1 .0
.203	.0268				.0012	.00	.71	.47	.31	.013	.00	.00		PIPE

LINE_B6
Q100
OBR

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
2653.390	334.783	.680	335.463	1.60	2.05	.07	335.53	.00	.48	1.49	1.500	.000	.00	1 .0
HYDRAULIC JUMP														
2653.390	334.783	.309	335.091	1.60	6.11	.58	335.67	.00	.48	1.21	1.500	.000	.00	1 .0
9.210	.0268					.0270	.25	.31	2.32	.31	.013	.00	.00	PIPE
2662.600	335.030	.309	335.339	1.60	6.11	.58	335.92	.00	.48	1.21	1.500	.000	.00	1 .0
40.229	.0270					.0270	1.09	.31	2.32	.31	.013	.00	.00	PIPE
2702.828	336.116	.309	336.424	1.60	6.11	.58	337.00	.00	.48	1.21	1.500	.000	.00	1 .0
25.427	.0270					.0263	.67	.31	2.32	.31	.013	.00	.00	PIPE
2728.256	336.802	.312	337.114	1.60	6.00	.56	337.67	.00	.48	1.22	1.500	.000	.00	1 .0
13.573	.0270					.0241	.33	.31	2.26	.31	.013	.00	.00	PIPE
2741.828	337.169	.323	337.492	1.60	5.72	.51	338.00	.00	.48	1.23	1.500	.000	.00	1 .0
5.913	.0270					.0210	.12	.32	2.12	.31	.013	.00	.00	PIPE
2747.741	337.328	.334	337.662	1.60	5.46	.46	338.12	.00	.48	1.25	1.500	.000	.00	1 .0
3.602	.0270					.0184	.07	.33	1.98	.31	.013	.00	.00	PIPE
2751.344	337.426	.345	337.771	1.60	5.20	.42	338.19	.00	.48	1.26	1.500	.000	.00	1 .0
2.386	.0270					.0161	.04	.35	1.86	.31	.013	.00	.00	PIPE
2753.730	337.490	.357	337.847	1.60	4.96	.38	338.23	.00	.48	1.28	1.500	.000	.00	1 .0
6.079	.0150					.0150	.09	.36	1.74	.36	.013	.00	.00	PIPE

LINE_B6
Q100
OBR

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width / "N"	Height/ Dia.-FT / X-Fall	Base Wt or I.D. / ZR	ZL	No Wth Prs/Pip / Type Ch
2759.809	337.581	.357	337.938	1.60	4.96	.38	338.32	.00	.48	1.28	1.500	.000	.00	1 .0
25.775	.0150				.0147	.38	.36	1.74	.36	.013	.00	.00	PIPE	
2785.584	337.968	.360	338.328	1.60	4.89	.37	338.70	.00	.48	1.28	1.500	.000	.00	1 .0
13.705	.0150				.0135	.18	.36	1.70	.36	.013	.00	.00	PIPE	
2799.289	338.173	.373	338.546	1.60	4.66	.34	338.88	.00	.48	1.30	1.500	.000	.00	1 .0
5.532	.0150				.0118	.07	.37	1.60	.36	.013	.00	.00	PIPE	
2804.820	338.256	.386	338.642	1.60	4.44	.31	338.95	.00	.48	1.31	1.500	.000	.00	1 .0
3.184	.0150				.0103	.03	.39	1.50	.36	.013	.00	.00	PIPE	
2808.004	338.304	.399	338.703	1.60	4.24	.28	338.98	.00	.48	1.33	1.500	.000	.00	1 .0
1.902	.0150				.0090	.02	.40	1.40	.36	.013	.00	.00	PIPE	
2809.906	338.332	.413	338.746	1.60	4.04	.25	339.00	.00	.48	1.34	1.500	.000	.00	1 .0
1.275	.0150				.0079	.01	.41	1.31	.36	.013	.00	.00	PIPE	
2811.181	338.352	.427	338.779	1.60	3.85	.23	339.01	.00	.48	1.35	1.500	.000	.00	1 .0
.736	.0150				.0069	.01	.43	1.23	.36	.013	.00	.00	PIPE	
2811.917	338.363	.442	338.805	1.60	3.67	.21	339.01	.00	.48	1.37	1.500	.000	.00	1 .0
.452	.0150				.0060	.00	.44	1.15	.36	.013	.00	.00	PIPE	
2812.369	338.369	.457	338.826	1.60	3.50	.19	339.02	.00	.48	1.38	1.500	.000	.00	1 .0
.041	.0150				.0053	.00	.46	1.07	.36	.013	.00	.00	PIPE	

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:11- 6-2024 Time: 8:34:22

LINE_B6
Q100
OBR

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT or "N"	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp		X-Fall	ZR	Type Ch
2812.410	338.370	.475	338.845	1.60	3.33	.17	339.02	.00	.48	1.40	1.500	.000	.00	1 .0
WALL	ENTRANCE													
2812.410	338.370	1.475	339.845	1.60	.91	.01	339.86	.00	.48	.38	1.500	.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.500														
CD	2	2	0	.000	4.000	4.000			.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
OCEAN BREEZE RANCH
HEADING LINE NO 2 IS -
100 YR
HEADING LINE NO 3 IS -
LINE SD-B6-1

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1000.000	233.990	1	233.790

ELEMENT NO 2 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1000.000	233.990	1

ELEMENT NO 3 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1005.250	238.660	1	.013	.000	.000	.000	0

ELEMENT NO 4 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1005.250	238.660	2	.200

ELEMENT NO 5 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1005.250	238.660	2	238.660

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 3-2024 Time: 7:13:39

OCEAN BREEZE RANCH
100 YR
LINE SD-B6-1

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1000.000	233.990	.463	234.453	8.70	18.75	5.46	239.91	.00	1.14	1.39	1.500	.000	.00	0 .0
WALL EXIT														
1000.000	233.990	.462	234.452	8.70	18.81	5.50	239.95	.00	1.14	1.38	1.500	.000	.00	1 .0
.544	.8895					.1527	.08	.46	5.74	.30	.013	.00	.00	PIPE
1000.544	234.474	.475	234.949	8.70	18.06	5.06	240.01	.00	1.14	1.40	1.500	.000	.00	1 .0
.587	.8895					.1350	.08	.48	5.42	.30	.013	.00	.00	PIPE
1001.131	234.996	.492	235.488	8.70	17.22	4.60	240.09	.00	1.14	1.41	1.500	.000	.00	1 .0
.519	.8895					.1184	.06	.49	5.07	.30	.013	.00	.00	PIPE
1001.651	235.458	.510	235.968	8.70	16.41	4.18	240.15	.00	1.14	1.42	1.500	.000	.00	1 .0
.461	.8895					.1037	.05	.51	4.74	.30	.013	.00	.00	PIPE
1002.112	235.868	.528	236.396	8.70	15.65	3.80	240.20	.00	1.14	1.43	1.500	.000	.00	1 .0
.409	.8895					.0909	.04	.53	4.43	.30	.013	.00	.00	PIPE
1002.521	236.232	.547	236.779	8.70	14.92	3.46	240.24	.00	1.14	1.44	1.500	.000	.00	1 .0
.365	.8895					.0797	.03	.55	4.14	.30	.013	.00	.00	PIPE
1002.886	236.557	.566	237.123	8.70	14.23	3.14	240.27	.00	1.14	1.45	1.500	.000	.00	1 .0
.323	.8895					.0699	.02	.57	3.87	.30	.013	.00	.00	PIPE
1003.209	236.844	.587	237.431	8.70	13.57	2.86	240.29	.00	1.14	1.46	1.500	.000	.00	1 .0
.288	.8895					.0614	.02	.59	3.61	.30	.013	.00	.00	PIPE

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 3-2024 Time: 7:13:39

OCEAN BREEZE RANCH
100 YR
LINE SD-B6-1

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1003.497	237.101	.608	237.709	8.70	12.93	2.60	240.31	.00	1.14	1.47	1.500	.000	.00	1 .0
.256	.8895					.0538	.01	.61	3.37	.30	.013	.00	.00	PIPE
1003.753	237.329	.630	237.959	8.70	12.33	2.36	240.32	.00	1.14	1.48	1.500	.000	.00	1 .0
.228	.8895					.0473	.01	.63	3.15	.30	.013	.00	.00	PIPE
1003.981	237.531	.653	238.184	8.70	11.76	2.15	240.33	.00	1.14	1.49	1.500	.000	.00	1 .0
.201	.8895					.0415	.01	.65	2.94	.30	.013	.00	.00	PIPE
1004.182	237.710	.678	238.388	8.70	11.21	1.95	240.34	.00	1.14	1.49	1.500	.000	.00	1 .0
.179	.8895					.0365	.01	.68	2.74	.30	.013	.00	.00	PIPE
1004.360	237.869	.703	238.572	8.70	10.69	1.77	240.35	.00	1.14	1.50	1.500	.000	.00	1 .0
.157	.8895					.0321	.01	.70	2.55	.30	.013	.00	.00	PIPE
1004.517	238.008	.730	238.738	8.70	10.19	1.61	240.35	.00	1.14	1.50	1.500	.000	.00	1 .0
.139	.8895					.0283	.00	.73	2.38	.30	.013	.00	.00	PIPE
1004.656	238.132	.757	238.889	8.70	9.72	1.47	240.36	.00	1.14	1.50	1.500	.000	.00	1 .0
.121	.8895					.0249	.00	.76	2.22	.30	.013	.00	.00	PIPE
1004.776	238.239	.786	239.025	8.70	9.27	1.33	240.36	.00	1.14	1.50	1.500	.000	.00	1 .0
.104	.8895					.0220	.00	.79	2.06	.30	.013	.00	.00	PIPE
1004.880	238.331	.817	239.148	8.70	8.83	1.21	240.36	.00	1.14	1.49	1.500	.000	.00	1 .0
.090	.8895					.0194	.00	.82	1.92	.30	.013	.00	.00	PIPE

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 3-2024 Time: 7:13:39

OCEAN BREEZE RANCH
100 YR
LINE SD-B6-1

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1004.970	238.411	.849	239.260	8.70	8.42	1.10	240.36	.00	1.14	1.49	1.500	.000	.00	1 .0
.076	.8895					.0171	.00	.85	1.78	.30	.013	.00	.00	PIPE
1005.046	238.479	.883	239.362	8.70	8.03	1.00	240.36	.00	1.14	1.48	1.500	.000	.00	1 .0
.063	.8895					.0151	.00	.88	1.65	.30	.013	.00	.00	PIPE
1005.109	238.535	.919	239.454	8.70	7.66	.91	240.36	.00	1.14	1.46	1.500	.000	.00	1 .0
.050	.8895					.0134	.00	.92	1.53	.30	.013	.00	.00	PIPE
1005.159	238.579	.958	239.537	8.70	7.30	.83	240.37	.00	1.14	1.44	1.500	.000	.00	1 .0
.040	.8895					.0119	.00	.96	1.42	.30	.013	.00	.00	PIPE
1005.199	238.615	.998	239.613	8.70	6.96	.75	240.37	.00	1.14	1.42	1.500	.000	.00	1 .0
.028	.8895					.0106	.00	1.00	1.31	.30	.013	.00	.00	PIPE
1005.227	238.640	1.042	239.682	8.70	6.64	.68	240.37	.00	1.14	1.38	1.500	.000	.00	1 .0
.017	.8895					.0094	.00	1.04	1.20	.30	.013	.00	.00	PIPE
1005.244	238.655	1.089	239.744	8.70	6.33	.62	240.37	.00	1.14	1.34	1.500	.000	.00	1 .0
.006	.8895					.0084	.00	1.09	1.10	.30	.013	.00	.00	PIPE
1005.250	238.660	1.142	239.802	8.70	6.03	.56	240.37	.00	1.14	1.28	1.500	.000	.00	1 .0
WALL	ENTRANCE													
1005.250	238.660	2.142	240.802	8.70	1.02	.02	240.82	.00	.53	4.00	4.000	4.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.500														
CD	2	2	0	.000	4.000	4.000			.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -

OCEAN BREEZE RANCH

HEADING LINE NO 2 IS -

100 YR

HEADING LINE NO 3 IS -

LINE SD-B6-2

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1003.000	233.990	1	233.790

ELEMENT NO 2 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1003.000	233.990	1

ELEMENT NO 3 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1028.250	238.640	1	.013	.000	.000	.000	0

ELEMENT NO 4 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1028.250	238.640	2	.200

ELEMENT NO 5 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1028.250	238.640	2	238.640

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 3-2024 Time: 7:13:45

OCEAN BREEZE RANCH
100 YR
LINE SD-B6-2

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1003.000	233.990	.191	234.181	1.50	11.44	2.03	236.21	.00	.46	1.00	1.500	.000	.00	0 .0
WALL EXIT														
1003.000	233.990	.190	234.180	1.50	11.56	2.08	236.26	.00	.46	1.00	1.500	.000	.00	1 .0
5.264	.1842					.1697	.89	.19	5.65	.19	.013	.00	.00	PIPE
1008.263	234.959	.192	235.151	1.50	11.32	1.99	237.14	.00	.46	1.00	1.500	.000	.00	1 .0
5.773	.1842					.1539	.89	.19	5.49	.19	.013	.00	.00	PIPE
1014.036	236.022	.198	236.221	1.50	10.79	1.81	238.03	.00	.46	1.02	1.500	.000	.00	1 .0
3.157	.1842					.1343	.42	.20	5.14	.19	.013	.00	.00	PIPE
1017.193	236.604	.205	236.809	1.50	10.29	1.64	238.45	.00	.46	1.03	1.500	.000	.00	1 .0
2.133	.1842					.1173	.25	.21	4.82	.19	.013	.00	.00	PIPE
1019.326	236.997	.212	237.209	1.50	9.81	1.49	238.70	.00	.46	1.05	1.500	.000	.00	1 .0
1.578	.1842					.1025	.16	.21	4.52	.19	.013	.00	.00	PIPE
1020.904	237.287	.219	237.506	1.50	9.36	1.36	238.87	.00	.46	1.06	1.500	.000	.00	1 .0
1.230	.1842					.0894	.11	.22	4.24	.19	.013	.00	.00	PIPE
1022.133	237.514	.226	237.740	1.50	8.92	1.24	238.98	.00	.46	1.07	1.500	.000	.00	1 .0
.983	.1842					.0781	.08	.23	3.97	.19	.013	.00	.00	PIPE
1023.117	237.695	.234	237.929	1.50	8.50	1.12	239.05	.00	.46	1.09	1.500	.000	.00	1 .0
.812	.1842					.0682	.06	.23	3.72	.19	.013	.00	.00	PIPE

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 3-2024 Time: 7:13:45

OCEAN BREEZE RANCH
100 YR
LINE SD-B6-2

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1023.928	237.844	.242	238.086	1.50	8.11	1.02	239.11	.00	.46	1.10	1.500	.000	.00	1 .0
.681	.1842					.0596	.04	.24	3.49	.19	.013	.00	.00	PIPE
1024.609	237.969	.250	238.220	1.50	7.73	.93	239.15	.00	.46	1.12	1.500	.000	.00	1 .0
.578	.1842					.0520	.03	.25	3.27	.19	.013	.00	.00	PIPE
1025.187	238.076	.258	238.334	1.50	7.37	.84	239.18	.00	.46	1.13	1.500	.000	.00	1 .0
.488	.1842					.0454	.02	.26	3.06	.19	.013	.00	.00	PIPE
1025.675	238.166	.267	238.433	1.50	7.03	.77	239.20	.00	.46	1.15	1.500	.000	.00	1 .0
.420	.1842					.0397	.02	.27	2.87	.19	.013	.00	.00	PIPE
1026.096	238.243	.276	238.519	1.50	6.70	.70	239.22	.00	.46	1.16	1.500	.000	.00	1 .0
.364	.1842					.0347	.01	.28	2.69	.19	.013	.00	.00	PIPE
1026.459	238.310	.285	238.595	1.50	6.39	.63	239.23	.00	.46	1.18	1.500	.000	.00	1 .0
.310	.1842					.0303	.01	.29	2.52	.19	.013	.00	.00	PIPE
1026.769	238.367	.295	238.662	1.50	6.09	.58	239.24	.00	.46	1.19	1.500	.000	.00	1 .0
.269	.1842					.0265	.01	.30	2.36	.19	.013	.00	.00	PIPE
1027.038	238.417	.305	238.722	1.50	5.81	.52	239.25	.00	.46	1.21	1.500	.000	.00	1 .0
.234	.1842					.0231	.01	.31	2.21	.19	.013	.00	.00	PIPE
1027.271	238.460	.315	238.775	1.50	5.54	.48	239.25	.00	.46	1.22	1.500	.000	.00	1 .0
.197	.1842					.0202	.00	.32	2.07	.19	.013	.00	.00	PIPE

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 3-2024 Time: 7:13:45

OCEAN BREEZE RANCH
100 YR
LINE SD-B6-2

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1027.469	238.496	.326	238.822	1.50	5.28	.43	239.26	.00	.46	1.24	1.500	.000	.00	1 .0
.170	.1842					.0177	.00	.33	1.94	.19	.013	.00	.00	PIPE
1027.639	238.527	.337	238.865	1.50	5.03	.39	239.26	.00	.46	1.25	1.500	.000	.00	1 .0
.141	.1842					.0154	.00	.34	1.82	.19	.013	.00	.00	PIPE
1027.780	238.553	.349	238.903	1.50	4.80	.36	239.26	.00	.46	1.27	1.500	.000	.00	1 .0
.120	.1842					.0135	.00	.35	1.70	.19	.013	.00	.00	PIPE
1027.900	238.576	.361	238.937	1.50	4.58	.33	239.26	.00	.46	1.28	1.500	.000	.00	1 .0
.102	.1842					.0118	.00	.36	1.60	.19	.013	.00	.00	PIPE
1028.002	238.594	.373	238.967	1.50	4.36	.30	239.26	.00	.46	1.30	1.500	.000	.00	1 .0
.080	.1842					.0103	.00	.37	1.49	.19	.013	.00	.00	PIPE
1028.082	238.609	.386	238.995	1.50	4.16	.27	239.26	.00	.46	1.31	1.500	.000	.00	1 .0
.065	.1842					.0090	.00	.39	1.40	.19	.013	.00	.00	PIPE
1028.147	238.621	.399	239.020	1.50	3.97	.24	239.26	.00	.46	1.33	1.500	.000	.00	1 .0
.047	.1842					.0079	.00	.40	1.31	.19	.013	.00	.00	PIPE
1028.194	238.630	.413	239.043	1.50	3.78	.22	239.26	.00	.46	1.34	1.500	.000	.00	1 .0
.029	.1842					.0069	.00	.41	1.23	.19	.013	.00	.00	PIPE
1028.223	238.635	.428	239.063	1.50	3.61	.20	239.27	.00	.46	1.35	1.500	.000	.00	1 .0
.025	.1842					.0061	.00	.43	1.15	.19	.013	.00	.00	PIPE

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 3-2024 Time: 7:13:45

OCEAN BREEZE RANCH
100 YR
LINE SD-B6-2

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1028.248	238.640	.442	239.082	1.50	3.44	.18	239.27	.00	.46	1.37	1.500	.000	.00	1 .0
.002	.1842					.0053	.00	.44	1.07	.19	.013	.00	.00	PIPE
1028.250	238.640	.459	239.099	1.50	3.27	.17	239.27	.00	.46	1.38	1.500	.000	.00	1 .0
WALL	ENTRANCE													
1028.250	238.640	1.459	240.099	1.50	.26	.00	240.10	.00	.16	4.00	4.000	4.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.500														
CD	2	2	0	.000	4.000	4.000			.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -

OCEAN BREEZE RANCH

HEADING LINE NO 2 IS -

100 YR

HEADING LINE NO 3 IS -

LINE SD-B6-3

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1002.500	240.670	1	244.160

ELEMENT NO 2 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1002.500	240.670	1

ELEMENT NO 3 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1034.180	241.240	1	.013	.000	.000	.000	0

ELEMENT NO 4 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1034.180	241.240	2	.200

ELEMENT NO 5 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1034.180	241.240	2	241.240

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 3-2024 Time: 7:13:53

OCEAN BREEZE RANCH
100 YR
LINE SD-B6-3

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1002.500	240.670	3.490	244.160	3.80	2.15	.07	244.23	.00	.75	.00	1.500	.000	.00	0 .0
WALL EXIT														
1002.500	240.670	3.490	244.160	3.80	2.15	.07	244.23	.00	.75	.00	1.500	.000	.00	1 .0
31.680	.0180					.0013	.04	3.49	.00	.53	.013	.00	.00	PIPE
1034.180	241.240	2.962	244.202	3.80	2.15	.07	244.27	.00	.75	.00	1.500	.000	.00	1 .0
WALL ENTRANCE														
1034.180	241.240	3.047	244.287	3.80	.31	.00	244.29	.00	.30	4.00	4.000	4.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.500														
CD	2	2	0	.000	4.000	4.000			.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
OCEAN BREEZE RANCH
HEADING LINE NO 2 IS -
100 YR
HEADING LINE NO 3 IS -
LINE SD-B6-4

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	991.750	244.720	1	248.270

ELEMENT NO 2 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	991.750	244.720	1

ELEMENT NO 3 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	997.500	245.770	1	.013	.000	.000	.000	0

ELEMENT NO 4 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	997.500	245.770	2	.200

ELEMENT NO 5 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	997.500	245.770	2	243.680

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 3-2024 Time:11: 1: 0

OCEAN BREEZE RANCH
100 YR
LINE SD-B6-4

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
991.750	244.720	3.550	248.270	8.60	4.87	.37	248.64	.00	1.14	.00	1.500	.000	.00	0 .0
WALL EXIT														
991.750	244.720	3.551	248.271	8.60	4.87	.37	248.64	.00	1.14	.00	1.500	.000	.00	1 .0
5.750	.1826					.0067	.04	3.55	.00	.44	.013	.00	.00	PIPE
997.500	245.770	2.539	248.309	8.60	4.87	.37	248.68	.00	1.14	.00	1.500	.000	.00	1 .0
WALL ENTRANCE														
997.500	245.770	2.971	248.742	8.60	.72	.01	248.75	.00	.52	4.00	4.000	4.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.500														
CD	2	2	0	.000	4.000	4.000			.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
OCEAN BREEZE RANCH
HEADING LINE NO 2 IS -
100 YR
HEADING LINE NO 3 IS -
LINE SD-B6-5

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1002.500	244.720	1	248.270

ELEMENT NO 2 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1002.500	244.720	1

ELEMENT NO 3 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1028.250	244.980	1	.013	.000	.000	.000	0

ELEMENT NO 4 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1028.250	244.980	2	.200

ELEMENT NO 5 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1028.250	244.980	2	243.680

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 3-2024 Time: 9:52: 6

OCEAN BREEZE RANCH
100 YR
LINE SD-B6-5

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1002.500	244.720	3.550	248.270	3.10	1.75	.05	248.32	.00	.67	.00	1.500	.000	.00	0 .0
WALL	EXIT													
1002.500	244.720	3.551	248.271	3.10	1.75	.05	248.32	.00	.67	.00	1.500	.000	.00	1 .0
25.750	.0101					.0009	.02	3.55	.00	.56	.013	.00	.00	PIPE
1028.250	244.980	3.313	248.293	3.10	1.75	.05	248.34	.00	.67	.00	1.500	.000	.00	1 .0
WALL	ENTRANCE													
1028.250	244.980	3.371	248.351	3.10	.23	.00	248.35	.00	.27	4.00	4.000	4.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.500														
CD	2	2	0	.000	4.000	4.000			.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
OCEAN BREEZE RANCH
HEADING LINE NO 2 IS -
100 YR
HEADING LINE NO 3 IS -
LINE SD-B6-6

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1002.000	253.120	1	257.540

ELEMENT NO 2 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1002.000	253.120	1

ELEMENT NO 3 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1038.500	253.980	1	.013	.000	.000	.000	0

ELEMENT NO 4 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1038.500	253.980	2	.200

ELEMENT NO 5 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1038.500	253.980	2	243.680

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 3-2024 Time:11:23:47

OCEAN BREEZE RANCH
100 YR
LINE SD-B6-6

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1002.000	253.120	4.420	257.540	2.10	1.19	.02	257.56	.00	.55	.00	1.500	.000	.00	0 .0
WALL EXIT														
1002.000	253.120	4.421	257.541	2.10	1.19	.02	257.56	.00	.55	.00	1.500	.000	.00	1 .0
36.500	.0236					.0004	.01	4.42	.00	.37	.013	.00	.00	PIPE
1038.500	253.980	3.575	257.555	2.10	1.19	.02	257.58	.00	.55	.00	1.500	.000	.00	1 .0
WALL ENTRANCE														
1038.500	253.980	3.602	257.582	2.10	.15	.00	257.58	.00	.20	4.00	4.000	4.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.500														
CD	2	2	0	.000	4.000	4.000			.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
OCEAN BREEZE RANCH
HEADING LINE NO 2 IS -
100 YR
HEADING LINE NO 3 IS -
SD-B6-7

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1002.000	258.330	1	262.400

ELEMENT NO 2 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1002.000	258.330	1

ELEMENT NO 3 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1008.250	258.490	1	.013	.000	.000	.000	0

ELEMENT NO 4 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1008.250	258.490	2	.200

ELEMENT NO 5 IS A JUNCTION * * * * * * *

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	1012.250	258.820	2	2	0	.013	6.300	.000	258.820	.000	90.000	.000

RADIUS	ANGLE
.000	.000

ELEMENT NO 6 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1012.250	258.820	1

ELEMENT NO 7 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1034.750	259.410	1	.013	.000	.000	.000	0

ELEMENT NO 8 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1034.750	259.410	1	.200

ELEMENT NO 9 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1034.750	259.410	1	259.410

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 3-2024 Time: 1: 2:23

OCEAN BREEZE RANCH
100 YR
SD-B6-7

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1002.000	258.330	4.070	262.400	10.30	5.83	.53	262.93	.00	1.24	.00	1.500	.000	.00	0 .0
WALL EXIT														
1002.000	258.330	4.070	262.400	10.30	5.83	.53	262.93	.00	1.24	.00	1.500	.000	.00	1 .0
6.250	.0256					.0096	.06	4.07	.00	.85	.013	.00	.00	PIPE
1008.250	258.490	3.970	262.460	10.30	5.83	.53	262.99	.00	1.24	.00	1.500	.000	.00	1 .0
WALL ENTRANCE														
1008.250	258.490	4.598	263.088	10.30	.56	.00	263.09	.00	.59	4.00	4.000	4.000	.00	0 .0
JUNCT STR	.0825					.0000	.00	4.60	.05		.013	.00	.00	RECTANG
1012.250	258.820	4.277	263.097	4.00	.23	.00	263.10	.00	.31	4.00	4.000	4.000	.00	0 .0
WALL EXIT														
1012.250	258.820	4.277	263.097	4.00	2.26	.08	263.18	.00	.77	.00	1.500	.000	.00	1 .0
22.500	.0262					.0015	.03	4.28	.00	.49	.013	.00	.00	PIPE
WALL ENTRANCE														
1034.750	259.410	3.720	263.130	4.00	2.26	.08	263.21	.00	.77	.00	1.500	.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.500														
CD	2	2	0	.000	4.000	4.000			.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
OCEAN BREEZE RANCH
HEADING LINE NO 2 IS -
100 YR
HEADING LINE NO 3 IS -
SD-B6-8

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	990.000	295.600	1	299.300

ELEMENT NO 2 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	990.000	295.600	1

ELEMENT NO 3 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1016.250	296.390	1	.013	.000	.000	.000	0

ELEMENT NO 4 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1016.250	296.390	2	.200

ELEMENT NO 5 IS A JUNCTION * * * * * * *

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	1020.250	297.190	2	2	0	.013	3.300	.000	297.190	.000	90.000	.000

RADIUS	ANGLE
.000	.000

ELEMENT NO 6 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1020.250	297.190	1

ELEMENT NO 7 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1026.500	298.470	1	.013	.000	.000	.000	0

ELEMENT NO 8 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1026.500	298.470	1	.200

ELEMENT NO 9 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1026.500	298.470	1	259.410

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 3-2024 Time: 1:21: 0

OCEAN BREEZE RANCH
100 YR
SD-B6-8

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
990.000	295.600	3.700	299.300	6.50	3.68	.21	299.51	.00	.99	.00	1.500	.000	.00	0 .0
WALL	EXIT													
990.000	295.600	3.700	299.300	6.50	3.68	.21	299.51	.00	.99	.00	1.500	.000	.00	1 .0
26.250	.0301					.0038	.10	3.70	.00	.62	.013	.00	.00	PIPE
1016.250	296.390	3.011	299.401	6.50	3.68	.21	299.61	.00	.99	.00	1.500	.000	.00	1 .0
WALL	ENTRANCE													
1016.250	296.390	3.259	299.649	6.50	.50	.00	299.65	.00	.43	4.00	4.000	4.000	.00	0 .0
JUNCT STR	.2000					.0000	.00	3.26	.05		.013	.00	.00	RECTANG
1020.250	297.190	2.465	299.655	3.20	.32	.00	299.66	.00	.27	4.00	4.000	4.000	.00	0 .0
WALL	EXIT													
1020.250	297.190	2.465	299.655	3.20	1.81	.05	299.71	.00	.68	.00	1.500	.000	.00	1 .0
4.734	.2048					.0009	.00	2.47	.00	.26	.013	.00	.00	PIPE
1024.984	298.159	1.500	299.659	3.20	1.81	.05	299.71	.00	.68	.00	1.500	.000	.00	1 .0
.656	.2048					.0009	.00	1.50	.00	.26	.013	.00	.00	PIPE
1025.640	298.294	1.360	299.654	3.20	1.90	.06	299.71	.00	.68	.87	1.500	.000	.00	1 .0
.365	.2048					.0008	.00	1.36	.24	.26	.013	.00	.00	PIPE
1026.005	298.369	1.280	299.649	3.20	1.99	.06	299.71	.00	.68	1.06	1.500	.000	.00	1 .0
.298	.2048					.0009	.00	1.28	.29	.26	.013	.00	.00	PIPE

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 3-2024 Time: 1:21: 0

OCEAN BREEZE RANCH
100 YR
SD-B6-8

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1026.303	298.430	1.213	299.643	3.20	2.09	.07	299.71	.00	.68	1.18	1.500	.000	.00	1 .0
.197	.2048					.0010	.00	1.21	.32	.26	.013	.00	.00	PIPE
WALL	ENTRANCE													
1026.500	298.470	1.167	299.637	3.20	2.17	.07	299.71	.00	.68	1.25	1.500	.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.500														
CD	2	2	0	.000	4.000	4.000			.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
OCEAN BREEZE RANCH
HEADING LINE NO 2 IS -
100 YR
HEADING LINE NO 3 IS -
LINE SD-B6-9

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1012.000	319.400	1	321.170

ELEMENT NO 2 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1012.000	319.400	1

ELEMENT NO 3 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1018.250	321.210	1	.013	.000	.000	.000	0

ELEMENT NO 4 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1018.250	321.210	2	.200

ELEMENT NO 5 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1018.250	321.210	2	243.680

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 3-2024 Time: 1:27:19

OCEAN BREEZE RANCH
100 YR
LINE SD-B6-9

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1012.000	319.400	.480	319.880	6.10	12.51	2.43	322.31	.00	.95	1.40	1.500	.000	.00	0 .0
WALL EXIT														
1012.000	319.400	.478	319.878	6.10	12.57	2.46	322.33	.00	.95	1.40	1.500	.000	.00	1 .0
.663	.2896					.0663	.04	.48	3.76	.33	.013	.00	.00	PIPE
1012.663	319.592	.490	320.082	6.10	12.14	2.29	322.37	.00	.95	1.41	1.500	.000	.00	1 .0
.829	.2896					.0591	.05	.49	3.58	.33	.013	.00	.00	PIPE
1013.492	319.832	.507	320.339	6.10	11.58	2.08	322.42	.00	.95	1.42	1.500	.000	.00	1 .0
.720	.2896					.0518	.04	.51	3.35	.33	.013	.00	.00	PIPE
1014.212	320.041	.525	320.566	6.10	11.04	1.89	322.46	.00	.95	1.43	1.500	.000	.00	1 .0
.627	.2896					.0454	.03	.53	3.13	.33	.013	.00	.00	PIPE
1014.839	320.222	.544	320.766	6.10	10.53	1.72	322.49	.00	.95	1.44	1.500	.000	.00	1 .0
.546	.2896					.0398	.02	.54	2.93	.33	.013	.00	.00	PIPE
1015.385	320.380	.564	320.944	6.10	10.04	1.56	322.51	.00	.95	1.45	1.500	.000	.00	1 .0
.480	.2896					.0349	.02	.56	2.73	.33	.013	.00	.00	PIPE
1015.865	320.519	.584	321.103	6.10	9.57	1.42	322.53	.00	.95	1.46	1.500	.000	.00	1 .0
.418	.2896					.0306	.01	.58	2.55	.33	.013	.00	.00	PIPE
1016.283	320.640	.605	321.245	6.10	9.12	1.29	322.54	.00	.95	1.47	1.500	.000	.00	1 .0
.364	.2896					.0269	.01	.61	2.39	.33	.013	.00	.00	PIPE

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 3-2024 Time: 1:27:19

OCEAN BREEZE RANCH
100 YR
LINE SD-B6-9

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1016.646	320.746	.627	321.373	6.10	8.70	1.18	322.55	.00	.95	1.48	1.500	.000	.00	1 .0
.315	.2896					.0236	.01	.63	2.23	.33	.013	.00	.00	PIPE
1016.961	320.837	.650	321.487	6.10	8.29	1.07	322.56	.00	.95	1.49	1.500	.000	.00	1 .0
.268	.2896					.0208	.01	.65	2.08	.33	.013	.00	.00	PIPE
1017.230	320.915	.675	321.590	6.10	7.91	.97	322.56	.00	.95	1.49	1.500	.000	.00	1 .0
.233	.2896					.0183	.00	.68	1.94	.33	.013	.00	.00	PIPE
1017.463	320.982	.700	321.682	6.10	7.54	.88	322.57	.00	.95	1.50	1.500	.000	.00	1 .0
.198	.2896					.0161	.00	.70	1.81	.33	.013	.00	.00	PIPE
1017.661	321.040	.726	321.766	6.10	7.19	.80	322.57	.00	.95	1.50	1.500	.000	.00	1 .0
.163	.2896					.0141	.00	.73	1.68	.33	.013	.00	.00	PIPE
1017.825	321.087	.754	321.841	6.10	6.85	.73	322.57	.00	.95	1.50	1.500	.000	.00	1 .0
.135	.2896					.0124	.00	.75	1.57	.33	.013	.00	.00	PIPE
1017.959	321.126	.783	321.909	6.10	6.54	.66	322.57	.00	.95	1.50	1.500	.000	.00	1 .0
.109	.2896					.0110	.00	.78	1.46	.33	.013	.00	.00	PIPE
1018.068	321.157	.813	321.970	6.10	6.23	.60	322.57	.00	.95	1.49	1.500	.000	.00	1 .0
.081	.2896					.0097	.00	.81	1.36	.33	.013	.00	.00	PIPE
1018.149	321.181	.845	322.026	6.10	5.94	.55	322.57	.00	.95	1.49	1.500	.000	.00	1 .0
.056	.2896					.0085	.00	.85	1.26	.33	.013	.00	.00	PIPE

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 3-2024 Time: 1:27:19

OCEAN BREEZE RANCH
100 YR
LINE SD-B6-9

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1018.206	321.197	.879	322.076	6.10	5.66	.50	322.57	.00	.95	1.48	1.500	.000	.00	1 .0
.033	.2896					.0076	.00	.88	1.17	.33	.013	.00	.00	PIPE
1018.239	321.207	.915	322.122	6.10	5.40	.45	322.57	.00	.95	1.46	1.500	.000	.00	1 .0
.011	.2896					.0067	.00	.92	1.08	.33	.013	.00	.00	PIPE
1018.250	321.210	.954	322.164	6.10	5.14	.41	322.57	.00	.95	1.44	1.500	.000	.00	1 .0
WALL	ENTRANCE													
1018.250	321.210	1.954	323.164	6.10	.78	.01	323.17	.00	.42	4.00	4.000	4.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		2.000														
CD	2	4	1		1.500														
CD	3	3	0	.000	6.000	4.000	.000	.000	.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
LINE_L
HEADING LINE NO 2 IS -
Q100
HEADING LINE NO 3 IS -
OBR

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1002.500	234.630	3	238.430

ELEMENT NO 2 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1002.500	234.630	3

WARNING - ADJACENT SECTIONS ARE NOT IDENTICAL - SEE SECTION NUMBERS AND CHANNEL DEFINITIONS

ELEMENT NO 3 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1040.090	235.010	1	.013	.000	.000	.000	0

ELEMENT NO 4 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1141.820	236.010	1	.013	.000	.000	.000	0

ELEMENT NO 5 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1188.990	236.490	1	.013	145.382	18.590	.000	0

ELEMENT NO 6 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1188.990	236.490	3	.200

ELEMENT NO 7 IS A JUNCTION * * * * * * *

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	1192.990	236.990	3	2	2	.013	5.900	5.900	236.490	236.490	49.200	-90.000

RADIUS	ANGLE
.000	.000

ELEMENT NO 8 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1192.990	236.990	2

ELEMENT NO 9 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1488.870	244.480	2	.013	.000	.000	.000	0

ELEMENT NO 10 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1488.870	244.480	3	.200

ELEMENT NO 11 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1492.870	244.810	3	.013	.000	.000	.000	0

ELEMENT NO 12 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1492.870	244.810	2

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 13 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1518.680	245.510	2	.013	589.166	-2.510	.000	0

ELEMENT NO 14 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1518.680	245.510	3	.500

ELEMENT NO 15 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1518.680	245.510	3	245.510

FILE: LINE_B7.WSW W S P G W - EDIT LISTING - Version 14.11 Date:11- 6-2024 Time: 8:52:50

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING PAGE 1

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		3.000														
CD	2	2	0	.000	4.000	4.000			.00										

W S P G W PAGE NO 1

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -

OCEAN BREEZE RANCH

HEADING LINE NO 2 IS -

Q100

HEADING LINE NO 3 IS -

LINE B7

W S P G W PAGE NO 2

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1000.000	217.880	2	217.870

ELEMENT NO 2 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1000.000	217.880	1

ELEMENT NO 3 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1061.660	218.500	1	.013	.000	.000	.000	0

ELEMENT NO 4 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1061.660	218.500	2	.200

ELEMENT NO 5 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1061.660	218.500	2	218.500

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:11- 6-2024 Time: 8:52:51

OCEAN BREEZE RANCH
Q100
LINE B7

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1000.000	217.880	.929	218.809	39.80	10.71	1.78	220.59	.00	1.45	4.00	4.000	4.000	.00	0 .0
WALL EXIT														
1000.000	217.880	1.728	219.608	39.80	9.44	1.38	220.99	.00	2.05	2.97	3.000	.000	.00	1 .0
11.674	.0101					.0088	.10	1.73	1.40	1.67	.013	.00	.00	PIPE
1011.674	217.997	1.743	219.740	39.80	9.34	1.36	221.10	.00	2.05	2.96	3.000	.000	.00	1 .0
28.849	.0101					.0082	.24	1.74	1.37	1.67	.013	.00	.00	PIPE
1040.523	218.287	1.813	220.101	39.80	8.91	1.23	221.33	.00	2.05	2.93	3.000	.000	.00	1 .0
13.278	.0101					.0073	.10	1.81	1.27	1.67	.013	.00	.00	PIPE
1053.801	218.421	1.888	220.309	39.80	8.49	1.12	221.43	.00	2.05	2.90	3.000	.000	.00	1 .0
6.321	.0101					.0064	.04	1.89	1.18	1.67	.013	.00	.00	PIPE
1060.123	218.485	1.967	220.452	39.80	8.10	1.02	221.47	.00	2.05	2.85	3.000	.000	.00	1 .0
1.537	.0101					.0057	.01	1.97	1.09	1.67	.013	.00	.00	PIPE
1061.660	218.500	2.054	220.554	39.80	7.72	.92	221.48	.00	2.05	2.79	3.000	.000	.00	1 .0
WALL ENTRANCE														
1061.660	218.500	4.054	222.554	39.80	2.45	.09	222.65	.00	1.45	4.00	4.000	4.000	.00	0 .0

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 4-2024 Time: 9:55:20

LINE_L
Q100
OBR

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1002.500	234.630	3.800	238.430	26.50	1.74	.05	238.48	.00	1.11	4.00	6.000	4.000	.00	0 .0
WALL	EXIT													
1002.500	234.630	3.801	238.431	26.50	8.44	1.10	239.54	.00	1.80	.00	2.000	.000	.00	1 .0
37.590	.0101					.0137	.52	3.80	.00	2.00	.013	.00	.00	PIPE
1040.090	235.010	3.936	238.946	26.50	8.44	1.10	240.05	.00	1.80	.00	2.000	.000	.00	1 .0
101.730	.0098					.0137	1.40	3.94	.00	2.00	.013	.00	.00	PIPE
1141.820	236.010	4.332	240.342	26.50	8.44	1.10	241.45	.00	1.80	.00	2.000	.000	.00	1 .0
47.170	.0102					.0137	.65	.00	.00	2.00	.013	.00	.00	PIPE
1188.990	236.490	4.600	241.090	26.50	8.44	1.10	242.19	.00	1.80	.00	2.000	.000	.00	1 .0
WALL	ENTRANCE													
1188.990	236.490	5.903	242.393	26.50	1.12	.02	242.41	.00	1.11	4.00	6.000	4.000	.00	0 .0
JUNCT STR	.1250					.0001	.00	5.90	.08		.013	.00	.00	BOX
		---------- WARNING - Flow depth near top of box conduit ----------												
1192.990	236.990	5.412	242.402	14.70	.68	.01	242.41	.00	.75	4.00	6.000	4.000	.00	0 .0
WALL	EXIT													
		---------- WARNING - Flow depth near top of box conduit ----------												

LINE_L
Q100
OBR

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1192.990	236.990	5.413	242.403	14.70	8.32	1.07	243.48	.00	1.40	.00	1.500	.000	.00	1 .0
295.880	.0253					.0196	5.79	5.41	.00	1.09	.013	.00	.00	PIPE
1488.870	244.480	3.717	248.197	14.70	8.32	1.07	249.27	.00	1.40	.00	1.500	.000	.00	1 .0
WALL	ENTRANCE													
1488.870	244.480	4.998	249.478	14.70	.74	.01	249.49	.00	.75	4.00	6.000	4.000	.00	0 .0
2.810	.0825					.0000	.00	5.00	.06	.28	.013	.00	.00	BOX
1491.680	244.712	4.765	249.477	14.70	.77	.01	249.49	.00	.75	4.00	6.000	4.000	.00	0 .0
1.190	.0825					.0000	.00	4.77	.06	.28	.013	.00	.00	BOX
1492.870	244.810	4.667	249.477	14.70	.79	.01	249.49	.00	.75	4.00	6.000	4.000	.00	0 .0
WALL	EXIT													
1492.870	244.810	4.667	249.477	14.70	8.32	1.07	250.55	.00	1.40	.00	1.500	.000	.00	1 .0
25.810	.0271					.0196	.51	.00	.00	1.06	.013	.00	.00	PIPE
1518.680	245.510	4.508	250.018	14.70	8.32	1.07	251.09	.00	1.40	.00	1.500	.000	.00	1 .0
WALL	ENTRANCE													
1518.680	245.510	6.111	251.621	14.70	.61	.01	251.63	.00	.75	4.00	6.000	4.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.500														
CD	2	3	0	.000	4.000	4.000	.000	.000	.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
SD-L-1

HEADING LINE NO 2 IS -
Q100 OBR

HEADING LINE NO 3 IS -
SD-L-1 Q100

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1000.000	236.990	1	242.400

ELEMENT NO 2 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1006.250	237.200	1	.013	.000	.000	.000	0

ELEMENT NO 3 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1006.250	237.200	2	.500

ELEMENT NO 4 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1006.250	237.200	2	237.200

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 3-2024 Time: 7:50: 8

SD-L-1
Q100 OBR
SD-L-1 Q100

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1000.000	236.990	5.410	242.400	5.90	3.34	.17	242.57	.00	.94	.00	1.500	.000	.00	1 .0
6.250	.0336					.0032	.02	5.41	.00	.57	.013	.00	.00	PIPE
1006.250	237.200	5.220	242.420	5.90	3.34	.17	242.59	.00	.94	.00	1.500	.000	.00	1 .0
WALL	ENTRANCE													
1006.250	237.200	5.476	242.676	5.90	.37	.00	242.68	.00	.41	4.00	4.000	4.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.500														
CD	2	3	0	.000	4.000	4.000	.000	.000	.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -

SD-L-2

HEADING LINE NO 2 IS -

Q100 OBR

HEADING LINE NO 3 IS -

SD-L-2 Q100

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1002.000	236.990	1	242.400

ELEMENT NO 2 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1036.680	237.340	1	.013	.000	.000	.000	0

ELEMENT NO 3 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1036.680	237.340	2	.500

ELEMENT NO 4 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1036.670	237.340	2	237.340

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 3-2024 Time: 7:52:20

SD-L-2
Q100 OBR
SD-L-2 Q100

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1002.000	236.990	5.410	242.400	5.90	3.34	.17	242.57	.00	.94	.00	1.500	.000	.00	1 .0
34.680	.0101					.0032	.11	5.41	.00	.80	.013	.00	.00	PIPE
1036.680	237.340	5.169	242.509	5.90	3.34	.17	242.68	.00	.94	.00	1.500	.000	.00	1 .0
WALL	ENTRANCE													
1036.680	237.340	5.426	242.766	5.90	.37	.00	242.77	.00	.41	4.00	4.000	4.000	.00	0 .0
WALL	ENTRANCE													
1036.670	237.340	5.426	242.766	5.90	.37	.00	242.77	.00	.41	4.00	4.000	4.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.500														
CD	2	3	0	.000	4.000	4.000	.000	.000	.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -

SD-L-3

HEADING LINE NO 2 IS -

Q100 OBR

HEADING LINE NO 3 IS -

SD-L-3 Q100

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1000.000	245.840	1	251.620

ELEMENT NO 2 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1007.920	248.220	1	.013	.000	.000	.000	0

ELEMENT NO 3 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1007.920	248.220	2	.500

ELEMENT NO 4 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1007.920	248.220	2	248.220

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 4-2024 Time: 9:57:22

SD-L-3
Q100 OBR
SD-L-3 Q100

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1000.000	245.840	5.780	251.620	6.20	3.51	.19	251.81	.00	.96	.00	1.500	.000	.00	1 .0
7.920	.3005					.0035	.03	5.78	.00	.33	.013	.00	.00	PIPE
1007.920	248.220	3.428	251.648	6.20	3.51	.19	251.84	.00	.96	.00	1.500	.000	.00	1 .0
WALL	ENTRANCE													
1007.920	248.220	3.711	251.931	6.20	.42	.00	251.93	.00	.42	4.00	4.000	4.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.500														
CD	2	3	0	.000	4.000	4.000	.000	.000	.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -

SD-L-4

HEADING LINE NO 2 IS -

Q100 OBR

HEADING LINE NO 3 IS -

SD-L-4 Q100

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1002.000	245.840	1	251.620

ELEMENT NO 2 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1028.250	247.000	1	.013	.000	.000	.000	0

ELEMENT NO 3 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1028.250	247.000	2	.500

ELEMENT NO 4 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1028.250	247.000	2	247.000

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 4-2024 Time: 9:57:41

SD-L-4
Q100 OBR
SD-L-4 Q100

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1002.000	245.840	5.780	251.620	8.60	4.87	.37	251.99	.00	1.14	.00	1.500	.000	.00	1 .0
26.250	.0442					.0067	.18	5.78	.00	.65	.013	.00	.00	PIPE
1028.250	247.000	4.796	251.796	8.60	4.87	.37	252.16	.00	1.14	.00	1.500	.000	.00	1 .0
WALL	ENTRANCE													
1028.250	247.000	5.341	252.341	8.60	.54	.00	252.35	.00	.52	4.00	4.000	4.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	2	4	1		2.000														
CD	1	4	1		1.500														
CD	3	4	1		2.500														
CD	6	3	0	.000	4.000	4.000	.000	.000	.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -

LINE_M

HEADING LINE NO 2 IS -

Q100 05/31/2024

HEADING LINE NO 3 IS -

LINE_M LINE_M_100.WSW

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1002.500	247.370	6	252.150

ELEMENT NO 2 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1002.500	247.370	3

ELEMENT NO 3 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1093.770	251.000	3	.013	.000	.000	.000	0

ELEMENT NO 4 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1093.770	251.000	6	.200

ELEMENT NO 5 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1097.770	251.330	6	.013	.000	.000	.000	0

ELEMENT NO 6 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1097.770	251.330	3

ELEMENT NO 7 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1239.720	260.860	3	.013	.000	.000	.000	0

ELEMENT NO 8 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1239.720	260.860	6	.200

ELEMENT NO 9 IS A JUNCTION * * * * * * *

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	1243.720	261.360	6	1	1	.013	6.600	7.200	261.530	261.530	-90.000	.400
									RADIUS	ANGLE		
									114.592	2.000		

ELEMENT NO 10 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1243.720	261.360	2

ELEMENT NO 11 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1572.910	272.950	2	.013	.000	.000	.000	0

ELEMENT NO 12 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1572.910	272.950	6	.200

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 13 IS A JUNCTION

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	1576.910	273.280	6	1	1	.013	6.800	6.900	273.450	273.450	48.900	-.800
									RADIUS	ANGLE		
									36.965	6.200		

ELEMENT NO 14 IS A WALL EXIT

U/S DATA	STATION	INVERT	SECT
	1576.910	273.280	2

ELEMENT NO 15 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1655.170	275.820	2	.013	589.996	-7.600	.000	0

ELEMENT NO 16 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1911.690	284.330	2	.013	.000	.000	.000	0

ELEMENT NO 17 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1918.060	284.530	2	.013	776.555	.470	.000	0

ELEMENT NO 18 IS A WALL ENTRANCE

U/S DATA	STATION	INVERT	SECT	FP
	1918.060	284.530	6	.200

ELEMENT NO 19 IS A JUNCTION

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	1922.060	284.860	6	1	1	.013	7.200	2.400	285.030	285.030	76.000	-.700
									RADIUS	ANGLE		
									38.197	6.000		

ELEMENT NO 20 IS A WALL EXIT

U/S DATA	STATION	INVERT	SECT
	1922.060	284.860	2

ELEMENT NO 21 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	2216.000	291.180	2	.013	610.200	27.600	.000	0

ELEMENT NO 22 IS A WALL ENTRANCE

U/S DATA	STATION	INVERT	SECT	FP
	2216.000	291.180	6	.200

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 23 IS A JUNCTION

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	2220.000	291.680	6	2	0	.013	13.400	.000	291.510	.000	.000	-.600
									RADIUS	ANGLE		
									34.206	6.700		

ELEMENT NO 24 IS A WALL EXIT

U/S DATA	STATION	INVERT	SECT
	2220.000	291.680	1

ELEMENT NO 25 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	2287.740	295.650	1	.013	611.215	6.350	.000	0

ELEMENT NO 26 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	2347.280	299.140	1	.013	.000	.000	.000	0

ELEMENT NO 27 IS A WALL ENTRANCE

U/S DATA	STATION	INVERT	SECT	FP
	2347.280	299.140	6	.200

ELEMENT NO 28 IS A JUNCTION

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	2351.280	299.470	6	1	0	.013	1.800	.000	299.470	.000	.000	.900
									RADIUS	ANGLE		

WATER SURFACE PROFILE - ELEMENT CARD LISTING

							.000	.000		
ELEMENT NO 29 IS A WALL EXIT			*							
U/S DATA	STATION	INVERT	SECT							
	2351.280	299.470	1							
ELEMENT NO 30 IS A REACH		*	*	*						
U/S DATA	STATION	INVERT	SECT	N			RADIUS	ANGLE	ANG PT	MAN H
	2387.780	301.610	1	.013			.000	.000	.000	0
ELEMENT NO 31 IS A WALL ENTRANCE			*							
U/S DATA	STATION	INVERT	SECT	FP						
	2387.780	301.610	6	.200						
ELEMENT NO 32 IS A SYSTEM HEADWORKS			*		*					
U/S DATA	STATION	INVERT	SECT			W S ELEV				
	2387.780	301.610	6			.000				

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 1-2024 Time: 6:40:33

LINE_M
Q100 05/31/2024
LINE_M LINE_M_100.WSW

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1002.500	247.370	4.780	252.150	54.60	3.41	.18	252.33	.00	1.80	4.00	4.000	4.000	.00	0 .0
WALL EXIT														
1002.500	247.370	4.780	252.150	54.60	11.12	1.92	254.07	.00	2.35	.00	2.500	.000	.00	1 .0
91.270	.0398					.0177	1.62	4.78	.00	1.49	.013	.00	.00	PIPE
1093.770	251.000	2.768	253.768	54.60	11.12	1.92	255.69	.00	2.35	.00	2.500	.000	.00	1 .0
WALL ENTRANCE														
1093.770	251.000	4.856	255.856	54.60	3.41	.18	256.04	.00	1.80	4.00	4.000	4.000	.00	0 .0
4.000	.0825					.0009	.00	4.86	.30	.66	.013	.00	.00	BOX
1097.770	251.330	4.530	255.860	54.60	3.41	.18	256.04	.00	1.80	4.00	4.000	4.000	.00	0 .0
HYDRAULIC JUMP														
1097.770	251.330	1.328	252.658	54.60	20.61	6.60	259.26	.00	2.35	2.50	2.500	.000	.00	1 .0
22.161	.0671					.0564	1.25	1.33	3.53	1.27	.013	.00	.00	PIPE
1119.931	252.818	1.349	254.167	54.60	20.20	6.34	260.51	.00	2.35	2.49	2.500	.000	.00	1 .0
33.859	.0671					.0517	1.75	1.35	3.42	1.27	.013	.00	.00	PIPE
1153.790	255.091	1.402	256.493	54.60	19.26	5.76	262.25	.00	2.35	2.48	2.500	.000	.00	1 .0
21.766	.0671					.0456	.99	1.40	3.18	1.27	.013	.00	.00	PIPE
1175.555	256.552	1.458	258.010	54.60	18.37	5.24	263.25	.00	2.35	2.47	2.500	.000	.00	1 .0
15.579	.0671					.0404	.63	1.46	2.95	1.27	.013	.00	.00	PIPE

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 1-2024 Time: 6:40:33

LINE_M
Q100 05/31/2024
LINE_M LINE_M_100.WSW

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1191.134	257.598	1.517	259.115	54.60	17.51	4.76	263.88	.00	2.35	2.44	2.500	.000	.00	1 .0
11.780	.0671					.0357	.42	1.52	2.73	1.27	.013	.00	.00	PIPE
1202.914	258.389	1.580	259.969	54.60	16.70	4.33	264.30	.00	2.35	2.41	2.500	.000	.00	1 .0
9.241	.0671					.0317	.29	1.58	2.53	1.27	.013	.00	.00	PIPE
1212.156	259.009	1.646	260.656	54.60	15.92	3.94	264.59	.00	2.35	2.37	2.500	.000	.00	1 .0
7.333	.0671					.0282	.21	1.65	2.33	1.27	.013	.00	.00	PIPE
1219.489	259.502	1.718	261.220	54.60	15.18	3.58	264.80	.00	2.35	2.32	2.500	.000	.00	1 .0
5.906	.0671					.0251	.15	1.72	2.15	1.27	.013	.00	.00	PIPE
1225.395	259.898	1.795	261.693	54.60	14.47	3.25	264.95	.00	2.35	2.25	2.500	.000	.00	1 .0
4.759	.0671					.0224	.11	1.80	1.97	1.27	.013	.00	.00	PIPE
1230.154	260.218	1.878	262.096	54.60	13.80	2.96	265.05	.00	2.35	2.16	2.500	.000	.00	1 .0
3.764	.0671					.0202	.08	1.88	1.80	1.27	.013	.00	.00	PIPE
1233.917	260.470	1.970	262.440	54.60	13.16	2.69	265.13	.00	2.35	2.04	2.500	.000	.00	1 .0
2.891	.0671					.0182	.05	1.97	1.63	1.27	.013	.00	.00	PIPE
1236.808	260.664	2.073	262.738	54.60	12.54	2.44	265.18	.00	2.35	1.88	2.500	.000	.00	1 .0
2.024	.0671					.0167	.03	2.07	1.45	1.27	.013	.00	.00	PIPE
1238.832	260.800	2.193	262.993	54.60	11.96	2.22	265.21	.00	2.35	1.64	2.500	.000	.00	1 .0
.888	.0671					.0157	.01	2.19	1.26	1.27	.013	.00	.00	PIPE

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 1-2024 Time: 6:40:33

LINE_M
Q100 05/31/2024
LINE_M LINE_M_100.WSW

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT) / SF Ave	Water Elev / HF	Q (CFS) / SE Dpth	Vel (FPS) / Froude N	Vel Head / Norm Dp	Energy Grd.El. / "N"	Super Elev / X-Fall	Critical Depth / ZR	Flow Top Width / Type Ch	Height/ Dia.-FT /	Base Wt or I.D. /	ZL /	No Wth Prs/Pip /
1239.720	260.860	2.350	263.210	54.60	11.40	2.02	265.23	.00	2.35	1.19	2.500	.000	.00	1 .0
WALL ENTRANCE														
1239.720	260.860	4.556	265.416	54.60	3.41	.18	265.60	.00	1.80	4.00	4.000	4.000	.00	0 .0
JUNCT STR	.1250					.0009	.00	.00	.30		.013	.00	.00	BOX
1243.720	261.360	4.161	265.521	40.80	2.55	.10	265.62	.00	1.48	4.00	4.000	4.000	.00	0 .0
WALL EXIT														
1243.720	261.360	4.162	265.522	40.80	12.99	2.62	268.14	.00	1.96	.00	2.000	.000	.00	1 .0
329.190	.0352					.0325	10.71	4.16	.00	1.57	.013	.00	.00	PIPE
1572.910	272.950	3.279	276.229	40.80	12.99	2.62	278.85	.00	1.96	.00	2.000	.000	.00	1 .0
WALL ENTRANCE														
1572.910	272.950	6.301	279.251	40.80	2.55	.10	279.35	.00	1.48	4.00	4.000	4.000	.00	0 .0
JUNCT STR	.0825					.0005	.00	.00	.22		.013	.00	.00	BOX
1576.910	273.280	5.999	279.279	27.10	1.69	.04	279.32	.00	1.13	4.00	4.000	4.000	.00	0 .0
WALL EXIT														
1576.910	273.280	6.000	279.280	27.10	8.63	1.16	280.44	.00	1.81	.00	2.000	.000	.00	1 .0
78.260	.0325					.0144	1.12	.00	.00	1.19	.013	.00	.00	PIPE
1655.170	275.820	4.650	280.470	27.10	8.63	1.16	281.63	.00	1.81	.00	2.000	.000	.00	1 .0
103.875	.0332					.0144	1.49	4.65	.00	1.18	.013	.00	.00	PIPE

LINE_M
Q100 05/31/2024
LINE_M LINE_M_100.WSW

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1759.045	279.266	2.695	281.961	27.10	8.63	1.16	283.12	.00	1.81	.00	2.000	.000	.00	1 .0
HYDRAULIC JUMP														
1759.045	279.266	1.201	280.467	27.10	13.76	2.94	283.41	.00	1.81	1.96	2.000	.000	.00	1 .0
38.604	.0332					.0312	1.21	1.20	2.42	1.18	.013	.00	.00	PIPE
1797.649	280.547	1.212	281.759	27.10	13.60	2.87	284.63	.00	1.81	1.95	2.000	.000	.00	1 .0
50.701	.0332					.0290	1.47	1.21	2.37	1.18	.013	.00	.00	PIPE
1848.350	282.229	1.262	283.491	27.10	12.96	2.61	286.10	.00	1.81	1.93	2.000	.000	.00	1 .0
24.641	.0332					.0257	.63	1.26	2.20	1.18	.013	.00	.00	PIPE
1872.991	283.046	1.316	284.362	27.10	12.36	2.37	286.73	.00	1.81	1.90	2.000	.000	.00	1 .0
15.415	.0332					.0229	.35	1.32	2.03	1.18	.013	.00	.00	PIPE
1888.406	283.558	1.373	284.931	27.10	11.79	2.16	287.09	.00	1.81	1.86	2.000	.000	.00	1 .0
10.561	.0332					.0204	.22	1.37	1.87	1.18	.013	.00	.00	PIPE
1898.968	283.908	1.434	285.342	27.10	11.24	1.96	287.30	.00	1.81	1.80	2.000	.000	.00	1 .0
7.441	.0332					.0182	.14	1.43	1.71	1.18	.013	.00	.00	PIPE
1906.409	284.155	1.501	285.656	27.10	10.71	1.78	287.44	.00	1.81	1.73	2.000	.000	.00	1 .0
5.281	.0332					.0164	.09	1.50	1.56	1.18	.013	.00	.00	PIPE
1911.690	284.330	1.574	285.904	27.10	10.22	1.62	287.52	.01	1.81	1.64	2.000	.000	.00	1 .0
2.206	.0314					.0151	.03	1.58	1.41	1.20	.013	.00	.00	PIPE

LINE_M
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Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1913.896	284.399	1.614	286.013	27.10	9.97	1.54	287.56	.01	1.81	1.58	2.000	.000	.00	1 .0
3.034	.0314					.0141	.04	1.62	1.34	1.20	.013	.00	.00	PIPE
1916.930	284.495	1.702	286.197	27.10	9.51	1.40	287.60	.01	1.81	1.42	2.000	.000	.00	1 .0
1.130	.0314					.0130	.01	1.71	1.18	1.20	.013	.00	.00	PIPE
1918.060	284.530	1.810	286.340	27.10	9.06	1.28	287.62	.00	1.81	1.17	2.000	.000	.00	1 .0
WALL ENTRANCE														
1918.060	284.530	3.260	287.790	27.10	2.08	.07	287.86	.01	1.13	4.00	4.000	4.000	.00	0 .0
JUNCT STR	.0825					.0002	.00	3.27	.20		.013	.00	.00	BOX
1922.060	284.860	2.981	287.841	17.50	1.47	.03	287.87	.00	.84	4.00	4.000	4.000	.00	0 .0
WALL EXIT														
1922.060	284.860	2.981	287.841	17.50	5.57	.48	288.32	.00	1.51	.00	2.000	.000	.00	1 .0
57.185	.0215					.0060	.34	.00	.00	1.03	.013	.00	.00	PIPE
1979.245	286.090	2.109	288.198	17.50	5.57	.48	288.68	.00	1.51	.00	2.000	.000	.00	1 .0
HYDRAULIC JUMP														
1979.245	286.090	1.032	287.122	17.50	10.70	1.78	288.90	.01	1.51	2.00	2.000	.000	.00	1 .0
14.520	.0215					.0215	.31	1.04	2.08	1.03	.013	.00	.00	PIPE
1993.766	286.402	1.032	287.434	17.50	10.70	1.78	289.21	.01	1.51	2.00	2.000	.000	.00	1 .0
96.172	.0215					.0212	2.04	1.04	2.08	1.03	.013	.00	.00	PIPE

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WATER SURFACE PROFILE LISTING Date: 6- 1-2024 Time: 6:40:33

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Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
2089.938	288.470	1.041	289.511	17.50	10.59	1.74	291.25	.01	1.51	2.00	2.000	.000	.00	1 .0
64.128	.0215					.0197	1.26	1.05	2.05	1.03	.013	.00	.00	PIPE
2154.066	289.848	1.081	290.929	17.50	10.09	1.58	292.51	.01	1.51	1.99	2.000	.000	.00	1 .0
24.243	.0215					.0173	.42	1.09	1.91	1.03	.013	.00	.00	PIPE
2178.310	290.370	1.124	291.494	17.50	9.62	1.44	292.93	.01	1.51	1.98	2.000	.000	.00	1 .0
13.871	.0215					.0153	.21	1.13	1.77	1.03	.013	.00	.00	PIPE
2192.181	290.668	1.169	291.837	17.50	9.18	1.31	293.14	.01	1.51	1.97	2.000	.000	.00	1 .0
9.032	.0215					.0135	.12	1.18	1.64	1.03	.013	.00	.00	PIPE
2201.213	290.862	1.216	292.078	17.50	8.75	1.19	293.27	.01	1.51	1.95	2.000	.000	.00	1 .0
6.104	.0215					.0120	.07	1.22	1.52	1.03	.013	.00	.00	PIPE
2207.317	290.993	1.266	292.259	17.50	8.34	1.08	293.34	.01	1.51	1.93	2.000	.000	.00	1 .0
4.071	.0215					.0106	.04	1.27	1.41	1.03	.013	.00	.00	PIPE
2211.387	291.081	1.320	292.401	17.50	7.95	.98	293.38	.01	1.51	1.89	2.000	.000	.00	1 .0
2.681	.0215					.0095	.03	1.33	1.30	1.03	.013	.00	.00	PIPE
2214.069	291.138	1.377	292.516	17.50	7.58	.89	293.41	.01	1.51	1.85	2.000	.000	.00	1 .0
1.467	.0215					.0084	.01	1.38	1.20	1.03	.013	.00	.00	PIPE
2215.535	291.170	1.439	292.609	17.50	7.23	.81	293.42	.00	1.51	1.80	2.000	.000	.00	1 .0
.465	.0215					.0075	.00	1.44	1.10	1.03	.013	.00	.00	PIPE

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Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
2216.000	291.180	1.507	292.687	17.50	6.89	.74	293.42	.00	1.51	1.72	2.000	.000	.00	1 .0
WALL ENTRANCE														
2216.000	291.180	3.507	294.687	17.50	1.25	.02	294.71	.01	.84	4.00	4.000	4.000	.00	0 .0
JUNCT STR	.1250					.0001	.00	3.51	.12		.013	.00	.00	BOX
2220.000	291.680	3.031	294.711	4.10	.34	.00	294.71	.00	.32	4.00	4.000	4.000	.00	0 .0
WALL EXIT														
2220.000	291.680	3.031	294.711	4.10	2.32	.08	294.79	.00	.78	.00	1.500	.000	.00	1 .0
26.876	.0586					.0015	.04	.00	.00	.41	.013	.00	.00	PIPE
2246.876	293.255	1.500	294.755	4.10	2.32	.08	294.84	1.50	.78	.00	1.500	.000	.00	1 .0
2.109	.0586					.0014	.00	1.50	.00	.41	.013	.00	.00	PIPE
2248.985	293.379	1.360	294.739	4.10	2.43	.09	294.83	.00	.78	.87	1.500	.000	.00	1 .0
HYDRAULIC JUMP														
2248.985	293.379	.407	293.786	4.10	10.57	1.73	295.52	.01	.78	1.33	1.500	.000	.00	1 .0
38.755	.0586					.0574	2.23	.41	3.45	.41	.013	.00	.00	PIPE
2287.740	295.650	.412	296.062	4.10	10.41	1.68	297.74	.00	.78	1.34	1.500	.000	.00	1 .0
21.797	.0586					.0533	1.16	.41	3.38	.41	.013	.00	.00	PIPE
2309.537	296.928	.423	297.351	4.10	10.02	1.56	298.91	.00	.78	1.35	1.500	.000	.00	1 .0
11.282	.0586					.0473	.53	.42	3.21	.41	.013	.00	.00	PIPE

LINE_M
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Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
2320.819	297.589	.437	298.026	4.10	9.55	1.42	299.44	.00	.78	1.36	1.500	.000	.00	1 .0
6.551	.0586					.0414	.27	.44	3.00	.41	.013	.00	.00	PIPE
2327.370	297.973	.453	298.426	4.10	9.11	1.29	299.71	.00	.78	1.38	1.500	.000	.00	1 .0
4.563	.0586					.0362	.17	.45	2.81	.41	.013	.00	.00	PIPE
2331.934	298.240	.468	298.709	4.10	8.68	1.17	299.88	.00	.78	1.39	1.500	.000	.00	1 .0
3.327	.0586					.0317	.11	.47	2.63	.41	.013	.00	.00	PIPE
2335.260	298.435	.485	298.921	4.10	8.28	1.06	299.99	.00	.78	1.40	1.500	.000	.00	1 .0
2.589	.0586					.0278	.07	.49	2.46	.41	.013	.00	.00	PIPE
2337.849	298.587	.502	299.089	4.10	7.89	.97	300.06	.00	.78	1.42	1.500	.000	.00	1 .0
2.042	.0586					.0244	.05	.50	2.30	.41	.013	.00	.00	PIPE
2339.891	298.707	.520	299.227	4.10	7.53	.88	300.11	.00	.78	1.43	1.500	.000	.00	1 .0
1.636	.0586					.0214	.03	.52	2.15	.41	.013	.00	.00	PIPE
2341.528	298.803	.539	299.342	4.10	7.18	.80	300.14	.00	.78	1.44	1.500	.000	.00	1 .0
1.346	.0586					.0187	.03	.54	2.01	.41	.013	.00	.00	PIPE
2342.874	298.882	.558	299.440	4.10	6.84	.73	300.17	.00	.78	1.45	1.500	.000	.00	1 .0
1.092	.0586					.0164	.02	.56	1.88	.41	.013	.00	.00	PIPE
2343.967	298.946	.578	299.524	4.10	6.52	.66	300.18	.00	.78	1.46	1.500	.000	.00	1 .0
.884	.0586					.0144	.01	.58	1.75	.41	.013	.00	.00	PIPE

LINE_M
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LINE_M LINE_M_100.WSW

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
2344.851	298.998	.599	299.597	4.10	6.22	.60	300.20	.00	.78	1.47	1.500	.000	.00	1 .0
.710	.0586					.0126	.01	.60	1.64	.41	.013	.00	.00	PIPE
2345.560	299.039	.621	299.660	4.10	5.93	.55	300.21	.00	.78	1.48	1.500	.000	.00	1 .0
.582	.0586					.0111	.01	.62	1.53	.41	.013	.00	.00	PIPE
2346.142	299.073	.643	299.716	4.10	5.66	.50	300.21	.00	.78	1.48	1.500	.000	.00	1 .0
.433	.0586					.0097	.00	.64	1.43	.41	.013	.00	.00	PIPE
2346.575	299.099	.667	299.766	4.10	5.39	.45	300.22	.00	.78	1.49	1.500	.000	.00	1 .0
.321	.0586					.0086	.00	.67	1.33	.41	.013	.00	.00	PIPE
2346.896	299.117	.692	299.810	4.10	5.14	.41	300.22	.00	.78	1.50	1.500	.000	.00	1 .0
.221	.0586					.0075	.00	.69	1.24	.41	.013	.00	.00	PIPE
2347.117	299.130	.718	299.849	4.10	4.90	.37	300.22	.00	.78	1.50	1.500	.000	.00	1 .0
.133	.0586					.0066	.00	.72	1.16	.41	.013	.00	.00	PIPE
2347.250	299.138	.745	299.883	4.10	4.67	.34	300.22	.00	.78	1.50	1.500	.000	.00	1 .0
.030	.0586					.0058	.00	.75	1.08	.41	.013	.00	.00	PIPE
2347.280	299.140	.775	299.915	4.10	4.45	.31	300.22	.00	.78	1.50	1.500	.000	.00	1 .0
WALL	ENTRANCE													
2347.280	299.140	1.775	300.915	4.10	.58	.01	300.92	.00	.32	4.00	4.000	4.000	.00	0 .0
JUNCT STR	.0825					.0000	.00	1.78	.08		.013	.00	.00	BOX

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WATER SURFACE PROFILE LISTING Date: 6- 1-2024 Time: 6:40:33

LINE_M
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Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
2351.280	299.470	1.443	300.913	2.30	.40	.00	300.92	.00	.22	4.00	4.000	4.000	.00	0 .0
WALL	EXIT													
2351.280	299.470	1.444	300.914	2.30	1.32	.03	300.94	.00	.57	.57	1.500	.000	.00	1 .0
1.778	.0586					.0004	.00	1.44	.13	.30	.013	.00	.00	PIPE
2353.058	299.574	1.338	300.912	2.30	1.38	.03	300.94	.00	.57	.93	1.500	.000	.00	1 .0
1.255	.0586					.0004	.00	1.34	.18	.30	.013	.00	.00	PIPE
2354.313	299.648	1.262	300.910	2.30	1.45	.03	300.94	.00	.57	1.10	1.500	.000	.00	1 .0
1.044	.0586					.0005	.00	1.26	.21	.30	.013	.00	.00	PIPE
2355.358	299.709	1.198	300.907	2.30	1.52	.04	300.94	.00	.57	1.20	1.500	.000	.00	1 .0
.919	.0586					.0005	.00	1.20	.24	.30	.013	.00	.00	PIPE
2356.277	299.763	1.141	300.904	2.30	1.59	.04	300.94	.00	.57	1.28	1.500	.000	.00	1 .0
.811	.0586					.0006	.00	1.14	.26	.30	.013	.00	.00	PIPE
2357.088	299.811	1.090	300.901	2.30	1.67	.04	300.94	.00	.57	1.34	1.500	.000	.00	1 .0
.736	.0586					.0007	.00	1.09	.29	.30	.013	.00	.00	PIPE
2357.824	299.854	1.043	300.897	2.30	1.75	.05	300.94	.00	.57	1.38	1.500	.000	.00	1 .0
.677	.0586					.0007	.00	1.04	.32	.30	.013	.00	.00	PIPE
2358.501	299.893	.999	300.893	2.30	1.84	.05	300.95	.00	.57	1.41	1.500	.000	.00	1 .0
.509	.0586					.0008	.00	1.00	.34	.30	.013	.00	.00	PIPE

LINE_M
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Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
2359.010	299.923	.958	300.881	2.30	1.93	.06	300.94	.00	.57	1.44	1.500	.000	.00	1 .0
HYDRAULIC JUMP														
2359.010	299.923	.310	300.233	2.30	8.73	1.18	301.42	.00	.57	1.21	1.500	.000	.00	1 .0
5.143	.0586					.0516	.27	.31	3.30	.30	.013	.00	.00	PIPE
2364.153	300.225	.319	300.544	2.30	8.35	1.08	301.63	.00	.57	1.23	1.500	.000	.00	1 .0
6.515	.0586					.0452	.29	.32	3.10	.30	.013	.00	.00	PIPE
2370.669	300.607	.330	300.937	2.30	7.96	.98	301.92	.00	.57	1.24	1.500	.000	.00	1 .0
4.104	.0586					.0395	.16	.33	2.91	.30	.013	.00	.00	PIPE
2374.773	300.847	.341	301.189	2.30	7.59	.89	302.08	.00	.57	1.26	1.500	.000	.00	1 .0
2.877	.0586					.0346	.10	.34	2.72	.30	.013	.00	.00	PIPE
2377.650	301.016	.353	301.369	2.30	7.23	.81	302.18	.00	.57	1.27	1.500	.000	.00	1 .0
2.178	.0586					.0302	.07	.35	2.55	.30	.013	.00	.00	PIPE
2379.829	301.144	.365	301.509	2.30	6.90	.74	302.25	.00	.57	1.29	1.500	.000	.00	1 .0
1.683	.0586					.0264	.04	.37	2.39	.30	.013	.00	.00	PIPE
2381.511	301.242	.378	301.621	2.30	6.58	.67	302.29	.00	.57	1.30	1.500	.000	.00	1 .0
1.354	.0586					.0231	.03	.38	2.24	.30	.013	.00	.00	PIPE
2382.865	301.322	.391	301.713	2.30	6.27	.61	302.32	.00	.57	1.32	1.500	.000	.00	1 .0
1.107	.0586					.0202	.02	.39	2.09	.30	.013	.00	.00	PIPE

LINE_M
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LINE_M LINE_M_100.WSW

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
2383.972	301.387	.404	301.791	2.30	5.98	.56	302.35	.00	.57	1.33	1.500	.000	.00	1 .0
.891	.0586					.0177	.02	.40	1.96	.30	.013	.00	.00	PIPE
2384.863	301.439	.418	301.857	2.30	5.70	.50	302.36	.00	.57	1.35	1.500	.000	.00	1 .0
.716	.0586					.0155	.01	.42	1.83	.30	.013	.00	.00	PIPE
2385.578	301.481	.433	301.914	2.30	5.44	.46	302.37	.00	.57	1.36	1.500	.000	.00	1 .0
.593	.0586					.0136	.01	.43	1.72	.30	.013	.00	.00	PIPE
2386.171	301.516	.448	301.964	2.30	5.18	.42	302.38	.00	.57	1.37	1.500	.000	.00	1 .0
.469	.0586					.0119	.01	.45	1.61	.30	.013	.00	.00	PIPE
2386.639	301.543	.464	302.007	2.30	4.94	.38	302.39	.00	.57	1.39	1.500	.000	.00	1 .0
.383	.0586					.0104	.00	.46	1.50	.30	.013	.00	.00	PIPE
2387.022	301.566	.480	302.046	2.30	4.71	.34	302.39	.00	.57	1.40	1.500	.000	.00	1 .0
.289	.0586					.0091	.00	.48	1.41	.30	.013	.00	.00	PIPE
2387.311	301.582	.497	302.080	2.30	4.49	.31	302.39	.00	.57	1.41	1.500	.000	.00	1 .0
.207	.0586					.0080	.00	.50	1.31	.30	.013	.00	.00	PIPE
2387.518	301.595	.515	302.110	2.30	4.28	.28	302.39	.00	.57	1.42	1.500	.000	.00	1 .0
.153	.0586					.0070	.00	.52	1.23	.30	.013	.00	.00	PIPE
2387.671	301.604	.533	302.137	2.30	4.08	.26	302.40	.00	.57	1.44	1.500	.000	.00	1 .0
.086	.0586					.0061	.00	.53	1.15	.30	.013	.00	.00	PIPE

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Q100 05/31/2024
LINE_M LINE_M_100.WSW

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
2387.758	301.609	.552	302.161	2.30	3.89	.24	302.40	.00	.57	1.45	1.500	.000	.00	1 .0
.022	.0586					.0054	.00	.55	1.07	.30	.013	.00	.00	PIPE
2387.780	301.610	.573	302.183	2.30	3.70	.21	302.40	.00	.57	1.46	1.500	.000	.00	1 .0
WALL	ENTRANCE													
2387.780	301.610	1.573	303.183	2.30	.37	.00	303.19	.00	.22	4.00	4.000	4.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.500														
CD	2	3	0	.000	4.000	4.000	.000	.000	.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -

SD-M-1

HEADING LINE NO 2 IS -

Q100 OBR

HEADING LINE NO 3 IS -

SD-M-1 Q100

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1000.000	261.860	1	262.520

ELEMENT NO 2 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1006.250	263.730	1	.013	.000	.000	.000	0

ELEMENT NO 3 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1006.250	263.730	2	.500

ELEMENT NO 4 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1006.250	263.730	2	263.730

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 3-2024 Time: 8: 5:14

SD-M-1
Q100 OBR
SD-M-1 Q100

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1000.000	261.860	.494	262.354	6.50	12.81	2.55	264.90	.00	.99	1.41	1.500	.000	.00	1 .0
.543	.2992					.0671	.04	.49	3.76	.34	.013	.00	.00	PIPE
1000.543	262.022	.504	262.526	6.50	12.46	2.41	264.94	.00	.99	1.42	1.500	.000	.00	1 .0
.842	.2992					.0605	.05	.50	3.62	.34	.013	.00	.00	PIPE
1001.385	262.274	.522	262.797	6.50	11.88	2.19	264.99	.00	.99	1.43	1.500	.000	.00	1 .0
.736	.2992					.0530	.04	.52	3.38	.34	.013	.00	.00	PIPE
1002.121	262.495	.540	263.035	6.50	11.33	1.99	265.03	.00	.99	1.44	1.500	.000	.00	1 .0
.637	.2992					.0465	.03	.54	3.16	.34	.013	.00	.00	PIPE
1002.758	262.685	.560	263.245	6.50	10.80	1.81	265.06	.00	.99	1.45	1.500	.000	.00	1 .0
.560	.2992					.0408	.02	.56	2.95	.34	.013	.00	.00	PIPE
1003.318	262.853	.580	263.433	6.50	10.30	1.65	265.08	.00	.99	1.46	1.500	.000	.00	1 .0
.488	.2992					.0358	.02	.58	2.76	.34	.013	.00	.00	PIPE
1003.806	262.999	.601	263.600	6.50	9.82	1.50	265.10	.00	.99	1.47	1.500	.000	.00	1 .0
.426	.2992					.0314	.01	.60	2.58	.34	.013	.00	.00	PIPE
1004.232	263.126	.623	263.749	6.50	9.36	1.36	265.11	.00	.99	1.48	1.500	.000	.00	1 .0
.371	.2992					.0276	.01	.62	2.41	.34	.013	.00	.00	PIPE
1004.602	263.237	.646	263.883	6.50	8.92	1.24	265.12	.00	.99	1.49	1.500	.000	.00	1 .0
.322	.2992					.0242	.01	.65	2.25	.34	.013	.00	.00	PIPE

SD-M-1
Q100 OBR
SD-M-1 Q100

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1004.924	263.333	.670	264.003	6.50	8.51	1.12	265.13	.00	.99	1.49	1.500	.000	.00	1 .0
.278	.2992					.0213	.01	.67	2.10	.34	.013	.00	.00	PIPE
1005.202	263.416	.695	264.111	6.50	8.11	1.02	265.13	.00	.99	1.50	1.500	.000	.00	1 .0
.239	.2992					.0187	.00	.70	1.95	.34	.013	.00	.00	PIPE
1005.440	263.488	.721	264.209	6.50	7.74	.93	265.14	.00	.99	1.50	1.500	.000	.00	1 .0
.203	.2992					.0165	.00	.72	1.82	.34	.013	.00	.00	PIPE
1005.644	263.549	.748	264.297	6.50	7.38	.84	265.14	.00	.99	1.50	1.500	.000	.00	1 .0
.168	.2992					.0145	.00	.75	1.70	.34	.013	.00	.00	PIPE
1005.811	263.599	.777	264.376	6.50	7.03	.77	265.14	.00	.99	1.50	1.500	.000	.00	1 .0
.139	.2992					.0128	.00	.78	1.58	.34	.013	.00	.00	PIPE
1005.950	263.640	.807	264.447	6.50	6.70	.70	265.15	.00	.99	1.50	1.500	.000	.00	1 .0
.113	.2992					.0113	.00	.81	1.47	.34	.013	.00	.00	PIPE
1006.063	263.674	.838	264.512	6.50	6.39	.63	265.15	.00	.99	1.49	1.500	.000	.00	1 .0
.082	.2992					.0100	.00	.84	1.36	.34	.013	.00	.00	PIPE
1006.145	263.699	.872	264.571	6.50	6.10	.58	265.15	.00	.99	1.48	1.500	.000	.00	1 .0
.060	.2992					.0088	.00	.87	1.27	.34	.013	.00	.00	PIPE
1006.205	263.717	.907	264.624	6.50	5.81	.52	265.15	.00	.99	1.47	1.500	.000	.00	1 .0
.033	.2992					.0078	.00	.91	1.17	.34	.013	.00	.00	PIPE

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 3-2024 Time: 8: 5:14

SD-M-1
Q100 OBR
SD-M-1 Q100

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1006.238	263.727	.945	264.672	6.50	5.54	.48	265.15	.00	.99	1.45	1.500	.000	.00	1 .0
.012	.2992					.0069	.00	.95	1.09	.34	.013	.00	.00	PIPE
1006.250	263.730	.986	264.716	6.50	5.28	.43	265.15	.00	.99	1.42	1.500	.000	.00	1 .0
WALL	ENTRANCE													
1006.250	263.730	1.986	265.716	6.50	.82	.01	265.73	.00	.43	4.00	4.000	4.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.500														
CD	2	3	0	.000	4.000	4.000	.000	.000	.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -

SD-M-2

HEADING LINE NO 2 IS -

Q100 OBR

HEADING LINE NO 3 IS -

SD-M-2 Q100

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1002.000	261.860	1	262.520

ELEMENT NO 2 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1041.260	266.000	1	.013	.000	.000	.000	0

ELEMENT NO 3 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1041.260	266.000	2	.500

ELEMENT NO 4 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1041.260	266.000	2	266.000

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 3-2024 Time: 8: 2:37

SD-M-2
Q100 OBR
SD-M-2 Q100

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1002.000	261.860	.498	262.358	7.20	14.04	3.06	265.42	.00	1.04	1.41	1.500	.000	.00	1 .0
6.043	.1055					.0798	.48	.50	4.11	.47	.013	.00	.00	PIPE
1008.043	262.497	.508	263.005	7.20	13.65	2.89	265.90	.00	1.04	1.42	1.500	.000	.00	1 .0
7.308	.1055					.0719	.53	.51	3.95	.47	.013	.00	.00	PIPE
1015.351	263.268	.526	263.794	7.20	13.01	2.63	266.42	.00	1.04	1.43	1.500	.000	.00	1 .0
5.190	.1055					.0631	.33	.53	3.69	.47	.013	.00	.00	PIPE
1020.541	263.815	.545	264.360	7.20	12.41	2.39	266.75	.00	1.04	1.44	1.500	.000	.00	1 .0
3.952	.1055					.0553	.22	.55	3.45	.47	.013	.00	.00	PIPE
1024.494	264.232	.564	264.796	7.20	11.83	2.17	266.97	.00	1.04	1.45	1.500	.000	.00	1 .0
3.099	.1055					.0485	.15	.56	3.22	.47	.013	.00	.00	PIPE
1027.593	264.559	.585	265.144	7.20	11.28	1.98	267.12	.00	1.04	1.46	1.500	.000	.00	1 .0
2.521	.1055					.0426	.11	.59	3.01	.47	.013	.00	.00	PIPE
1030.114	264.825	.606	265.431	7.20	10.75	1.80	267.23	.00	1.04	1.47	1.500	.000	.00	1 .0
2.074	.1055					.0373	.08	.61	2.81	.47	.013	.00	.00	PIPE
1032.188	265.043	.628	265.671	7.20	10.25	1.63	267.30	.00	1.04	1.48	1.500	.000	.00	1 .0
1.726	.1055					.0328	.06	.63	2.62	.47	.013	.00	.00	PIPE
1033.914	265.225	.651	265.876	7.20	9.78	1.48	267.36	.00	1.04	1.49	1.500	.000	.00	1 .0
1.447	.1055					.0288	.04	.65	2.45	.47	.013	.00	.00	PIPE

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 3-2024 Time: 8: 2:37

SD-M-2 Q100 OBR SD-M-2 Q100

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1035.361	265.378	.675	266.053	7.20	9.32	1.35	267.40	.00	1.04	1.49	1.500	.000	.00	1 .0
1.206	.1055					.0253	.03	.68	2.28	.47	.013	.00	.00	PIPE
1036.567	265.505	.701	266.206	7.20	8.89	1.23	267.43	.00	1.04	1.50	1.500	.000	.00	1 .0
1.028	.1055					.0223	.02	.70	2.13	.47	.013	.00	.00	PIPE
1037.595	265.614	.727	266.341	7.20	8.47	1.12	267.46	.00	1.04	1.50	1.500	.000	.00	1 .0
.855	.1055					.0196	.02	.73	1.98	.47	.013	.00	.00	PIPE
1038.450	265.704	.755	266.459	7.20	8.08	1.01	267.47	.00	1.04	1.50	1.500	.000	.00	1 .0
.716	.1055					.0173	.01	.76	1.85	.47	.013	.00	.00	PIPE
1039.166	265.779	.784	266.563	7.20	7.70	.92	267.48	.00	1.04	1.50	1.500	.000	.00	1 .0
.596	.1055					.0152	.01	.78	1.72	.47	.013	.00	.00	PIPE
1039.762	265.842	.814	266.656	7.20	7.35	.84	267.49	.00	1.04	1.49	1.500	.000	.00	1 .0
.480	.1055					.0134	.01	.81	1.60	.47	.013	.00	.00	PIPE
1040.242	265.893	.846	266.739	7.20	7.00	.76	267.50	.00	1.04	1.49	1.500	.000	.00	1 .0
.376	.1055					.0119	.00	.85	1.48	.47	.013	.00	.00	PIPE
1040.618	265.932	.880	266.812	7.20	6.68	.69	267.50	.00	1.04	1.48	1.500	.000	.00	1 .0
.284	.1055					.0105	.00	.88	1.38	.47	.013	.00	.00	PIPE
1040.902	265.962	.916	266.878	7.20	6.37	.63	267.51	.00	1.04	1.46	1.500	.000	.00	1 .0
.200	.1055					.0093	.00	.92	1.28	.47	.013	.00	.00	PIPE

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 3-2024 Time: 8: 2:37

SD-M-2
Q100 OBR
SD-M-2 Q100

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1041.102	265.983	.954	266.937	7.20	6.07	.57	267.51	.00	1.04	1.44	1.500	.000	.00	1 .0
.124	.1055					.0082	.00	.95	1.18	.47	.013	.00	.00	PIPE
1041.226	265.996	.994	266.990	7.20	5.79	.52	267.51	.00	1.04	1.42	1.500	.000	.00	1 .0
.034	.1055					.0073	.00	.99	1.09	.47	.013	.00	.00	PIPE
1041.260	266.000	1.039	267.039	7.20	5.51	.47	267.51	.00	1.04	1.38	1.500	.000	.00	1 .0
WALL	ENTRANCE													
1041.260	266.000	2.039	268.039	7.20	.88	.01	268.05	.00	.47	4.00	4.000	4.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.500														
CD	2	3	0	.000	4.000	4.000	.000	.000	.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -

SD-M-3

HEADING LINE NO 2 IS -

Q100 OBR

HEADING LINE NO 3 IS -

SD-M-3 Q100

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1000.000	273.450	1	279.280

ELEMENT NO 2 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1006.250	277.200	1	.013	.000	.000	.000	0

ELEMENT NO 3 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1006.250	277.200	2	.500

ELEMENT NO 4 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1006.250	277.200	2	277.200

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 3-2024 Time: 6:57:32

SD-M-3
Q100 OBR
SD-M-3 Q100

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1000.000	273.450	5.830	279.280	6.90	3.90	.24	279.52	.00	1.02	.00	1.500	.000	.00	1 .0
6.250	.6000					.0043	.03	5.83	.00	.30	.013	.00	.00	PIPE
1006.250	277.200	2.107	279.307	6.90	3.90	.24	279.54	.00	1.02	.00	1.500	.000	.00	1 .0
WALL	ENTRANCE													
1006.250	277.200	2.451	279.651	6.90	.70	.01	279.66	.00	.45	4.00	4.000	4.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.500														
CD	2	3	0	.000	4.000	4.000	.000	.000	.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -

SD-M-4

HEADING LINE NO 2 IS -

Q100 OBR

HEADING LINE NO 3 IS -

SD-M-4 Q100

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	982.280	273.450	1	279.280

ELEMENT NO 2 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1018.700	279.500	1	.013	.000	.000	.000	0

ELEMENT NO 3 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1018.700	279.500	2	.500

ELEMENT NO 4 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1018.700	279.500	2	279.500

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 3-2024 Time: 6:57:37

SD-M-4
Q100 OBR
SD-M-4 Q100

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
982.280	273.450	5.830	279.280	6.80	3.85	.23	279.51	.00	1.01	.00	1.500	.000	.00	1 .0
24.510	.1661					.0042	.10	5.83	.00	.40	.013	.00	.00	PIPE
1006.790	277.521	1.860	279.381	6.80	3.85	.23	279.61	.00	1.01	.00	1.500	.000	.00	1 .0
HYDRAULIC JUMP														
1006.790	277.521	.514	278.036	6.80	12.69	2.50	280.54	.00	1.01	1.42	1.500	.000	.00	1 .0
1.670	.1661					.0615	.10	.51	3.65	.40	.013	.00	.00	PIPE
1008.460	277.799	.532	278.331	6.80	12.10	2.27	280.61	.00	1.01	1.44	1.500	.000	.00	1 .0
1.674	.1661					.0539	.09	.53	3.41	.40	.013	.00	.00	PIPE
1010.133	278.077	.551	278.628	6.80	11.54	2.07	280.70	.00	1.01	1.45	1.500	.000	.00	1 .0
1.414	.1661					.0473	.07	.55	3.19	.40	.013	.00	.00	PIPE
1011.547	278.312	.571	278.883	6.80	11.00	1.88	280.76	.00	1.01	1.46	1.500	.000	.00	1 .0
1.211	.1661					.0415	.05	.57	2.98	.40	.013	.00	.00	PIPE
1012.758	278.513	.591	279.104	6.80	10.49	1.71	280.81	.00	1.01	1.47	1.500	.000	.00	1 .0
1.028	.1661					.0364	.04	.59	2.78	.40	.013	.00	.00	PIPE
1013.786	278.684	.613	279.297	6.80	10.00	1.55	280.85	.00	1.01	1.47	1.500	.000	.00	1 .0
.889	.1661					.0319	.03	.61	2.60	.40	.013	.00	.00	PIPE
1014.674	278.831	.635	279.466	6.80	9.54	1.41	280.88	.00	1.01	1.48	1.500	.000	.00	1 .0
.756	.1661					.0281	.02	.64	2.42	.40	.013	.00	.00	PIPE

SD-M-4 Q100 OBR SD-M-4 Q100

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1015.431	278.957	.659	279.616	6.80	9.09	1.28	280.90	.00	1.01	1.49	1.500	.000	.00	1 .0
.656	.1661					.0247	.02	.66	2.26	.40	.013	.00	.00	PIPE
1016.086	279.066	.683	279.749	6.80	8.67	1.17	280.92	.00	1.01	1.49	1.500	.000	.00	1 .0
.555	.1661					.0217	.01	.68	2.11	.40	.013	.00	.00	PIPE
1016.641	279.158	.709	279.867	6.80	8.27	1.06	280.93	.00	1.01	1.50	1.500	.000	.00	1 .0
.472	.1661					.0191	.01	.71	1.97	.40	.013	.00	.00	PIPE
1017.113	279.236	.736	279.973	6.80	7.88	.96	280.94	.00	1.01	1.50	1.500	.000	.00	1 .0
.400	.1661					.0168	.01	.74	1.83	.40	.013	.00	.00	PIPE
1017.513	279.303	.764	280.067	6.80	7.52	.88	280.94	.00	1.01	1.50	1.500	.000	.00	1 .0
.335	.1661					.0148	.00	.76	1.71	.40	.013	.00	.00	PIPE
1017.848	279.359	.793	280.152	6.80	7.17	.80	280.95	.00	1.01	1.50	1.500	.000	.00	1 .0
.271	.1661					.0130	.00	.79	1.59	.40	.013	.00	.00	PIPE
1018.119	279.404	.824	280.228	6.80	6.83	.72	280.95	.00	1.01	1.49	1.500	.000	.00	1 .0
.213	.1661					.0115	.00	.82	1.47	.40	.013	.00	.00	PIPE
1018.332	279.439	.857	280.296	6.80	6.51	.66	280.95	.00	1.01	1.48	1.500	.000	.00	1 .0
.166	.1661					.0102	.00	.86	1.37	.40	.013	.00	.00	PIPE
1018.498	279.466	.891	280.358	6.80	6.21	.60	280.96	.00	1.01	1.47	1.500	.000	.00	1 .0
.111	.1661					.0090	.00	.89	1.27	.40	.013	.00	.00	PIPE

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 3-2024 Time: 6:57:37

SD-M-4
Q100 OBR
SD-M-4 Q100

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1018.609	279.485	.928	280.413	6.80	5.92	.54	280.96	.00	1.01	1.46	1.500	.000	.00	1 .0
.073	.1661					.0080	.00	.93	1.18	.40	.013	.00	.00	PIPE
1018.682	279.497	.966	280.463	6.80	5.65	.50	280.96	.00	1.01	1.44	1.500	.000	.00	1 .0
.018	.1661					.0071	.00	.97	1.09	.40	.013	.00	.00	PIPE
1018.700	279.500	1.009	280.509	6.80	5.38	.45	280.96	.00	1.01	1.41	1.500	.000	.00	1 .0
WALL	ENTRANCE													
1018.700	279.500	2.009	281.509	6.80	.85	.01	281.52	.00	.45	4.00	4.000	4.000	.00	0 .0

FILE: SD-M-5.WSW W S P G W - EDIT LISTING - Version 14.11 Date: 6- 3-2024 Time: 6:57:40

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING PAGE 1

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.500														
CD	2	3	0	.000	4.000	4.000	.000	.000	.00										

W S P G W PAGE NO 1

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -

SD-M-5

HEADING LINE NO 2 IS -

Q100 OBR

HEADING LINE NO 3 IS -

SD-M-5 Q100

W S P G W PAGE NO 2

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1000.000	285.030	1	287.840

ELEMENT NO 2 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1006.250	287.220	1	.013	.000	.000	.000	0

ELEMENT NO 3 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1006.250	287.220	2	.500

ELEMENT NO 4 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1006.250	287.220	2	287.220

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 3-2024 Time: 6:57:42

SD-M-5
Q100 OBR
SD-M-5 Q100

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1000.000	285.030	2.810	287.840	2.40	1.36	.03	287.87	.00	.59	.00	1.500	.000	.00	1 .0
3.744	.3504					.0005	.00	2.81	.00	.20	.013	.00	.00	PIPE
1003.744	286.342	1.500	287.842	2.40	1.36	.03	287.87	.00	.59	.00	1.500	.000	.00	1 .0
.389	.3504					.0005	.00	1.50	.00	.20	.013	.00	.00	PIPE
1004.133	286.478	1.360	287.838	2.40	1.42	.03	287.87	.00	.59	.87	1.500	.000	.00	1 .0
.220	.3504					.0005	.00	1.36	.18	.20	.013	.00	.00	PIPE
1004.353	286.555	1.280	287.835	2.40	1.49	.03	287.87	.00	.59	1.06	1.500	.000	.00	1 .0
.182	.3504					.0005	.00	1.28	.21	.20	.013	.00	.00	PIPE
1004.534	286.619	1.213	287.832	2.40	1.57	.04	287.87	.00	.59	1.18	1.500	.000	.00	1 .0
.155	.3504					.0006	.00	1.21	.24	.20	.013	.00	.00	PIPE
1004.689	286.673	1.155	287.828	2.40	1.64	.04	287.87	.00	.59	1.26	1.500	.000	.00	1 .0
.140	.3504					.0006	.00	1.16	.27	.20	.013	.00	.00	PIPE
1004.829	286.722	1.102	287.824	2.40	1.72	.05	287.87	.00	.59	1.32	1.500	.000	.00	1 .0
.124	.3504					.0007	.00	1.10	.30	.20	.013	.00	.00	PIPE
1004.953	286.765	1.054	287.820	2.40	1.81	.05	287.87	.00	.59	1.37	1.500	.000	.00	1 .0
.111	.3504					.0008	.00	1.05	.32	.20	.013	.00	.00	PIPE
1005.064	286.804	1.010	287.815	2.40	1.90	.06	287.87	.00	.59	1.41	1.500	.000	.00	1 .0
.104	.3504					.0009	.00	1.01	.35	.20	.013	.00	.00	PIPE

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 3-2024 Time: 6:57:42

SD-M-5
Q100 OBR
SD-M-5 Q100

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1005.168	286.841	.968	287.809	2.40	1.99	.06	287.87	.00	.59	1.44	1.500	.000	.00	1 .0
.094	.3504					.0010	.00	.97	.38	.20	.013	.00	.00	PIPE
1005.262	286.874	.929	287.803	2.40	2.09	.07	287.87	.00	.59	1.46	1.500	.000	.00	1 .0
.084	.3504					.0011	.00	.93	.41	.20	.013	.00	.00	PIPE
1005.346	286.903	.893	287.796	2.40	2.19	.07	287.87	.00	.59	1.47	1.500	.000	.00	1 .0
.079	.3504					.0013	.00	.89	.45	.20	.013	.00	.00	PIPE
1005.425	286.931	.858	287.789	2.40	2.29	.08	287.87	.00	.59	1.48	1.500	.000	.00	1 .0
1005.428	286.932	.826	287.758	2.40	2.41	.09	287.85	.00	.59	1.49	1.500	.000	.00	1 .0
HYDRAULIC JUMP														
1005.428	286.932	.373	287.305	2.40	7.00	.76	288.07	.00	.59	1.30	1.500	.000	.00	1 .0
.013	.3504					.0265	.00	.37	2.40	.20	.013	.00	.00	PIPE
1005.441	286.937	.386	287.323	2.40	6.66	.69	288.01	.00	.59	1.31	1.500	.000	.00	1 .0
.152	.3504					.0232	.00	.39	2.24	.20	.013	.00	.00	PIPE
1005.593	286.990	.399	287.389	2.40	6.35	.63	288.02	.00	.59	1.33	1.500	.000	.00	1 .0
.130	.3504					.0203	.00	.40	2.10	.20	.013	.00	.00	PIPE
1005.723	287.035	.413	287.448	2.40	6.06	.57	288.02	.00	.59	1.34	1.500	.000	.00	1 .0
.114	.3504					.0177	.00	.41	1.96	.20	.013	.00	.00	PIPE
1005.836	287.075	.427	287.502	2.40	5.77	.52	288.02	.00	.59	1.35	1.500	.000	.00	1 .0
.096	.3504					.0155	.00	.43	1.84	.20	.013	.00	.00	PIPE

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 3-2024 Time: 6:57:42

SD-M-5
Q100 OBR
SD-M-5 Q100

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1005.932	287.109	.442	287.551	2.40	5.51	.47	288.02	.00	.59	1.37	1.500	.000	.00	1 .0
.080	.3504					.0136	.00	.44	1.72	.20	.013	.00	.00	PIPE
1006.012	287.137	.458	287.595	2.40	5.25	.43	288.02	.00	.59	1.38	1.500	.000	.00	1 .0
.068	.3504					.0119	.00	.46	1.61	.20	.013	.00	.00	PIPE
1006.079	287.160	.474	287.634	2.40	5.00	.39	288.02	.00	.59	1.39	1.500	.000	.00	1 .0
.054	.3504					.0104	.00	.47	1.50	.20	.013	.00	.00	PIPE
1006.133	287.179	.491	287.670	2.40	4.77	.35	288.02	.00	.59	1.41	1.500	.000	.00	1 .0
.044	.3504					.0091	.00	.49	1.41	.20	.013	.00	.00	PIPE
1006.178	287.195	.508	287.703	2.40	4.55	.32	288.02	.00	.59	1.42	1.500	.000	.00	1 .0
.033	.3504					.0080	.00	.51	1.32	.20	.013	.00	.00	PIPE
1006.210	287.206	.526	287.732	2.40	4.34	.29	288.02	.00	.59	1.43	1.500	.000	.00	1 .0
.022	.3504					.0070	.00	.53	1.23	.20	.013	.00	.00	PIPE
1006.232	287.214	.545	287.759	2.40	4.14	.27	288.02	.00	.59	1.44	1.500	.000	.00	1 .0
.015	.3504					.0061	.00	.55	1.15	.20	.013	.00	.00	PIPE
1006.247	287.219	.564	287.783	2.40	3.94	.24	288.02	.00	.59	1.45	1.500	.000	.00	1 .0
.003	.3504					.0054	.00	.56	1.07	.20	.013	.00	.00	PIPE
1006.250	287.220	.586	287.806	2.40	3.75	.22	288.02	.00	.59	1.46	1.500	.000	.00	1 .0
WALL	ENTRANCE													

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 3-2024 Time: 6:57:42

SD-M-5
Q100 OBR
SD-M-5 Q100

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1006.250	287.220	1.586	288.806	2.40	.38	.00	288.81	.00	.22	4.00	4.000	4.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.500														
CD	2	3	0	.000	4.000	4.000	.000	.000	.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -

SD-M-6

HEADING LINE NO 2 IS -

Q100 OBR

HEADING LINE NO 3 IS -

SD-M-6 Q100

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1002.000	285.030	1	287.840

ELEMENT NO 2 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1028.250	287.550	1	.013	.000	.000	.000	0

ELEMENT NO 3 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1028.250	287.550	2	.500

ELEMENT NO 4 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1028.250	287.550	2	287.550

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 3-2024 Time: 6:57:46

SD-M-6
Q100 OBR
SD-M-6 Q100

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1002.000	285.030	2.810	287.840	7.20	4.07	.26	288.10	.00	1.04	.00	1.500	.000	.00	1 .0
11.878	.0960					.0047	.06	2.81	.00	.48	.013	.00	.00	PIPE
1013.878	286.170	1.725	287.896	7.20	4.07	.26	288.15	.00	1.04	.00	1.500	.000	.00	1 .0
HYDRAULIC JUMP														
1013.878	286.170	.585	286.755	7.20	11.28	1.98	288.73	.00	1.04	1.46	1.500	.000	.00	1 .0
1.707	.0960					.0426	.07	.59	3.01	.48	.013	.00	.00	PIPE
1015.586	286.334	.606	286.940	7.20	10.75	1.80	288.74	.00	1.04	1.47	1.500	.000	.00	1 .0
2.408	.0960					.0373	.09	.61	2.81	.48	.013	.00	.00	PIPE
1017.994	286.565	.628	287.194	7.20	10.25	1.63	288.83	.00	1.04	1.48	1.500	.000	.00	1 .0
1.984	.0960					.0328	.07	.63	2.62	.48	.013	.00	.00	PIPE
1019.978	286.756	.651	287.407	7.20	9.78	1.48	288.89	.00	1.04	1.49	1.500	.000	.00	1 .0
1.651	.0960					.0288	.05	.65	2.45	.48	.013	.00	.00	PIPE
1021.629	286.914	.675	287.590	7.20	9.32	1.35	288.94	.00	1.04	1.49	1.500	.000	.00	1 .0
1.368	.0960					.0253	.03	.68	2.28	.48	.013	.00	.00	PIPE
1022.996	287.046	.701	287.747	7.20	8.89	1.23	288.97	.00	1.04	1.50	1.500	.000	.00	1 .0
1.160	.0960					.0223	.03	.70	2.13	.48	.013	.00	.00	PIPE
1024.156	287.157	.727	287.884	7.20	8.47	1.12	289.00	.00	1.04	1.50	1.500	.000	.00	1 .0
.960	.0960					.0196	.02	.73	1.98	.48	.013	.00	.00	PIPE

SD-M-6
Q100 OBR
SD-M-6 Q100

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1025.117	287.249	.755	288.004	7.20	8.08	1.01	289.02	.00	1.04	1.50	1.500	.000	.00	1 .0
.802	.0960					.0173	.01	.76	1.85	.48	.013	.00	.00	PIPE
1025.919	287.326	.784	288.110	7.20	7.70	.92	289.03	.00	1.04	1.50	1.500	.000	.00	1 .0
.666	.0960					.0152	.01	.78	1.72	.48	.013	.00	.00	PIPE
1026.585	287.390	.814	288.204	7.20	7.35	.84	289.04	.00	1.04	1.49	1.500	.000	.00	1 .0
.535	.0960					.0134	.01	.81	1.60	.48	.013	.00	.00	PIPE
1027.119	287.441	.846	288.288	7.20	7.00	.76	289.05	.00	1.04	1.49	1.500	.000	.00	1 .0
.419	.0960					.0119	.00	.85	1.48	.48	.013	.00	.00	PIPE
1027.538	287.482	.880	288.362	7.20	6.68	.69	289.05	.00	1.04	1.48	1.500	.000	.00	1 .0
.315	.0960					.0105	.00	.88	1.38	.48	.013	.00	.00	PIPE
1027.853	287.512	.916	288.428	7.20	6.37	.63	289.06	.00	1.04	1.46	1.500	.000	.00	1 .0
.222	.0960					.0093	.00	.92	1.28	.48	.013	.00	.00	PIPE
1028.075	287.533	.954	288.487	7.20	6.07	.57	289.06	.00	1.04	1.44	1.500	.000	.00	1 .0
.137	.0960					.0082	.00	.95	1.18	.48	.013	.00	.00	PIPE
1028.212	287.546	.994	288.540	7.20	5.79	.52	289.06	.00	1.04	1.42	1.500	.000	.00	1 .0
.038	.0960					.0073	.00	.99	1.09	.48	.013	.00	.00	PIPE
1028.250	287.550	1.039	288.589	7.20	5.51	.47	289.06	.00	1.04	1.38	1.500	.000	.00	1 .0
WALL	ENTRANCE													

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 3-2024 Time: 6:57:46

SD-M-6
Q100 OBR
SD-M-6 Q100

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1028.250	287.550	2.039	289.589	7.20	.88	.01	289.60	.00	.47	4.00	4.000	4.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.500														
CD	2	3	0	.000	4.000	4.000	.000	.000	.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -

SD-M-7

HEADING LINE NO 2 IS -

Q100 OBR

HEADING LINE NO 3 IS -

SD-M-7 Q100

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1002.000	299.470	1	300.910

ELEMENT NO 2 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1063.500	304.220	1	.013	.000	.000	.000	0

ELEMENT NO 3 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1063.500	304.220	2	.500

ELEMENT NO 4 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1063.500	304.220	2	304.220

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 3-2024 Time: 6:57:54

SD-M-7 Q100 OBR SD-M-7 Q100

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1002.000	299.470	1.440	300.910	1.90	1.09	.02	300.93	.00	.52	.59	1.500	.000	.00	1 .0
1.339	.0772					.0003	.00	1.44	.11	.26	.013	.00	.00	PIPE
1003.339	299.573	1.335	300.909	1.90	1.14	.02	300.93	.00	.52	.94	1.500	.000	.00	1 .0
.948	.0772					.0003	.00	1.34	.15	.26	.013	.00	.00	PIPE
1004.288	299.647	1.260	300.907	1.90	1.20	.02	300.93	.00	.52	1.10	1.500	.000	.00	1 .0
.803	.0772					.0003	.00	1.26	.18	.26	.013	.00	.00	PIPE
1005.091	299.709	1.196	300.905	1.90	1.26	.02	300.93	.00	.52	1.21	1.500	.000	.00	1 .0
.710	.0772					.0004	.00	1.20	.20	.26	.013	.00	.00	PIPE
1005.800	299.764	1.139	300.903	1.90	1.32	.03	300.93	.00	.52	1.28	1.500	.000	.00	1 .0
.629	.0772					.0004	.00	1.14	.22	.26	.013	.00	.00	PIPE
1006.429	299.812	1.088	300.900	1.90	1.38	.03	300.93	.00	.52	1.34	1.500	.000	.00	1 .0
.573	.0772					.0005	.00	1.09	.24	.26	.013	.00	.00	PIPE
1007.003	299.856	1.041	300.898	1.90	1.45	.03	300.93	.00	.52	1.38	1.500	.000	.00	1 .0
.518	.0772					.0005	.00	1.04	.26	.26	.013	.00	.00	PIPE
1007.520	299.896	.998	300.895	1.90	1.52	.04	300.93	.00	.52	1.42	1.500	.000	.00	1 .0
.488	.0772					.0006	.00	1.00	.29	.26	.013	.00	.00	PIPE
1008.008	299.934	.957	300.891	1.90	1.60	.04	300.93	.00	.52	1.44	1.500	.000	.00	1 .0
.219	.0772					.0006	.00	.96	.31	.26	.013	.00	.00	PIPE

SD-M-7 Q100 OBR SD-M-7 Q100

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1008.228	299.951	.919	300.870	1.90	1.67	.04	300.91	.00	.52	1.46	1.500	.000	.00	1 .0
HYDRAULIC JUMP														
1008.228	299.951	.259	300.210	1.90	9.31	1.35	301.56	.00	.52	1.13	1.500	.000	.00	1 .0
.488	.0772					.0772	.04	.26	3.87	.26	.013	.00	.00	PIPE
1008.715	299.989	.259	300.248	1.90	9.31	1.35	301.59	.00	.52	1.13	1.500	.000	.00	1 .0
22.868	.0772					.0748	1.71	.26	3.87	.26	.013	.00	.00	PIPE
1031.583	301.755	.263	302.018	1.90	9.10	1.29	303.30	.00	.52	1.14	1.500	.000	.00	1 .0
11.408	.0772					.0678	.77	.26	3.75	.26	.013	.00	.00	PIPE
1042.991	302.636	.272	302.908	1.90	8.68	1.17	304.08	.00	.52	1.16	1.500	.000	.00	1 .0
5.395	.0772					.0592	.32	.27	3.51	.26	.013	.00	.00	PIPE
1048.386	303.053	.281	303.334	1.90	8.27	1.06	304.40	.00	.52	1.17	1.500	.000	.00	1 .0
3.397	.0772					.0517	.18	.28	3.29	.26	.013	.00	.00	PIPE
1051.783	303.315	.291	303.606	1.90	7.89	.97	304.57	.00	.52	1.19	1.500	.000	.00	1 .0
2.460	.0772					.0452	.11	.29	3.09	.26	.013	.00	.00	PIPE
1054.244	303.505	.300	303.805	1.90	7.52	.88	304.68	.00	.52	1.20	1.500	.000	.00	1 .0
1.824	.0772					.0395	.07	.30	2.89	.26	.013	.00	.00	PIPE
1056.068	303.646	.311	303.957	1.90	7.17	.80	304.76	.00	.52	1.22	1.500	.000	.00	1 .0
1.465	.0772					.0345	.05	.31	2.71	.26	.013	.00	.00	PIPE

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 3-2024 Time: 6:57:54

SD-M-7
Q100 OBR
SD-M-7 Q100

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1057.533	303.759	.321	304.080	1.90	6.84	.73	304.81	.00	.52	1.23	1.500	.000	.00	1 .0
1.168	.0772					.0302	.04	.32	2.54	.26	.013	.00	.00	PIPE
1058.701	303.849	.332	304.181	1.90	6.52	.66	304.84	.00	.52	1.25	1.500	.000	.00	1 .0
.963	.0772					.0263	.03	.33	2.38	.26	.013	.00	.00	PIPE
1059.663	303.924	.343	304.267	1.90	6.22	.60	304.87	.00	.52	1.26	1.500	.000	.00	1 .0
.785	.0772					.0230	.02	.34	2.22	.26	.013	.00	.00	PIPE
1060.448	303.984	.355	304.339	1.90	5.93	.55	304.88	.00	.52	1.28	1.500	.000	.00	1 .0
.658	.0772					.0201	.01	.36	2.08	.26	.013	.00	.00	PIPE
1061.106	304.035	.367	304.402	1.90	5.65	.50	304.90	.00	.52	1.29	1.500	.000	.00	1 .0
.538	.0772					.0176	.01	.37	1.95	.26	.013	.00	.00	PIPE
1061.644	304.077	.380	304.457	1.90	5.39	.45	304.91	.00	.52	1.30	1.500	.000	.00	1 .0
.453	.0772					.0154	.01	.38	1.83	.26	.013	.00	.00	PIPE
1062.097	304.112	.393	304.505	1.90	5.14	.41	304.91	.00	.52	1.32	1.500	.000	.00	1 .0
.365	.0772					.0135	.00	.39	1.71	.26	.013	.00	.00	PIPE
1062.462	304.140	.407	304.547	1.90	4.90	.37	304.92	.00	.52	1.33	1.500	.000	.00	1 .0
.304	.0772					.0118	.00	.41	1.60	.26	.013	.00	.00	PIPE
1062.765	304.163	.421	304.584	1.90	4.67	.34	304.92	.00	.52	1.35	1.500	.000	.00	1 .0
.251	.0772					.0103	.00	.42	1.50	.26	.013	.00	.00	PIPE

SD-M-7
Q100 OBR
SD-M-7 Q100

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1063.016	304.183	.435	304.618	1.90	4.45	.31	304.93	.00	.52	1.36	1.500	.000	.00	1 .0
.176	.0772					.0090	.00	.44	1.40	.26	.013	.00	.00	PIPE
1063.192	304.196	.451	304.647	1.90	4.25	.28	304.93	.00	.52	1.38	1.500	.000	.00	1 .0
.136	.0772					.0079	.00	.45	1.31	.26	.013	.00	.00	PIPE
1063.328	304.207	.467	304.674	1.90	4.05	.25	304.93	.00	.52	1.39	1.500	.000	.00	1 .0
.101	.0772					.0069	.00	.47	1.23	.26	.013	.00	.00	PIPE
1063.430	304.215	.483	304.698	1.90	3.86	.23	304.93	.00	.52	1.40	1.500	.000	.00	1 .0
.057	.0772					.0061	.00	.48	1.15	.26	.013	.00	.00	PIPE
1063.486	304.219	.500	304.719	1.90	3.68	.21	304.93	.00	.52	1.41	1.500	.000	.00	1 .0
.014	.0772					.0053	.00	.50	1.07	.26	.013	.00	.00	PIPE
1063.500	304.220	.519	304.739	1.90	3.50	.19	304.93	.00	.52	1.43	1.500	.000	.00	1 .0
WALL	ENTRANCE													
1063.500	304.220	1.519	305.739	1.90	.31	.00	305.74	.00	.19	4.00	4.000	4.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	2	4	1		2.000														
CD	1	4	1		1.500														
CD	6	3	0	.000	4.000	4.000	.000	.000	.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -

LINE_N

HEADING LINE NO 2 IS -

Q100 06/01/2024

HEADING LINE NO 3 IS -

LINE_N LINE_N_100.WSW

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1000.000	291.510	6	294.711

ELEMENT NO 2 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1000.000	291.510	2

ELEMENT NO 3 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1135.680	292.860	2	.013	210.048	-37.010	.000	0

ELEMENT NO 4 IS A JUNCTION * * * * * * *

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	1139.680	293.360	6	1	0	.013	5.700	.000	293.360	.000	.000	-.800

RADIUS	ANGLE
27.284	8.400

ELEMENT NO 5 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1139.680	293.360	1

ELEMENT NO 6 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1163.360	295.730	1	.013	.000	.000	.000	0

ELEMENT NO 7 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1163.360	295.730	1	.200

ELEMENT NO 8 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1163.360	295.730	1	.000

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 1-2024 Time: 7: 5:41

LINE_N
Q100 06/01/2024
LINE_N LINE_N_100.WSW

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1000.000	291.510	3.201	294.711	13.40	1.05	.02	294.73	.00	.70	4.00	4.000	4.000	.00	0 .0
WALL EXIT														
1000.000	291.510	3.201	294.711	13.40	4.27	.28	294.99	.00	1.32	.00	2.000	.000	.00	1 .0
135.680	.0099					.0035	.48	.00	.00	1.11	.013	.00	.00	PIPE
1135.680	292.860	2.364	295.223	13.40	4.27	.28	295.51	.00	1.32	.00	2.000	.000	.00	1 .0
JUNCT STR	.1250					.0018	.01	.00	.00		.013	.00	.00	PIPE
---------- WARNING - Junction Analysis - Change in Channel Type ----------														
1139.680	293.360	2.141	295.501	7.70	.90	.01	295.51	.00	.49	4.00	4.000	4.000	.00	0 .0
WALL EXIT														
1139.680	293.360	2.141	295.501	7.70	4.36	.29	295.80	.00	1.08	.00	1.500	.000	.00	1 .0
2.311	.1001					.0054	.01	2.14	.00	.49	.013	.00	.00	PIPE
1141.991	293.591	1.917	295.509	7.70	4.36	.29	295.80	.00	1.08	.00	1.500	.000	.00	1 .0
HYDRAULIC JUMP														
1141.991	293.591	.580	294.171	7.70	12.20	2.31	296.48	.00	1.08	1.46	1.500	.000	.00	1 .0
1.638	.1001					.0534	.09	.58	3.27	.49	.013	.00	.00	PIPE
1143.629	293.755	.580	294.335	7.70	12.19	2.31	296.64	.00	1.08	1.46	1.500	.000	.00	1 .0
3.773	.1001					.0501	.19	.58	3.27	.49	.013	.00	.00	PIPE

LINE_N
Q100 06/01/2024
LINE_N LINE_N_100.WSW

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1147.402	294.133	.601	294.734	7.70	11.62	2.10	296.83	.00	1.08	1.47	1.500	.000	.00	1 .0
3.004	.1001					.0439	.13	.60	3.05	.49	.013	.00	.00	PIPE
1150.406	294.433	.623	295.057	7.70	11.08	1.91	296.96	.00	1.08	1.48	1.500	.000	.00	1 .0
2.444	.1001					.0386	.09	.62	2.85	.49	.013	.00	.00	PIPE
1152.850	294.678	.646	295.324	7.70	10.57	1.73	297.06	.00	1.08	1.49	1.500	.000	.00	1 .0
2.018	.1001					.0339	.07	.65	2.66	.49	.013	.00	.00	PIPE
1154.868	294.880	.670	295.550	7.70	10.07	1.58	297.13	.00	1.08	1.49	1.500	.000	.00	1 .0
1.682	.1001					.0298	.05	.67	2.48	.49	.013	.00	.00	PIPE
1156.551	295.048	.695	295.744	7.70	9.60	1.43	297.18	.00	1.08	1.50	1.500	.000	.00	1 .0
1.411	.1001					.0262	.04	.70	2.31	.49	.013	.00	.00	PIPE
1157.961	295.190	.721	295.911	7.70	9.16	1.30	297.21	.00	1.08	1.50	1.500	.000	.00	1 .0
1.186	.1001					.0231	.03	.72	2.15	.49	.013	.00	.00	PIPE
1159.148	295.308	.748	296.057	7.70	8.73	1.18	297.24	.00	1.08	1.50	1.500	.000	.00	1 .0
.985	.1001					.0203	.02	.75	2.01	.49	.013	.00	.00	PIPE
1160.133	295.407	.777	296.184	7.70	8.33	1.08	297.26	.00	1.08	1.50	1.500	.000	.00	1 .0
.825	.1001					.0179	.01	.78	1.87	.49	.013	.00	.00	PIPE
1160.959	295.490	.807	296.297	7.70	7.94	.98	297.28	.00	1.08	1.50	1.500	.000	.00	1 .0
.676	.1001					.0158	.01	.81	1.74	.49	.013	.00	.00	PIPE

LINE_N
Q100 06/01/2024
LINE_N LINE_N_100.WSW

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1161.634	295.557	.839	296.396	7.70	7.57	.89	297.29	.00	1.08	1.49	1.500	.000	.00	1 .0
.556	.1001					.0139	.01	.84	1.61	.49	.013	.00	.00	PIPE
1162.190	295.613	.872	296.485	7.70	7.22	.81	297.29	.00	1.08	1.48	1.500	.000	.00	1 .0
.427	.1001					.0123	.01	.87	1.50	.49	.013	.00	.00	PIPE
1162.617	295.656	.908	296.564	7.70	6.88	.74	297.30	.00	1.08	1.47	1.500	.000	.00	1 .0
.334	.1001					.0109	.00	.91	1.39	.49	.013	.00	.00	PIPE
1162.952	295.689	.945	296.634	7.70	6.56	.67	297.30	.00	1.08	1.45	1.500	.000	.00	1 .0
.229	.1001					.0097	.00	.95	1.28	.49	.013	.00	.00	PIPE
1163.181	295.712	.985	296.697	7.70	6.25	.61	297.30	.00	1.08	1.42	1.500	.000	.00	1 .0
.134	.1001					.0086	.00	.99	1.19	.49	.013	.00	.00	PIPE
1163.315	295.725	1.028	296.754	7.70	5.96	.55	297.31	.00	1.08	1.39	1.500	.000	.00	1 .0
.045	.1001					.0077	.00	1.03	1.09	.49	.013	.00	.00	PIPE
1163.360	295.730	1.075	296.805	7.70	5.68	.50	297.31	.00	1.08	1.35	1.500	.000	.00	1 .0
WALL	ENTRANCE													
1163.360	295.730	1.173	296.903	7.70	5.19	.42	297.32	.00	1.08	1.24	1.500	.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	2	4	1		2.000														
CD	1	4	1		1.500														
CD	3	4	1		2.500														
CD	6	3	0	.000	4.000	4.000	.000	.000	.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -

LINE_O

HEADING LINE NO 2 IS -

Q100 05/31/2024

HEADING LINE NO 3 IS -

LINE_O LINE_O_100.WSW

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1014.000	294.890	6	299.305

ELEMENT NO 2 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1014.000	294.890	3

ELEMENT NO 3 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1020.250	294.970	3	.013	.000	.000	.000	0

ELEMENT NO 4 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1020.250	294.970	6	.200

ELEMENT NO 5 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1024.250	295.300	6	.013	.000	.000	.000	0

ELEMENT NO 6 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1024.250	295.300	3

ELEMENT NO 7 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1036.000	295.460	3	.013	.000	.000	.000	0

ELEMENT NO 8 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1036.000	295.460	6	.200

ELEMENT NO 9 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1040.000	295.790	6	.013	.000	.000	.000	0

ELEMENT NO 10 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1040.000	295.790	3

ELEMENT NO 11 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1134.860	296.760	3	.013	.000	.000	8.297	0

ELEMENT NO 12 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1134.860	296.760	6	.200

ELEMENT NO 13 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1138.860	297.090	6	.013	.000	.000	.000	0

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ELEMENT NO  14 IS A  WALL  EXIT                        *
                U/S DATA   STATION    INVERT  SECT
                           1138.860  297.090    3
                                        W S P G W                                                    PAGE NO   3
                      WATER SURFACE PROFILE - ELEMENT CARD LISTING
ELEMENT NO  15 IS A REACH             *         *     *
                U/S DATA   STATION    INVERT  SECT              N                        RADIUS    ANGLE     ANG PT  MAN H
                           1242.240  298.120    3              .013                         .000     .000      .000     0
ELEMENT NO  16 IS A REACH             *         *     *
                U/S DATA   STATION    INVERT  SECT              N                        RADIUS    ANGLE     ANG PT  MAN H
                           1260.260  298.300    3              .013                       22.504  -45.880      .000     0
ELEMENT NO  17 IS A  WALL  ENTRANCE                    *
                U/S DATA   STATION    INVERT  SECT             FP
                           1260.260  298.300    6             .200
ELEMENT NO  18 IS A JUNCTION          *         *     *     *              *                  *              *
                U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3        Q4     INVERT-3 INVERT-4  PHI 3  PHI 4
                           1264.260  298.630    6     6     0   .013    11.700      .000   298.630      .000    .000     .000
                                                                                          RADIUS    ANGLE
                                                                                            .000     .000
ELEMENT NO  19 IS A  WALL  EXIT                        *
                U/S DATA   STATION    INVERT  SECT
                           1264.260  298.630    3
ELEMENT NO  20 IS A REACH             *         *     *
                U/S DATA   STATION    INVERT  SECT              N                        RADIUS    ANGLE     ANG PT  MAN H
                           1312.300  299.110    3              .013                         .000     .000     4.770     0
ELEMENT NO  21 IS A  WALL  ENTRANCE                    *
                U/S DATA   STATION    INVERT  SECT             FP
                           1312.300  299.110    6             .200
ELEMENT NO  22 IS A REACH             *         *     *
                U/S DATA   STATION    INVERT  SECT              N                        RADIUS    ANGLE     ANG PT  MAN H
                           1316.300  299.440    6              .013                         .000     .000      .000     0
ELEMENT NO  23 IS A  WALL  EXIT                        *
                U/S DATA   STATION    INVERT  SECT
                           1316.300  299.440    3
ELEMENT NO  24 IS A REACH             *         *     *
                U/S DATA   STATION    INVERT  SECT              N                        RADIUS    ANGLE     ANG PT  MAN H
                           1532.950  304.530    3              .013                         .000     .000      .000     0
ELEMENT NO  25 IS A  WALL  ENTRANCE                    *
                U/S DATA   STATION    INVERT  SECT             FP
                           1532.950  304.530    6             .200
ELEMENT NO  26 IS A JUNCTION          *         *     *     *              *                  *              *
                U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3        Q4     INVERT-3 INVERT-4  PHI 3  PHI 4
                           1536.950  305.530    6     1     1   .013     6.400     4.600   305.530  305.530  90.000    -.900
                                                                                          RADIUS    ANGLE
                                                                                            .000     .000
                                        W S P G W                                                    PAGE NO   4
                      WATER SURFACE PROFILE - ELEMENT CARD LISTING
ELEMENT NO  27 IS A  WALL  EXIT                        *
                U/S DATA   STATION    INVERT  SECT
                           1536.950  305.530    1
ELEMENT NO  28 IS A REACH             *         *     *
                U/S DATA   STATION    INVERT  SECT              N                        RADIUS    ANGLE     ANG PT  MAN H
                           1571.150  306.380    1              .013                         .000     .000      .000     0
ELEMENT NO  29 IS A REACH             *         *     *
                U/S DATA   STATION    INVERT  SECT              N                        RADIUS    ANGLE     ANG PT  MAN H
                           1655.330  308.490    1              .013                       589.628   -8.180      .000     0
ELEMENT NO  30 IS A REACH             *         *     *
                U/S DATA   STATION    INVERT  SECT              N                        RADIUS    ANGLE     ANG PT  MAN H
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                          1803.180  312.190    1               .013                          .000     .000      .000     0
ELEMENT NO  31 IS A REACH            *         *     *
                  U/S DATA   STATION    INVERT  SECT               N                        RADIUS    ANGLE     ANG PT  MAN H
                          1813.450  312.440    1               .013                       309.696    1.900      .000     0
ELEMENT NO  32 IS A  WALL  ENTRANCE                 *
                  U/S DATA   STATION    INVERT  SECT              FP
                          1813.450  312.440    6               .200
ELEMENT NO  33 IS A JUNCTION         *         *     *     *              *                    *                *
                  U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3        Q4     INVERT-3 INVERT-4  PHI 3  PHI 4
                          1817.450  312.770    6     1     1   .013     5.100     4.900   312.770  312.770 -71.900     .600
                                                                                           RADIUS    ANGLE
                                                                                           29.382   7.800
ELEMENT NO  34 IS A  WALL  EXIT                     *
                  U/S DATA   STATION    INVERT  SECT
                          1817.450  312.770    1
ELEMENT NO  35 IS A REACH            *         *     *
                  U/S DATA   STATION    INVERT  SECT               N                        RADIUS    ANGLE     ANG PT  MAN H
                          2009.230  317.570    1               .013                       309.963   35.450      .000     0
ELEMENT NO  36 IS A REACH            *         *     *
                  U/S DATA   STATION    INVERT  SECT               N                        RADIUS    ANGLE     ANG PT  MAN H
                          2080.370  319.340    1               .013                          .000     .000      .000     0
ELEMENT NO  37 IS A  WALL  ENTRANCE                 *
                  U/S DATA   STATION    INVERT  SECT              FP
                          2080.370  319.340    6               .200
ELEMENT NO  38 IS A JUNCTION         *         *     *     *              *                    *                *
                  U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3        Q4     INVERT-3 INVERT-4  PHI 3  PHI 4
                          2084.370  319.670    6     1     0   .013     5.200      .000   319.670      .000     .000     .900
                                                                                           RADIUS    ANGLE
                                                                                             .000     .000
                                                  W S P G W                                                      PAGE NO   5
                                WATER SURFACE PROFILE - ELEMENT CARD LISTING
ELEMENT NO  39 IS A  WALL  EXIT                     *
                  U/S DATA   STATION    INVERT  SECT
                          2084.370  319.670    1
ELEMENT NO  40 IS A REACH            *         *     *
                  U/S DATA   STATION    INVERT  SECT               N                        RADIUS    ANGLE     ANG PT  MAN H
                          2120.870  324.050    1               .013                          .000     .000      .000     0
ELEMENT NO  41 IS A  WALL  ENTRANCE                 *
                  U/S DATA   STATION    INVERT  SECT              FP
                          2120.870  324.050    6               .200
ELEMENT NO  42 IS A JUNCTION         *         *     *     *              *                    *                *
                  U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3        Q4     INVERT-3 INVERT-4  PHI 3  PHI 4
                          2124.870  324.380    6     6     0   .013     2.400      .000   324.380      .000     .000     .000
                                                                                           RADIUS    ANGLE
                                                                                             .000     .000
ELEMENT NO  43 IS A  WALL  EXIT                     *
                  U/S DATA   STATION    INVERT  SECT
                          2124.870  324.380    1
ELEMENT NO  44 IS A REACH            *         *     *
                  U/S DATA   STATION    INVERT  SECT               N                        RADIUS    ANGLE     ANG PT  MAN H
                          2131.120  325.130    1               .013                          .000     .000      .000     0
ELEMENT NO  45 IS A  WALL  ENTRANCE                 *
                  U/S DATA   STATION    INVERT  SECT              FP
                          2131.120  325.130    6               .200
ELEMENT NO  46 IS A SYSTEM HEADWORKS                *                    *
                  U/S DATA   STATION    INVERT  SECT                              W S ELEV
                          2131.120  325.130    6                                    .000
```

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 3-2024 Time: 6:54:45

LINE_O
Q100 05/31/2024
LINE_O LINE_O_100.WSW

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1014.000	294.890	4.415	299.305	41.50	2.59	.10	299.41	.00	1.50	4.00	4.000	4.000	.00	0 .0
WALL EXIT														
1014.000	294.890	4.415	299.305	41.50	8.45	1.11	300.41	.00	2.16	.00	2.500	.000	.00	1 .0
6.250	.0128					.0102	.06	4.42	.00	1.84	.013	.00	.00	PIPE
1020.250	294.970	4.399	299.369	41.50	8.45	1.11	300.48	.00	2.16	.00	2.500	.000	.00	1 .0
WALL ENTRANCE														
1020.250	294.970	5.605	300.576	41.50	2.59	.10	300.68	.00	1.50	4.00	4.000	4.000	.00	0 .0
4.000	.0825					.0005	.00	5.61	.23	.55	.013	.00	.00	BOX
1024.250	295.300	5.278	300.578	41.50	2.59	.10	300.68	.00	1.50	4.00	4.000	4.000	.00	0 .0
WALL EXIT														
1024.250	295.300	5.278	300.578	41.50	8.45	1.11	301.69	.00	2.16	.00	2.500	.000	.00	1 .0
11.750	.0136					.0102	.12	5.28	.00	1.80	.013	.00	.00	PIPE
1036.000	295.460	5.238	300.698	41.50	8.45	1.11	301.81	.00	2.16	.00	2.500	.000	.00	1 .0
WALL ENTRANCE														
1036.000	295.460	6.445	301.905	41.50	2.59	.10	302.01	.00	1.50	4.00	4.000	4.000	.00	0 .0
4.000	.0825					.0005	.00	6.44	.23	.55	.013	.00	.00	BOX
1040.000	295.790	6.117	301.907	41.50	2.59	.10	302.01	.00	1.50	4.00	4.000	4.000	.00	0 .0
WALL EXIT														

LINE_O
Q100 05/31/2024
LINE_O LINE_O_100.WSW

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1040.000	295.790	6.117	301.907	41.50	8.45	1.11	303.02	.00	2.16	.00	2.500	.000	.00	1 .0
94.860	.0102					.0102	.97	6.12	.00	2.05	.013	.00	.00	PIPE
1134.860	296.760	6.148	302.908	41.50	8.45	1.11	304.02	.00	2.16	.00	2.500	.000	.00	1 .0
WALL	ENTRANCE													
1134.860	296.760	7.355	304.115	41.50	2.59	.10	304.22	.00	1.50	4.00	4.000	4.000	.00	0 .0
4.000	.0825					.0005	.00	7.35	.23	.55	.013	.00	.00	BOX
1138.860	297.090	7.027	304.117	41.50	2.59	.10	304.22	.00	1.50	4.00	4.000	4.000	.00	0 .0
WALL	EXIT													
1138.860	297.090	7.028	304.118	41.50	8.45	1.11	305.23	.00	2.16	.00	2.500	.000	.00	1 .0
103.380	.0100					.0102	1.06	7.03	.00	2.08	.013	.00	.00	PIPE
1242.240	298.120	7.056	305.176	41.50	8.45	1.11	306.29	.00	2.16	.00	2.500	.000	.00	1 .0
18.020	.0100					.0102	.18	.00	.00	2.08	.013	.00	.00	PIPE
1260.260	298.300	7.219	305.519	41.50	8.45	1.11	306.63	.00	2.16	.00	2.500	.000	.00	1 .0
WALL	ENTRANCE													
1260.260	298.300	8.426	306.726	41.50	2.59	.10	306.83	.00	1.50	4.00	4.000	4.000	.00	0 .0
JUNCT STR	.0825					.0005	.00	.00	.23		.013	.00	.00	BOX
1264.260	298.630	8.182	306.812	29.80	1.86	.05	306.87	.00	1.20	4.00	4.000	4.000	.00	0 .0
WALL	EXIT													

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 3-2024 Time: 6:54:45

LINE_O
Q100 05/31/2024
LINE_O LINE_O_100.WSW

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1264.260	298.630	8.182	306.812	29.80	6.07	.57	307.38	.00	1.86	.00	2.500	.000	.00	1 .0
48.040	.0100					.0053	.25	8.18	.00	1.58	.013	.00	.00	PIPE
1312.300	299.110	7.965	307.075	29.80	6.07	.57	307.65	.00	1.86	.00	2.500	.000	.00	1 .0
WALL	ENTRANCE													
1312.300	299.110	8.587	307.697	29.80	1.86	.05	307.75	.00	1.20	4.00	4.000	4.000	.00	0 .0
4.000	.0825					.0003	.00	8.59	.16	.45	.013	.00	.00	BOX
1316.300	299.440	8.258	307.698	29.80	1.86	.05	307.75	.00	1.20	4.00	4.000	4.000	.00	0 .0
WALL	EXIT													
1316.300	299.440	8.258	307.698	29.80	6.07	.57	308.27	.00	1.86	.00	2.500	.000	.00	1 .0
216.650	.0235					.0053	1.14	8.26	.00	1.21	.013	.00	.00	PIPE
1532.950	304.530	4.312	308.842	29.80	6.07	.57	309.41	.00	1.86	.00	2.500	.000	.00	1 .0
WALL	ENTRANCE													
1532.950	304.530	4.934	309.464	29.80	1.86	.05	309.52	.00	1.20	4.00	4.000	4.000	.00	0 .0
JUNCT STR	.2500					.0003	.00	4.93	.16		.013	.00	.00	BOX
1536.950	305.530	3.976	309.506	18.80	1.18	.02	309.53	.00	.88	4.00	4.000	4.000	.00	0 .0
WALL	EXIT													

---------- WARNING - Flow depth near top of box conduit ----------

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 3-2024 Time: 6:54:45

LINE_O
Q100 05/31/2024
LINE_O LINE_O_100.WSW

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1536.950	305.530	3.977	309.507	18.80	10.64	1.76	311.26	.00	1.46	.00	1.500	.000	.00	1 .0
34.200	.0249					.0320	1.10	3.98	.00	1.50	.013	.00	.00	PIPE
1571.150	306.380	4.222	310.602	18.80	10.64	1.76	312.36	.00	1.46	.00	1.500	.000	.00	1 .0
84.180	.0251					.0320	2.70	.00	.00	1.50	.013	.00	.00	PIPE
1655.330	308.490	4.915	313.404	18.80	10.64	1.76	315.16	.00	1.46	.00	1.500	.000	.00	1 .0
147.850	.0250					.0320	4.74	4.91	.00	1.50	.013	.00	.00	PIPE
1803.180	312.190	5.950	318.140	18.80	10.64	1.76	319.90	.00	1.46	.00	1.500	.000	.00	1 .0
10.270	.0243					.0320	.33	.00	.00	1.50	.013	.00	.00	PIPE
1813.450	312.440	6.080	318.520	18.80	10.64	1.76	320.28	.00	1.46	.00	1.500	.000	.00	1 .0
WALL	ENTRANCE													
1813.450	312.440	8.164	320.604	18.80	1.17	.02	320.63	.00	.88	4.00	4.000	4.000	.00	0 .0
JUNCT STR	.0825					.0001	.00	.00	.10		.013	.00	.00	BOX
1817.450	312.770	7.832	320.602	8.80	.55	.00	320.61	.00	.53	4.00	4.000	4.000	.00	0 .0
WALL	EXIT													
1817.450	312.770	7.833	320.603	8.80	4.98	.39	320.99	.00	1.15	.00	1.500	.000	.00	1 .0
191.780	.0250					.0070	1.35	.00	.00	.78	.013	.00	.00	PIPE
2009.230	317.570	4.427	321.997	8.80	4.98	.39	322.38	.00	1.15	.00	1.500	.000	.00	1 .0
71.140	.0249					.0070	.50	4.43	.00	.78	.013	.00	.00	PIPE

LINE_O
Q100 05/31/2024
LINE_O LINE_O_100.WSW

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
2080.370	319.340	3.157	322.497	8.80	4.98	.39	322.88	.00	1.15	.00	1.500	.000	.00	1 .0
WALL ENTRANCE														
2080.370	319.340	3.611	322.951	8.80	.61	.01	322.96	.00	.53	4.00	4.000	4.000	.00	0 .0
JUNCT STR	.0825					.0000	.00	3.61	.06		.013	.00	.00	BOX
WARNING - Flow depth near top of box conduit														
2084.370	319.670	3.256	322.926	3.60	.28	.00	322.93	.00	.29	4.00	4.000	4.000	.00	0 .0
WALL EXIT														
2084.370	319.670	3.257	322.927	3.60	2.04	.06	322.99	.00	.72	.00	1.500	.000	.00	1 .0
14.789	.1200					.0012	.02	3.26	.00	.32	.013	.00	.00	PIPE
2099.159	321.445	1.500	322.945	3.60	2.04	.06	323.01	.00	.72	.00	1.500	.000	.00	1 .0
1.034	.1200					.0011	.00	1.50	.00	.32	.013	.00	.00	PIPE
2100.194	321.569	1.360	322.929	3.60	2.14	.07	323.00	.00	.72	.87	1.500	.000	.00	1 .0
HYDRAULIC JUMP														
2100.194	321.569	.347	321.916	3.60	11.62	2.10	324.01	.00	.72	1.27	1.500	.000	.00	1 .0
3.996	.1200					.0797	.32	.35	4.14	.32	.013	.00	.00	PIPE
2104.190	322.048	.359	322.407	3.60	11.07	1.90	324.31	.00	.72	1.28	1.500	.000	.00	1 .0
3.186	.1200					.0695	.22	.36	3.87	.32	.013	.00	.00	PIPE

LINE_O
Q100 05/31/2024
LINE_O LINE_O_100.WSW

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
2107.376	322.431	.371	322.802	3.60	10.55	1.73	324.53	.00	.72	1.29	1.500	.000	.00	1 .0
2.435	.1200					.0608	.15	.37	3.62	.32	.013	.00	.00	PIPE
2109.811	322.723	.384	323.107	3.60	10.06	1.57	324.68	.00	.72	1.31	1.500	.000	.00	1 .0
1.944	.1200					.0531	.10	.38	3.39	.32	.013	.00	.00	PIPE
2111.755	322.956	.397	323.353	3.60	9.59	1.43	324.78	.00	.72	1.32	1.500	.000	.00	1 .0
1.577	.1200					.0465	.07	.40	3.18	.32	.013	.00	.00	PIPE
2113.332	323.145	.411	323.556	3.60	9.15	1.30	324.86	.00	.72	1.34	1.500	.000	.00	1 .0
1.313	.1200					.0407	.05	.41	2.97	.32	.013	.00	.00	PIPE
2114.645	323.303	.425	323.728	3.60	8.72	1.18	324.91	.00	.72	1.35	1.500	.000	.00	1 .0
1.095	.1200					.0356	.04	.43	2.78	.32	.013	.00	.00	PIPE
2115.740	323.434	.440	323.874	3.60	8.32	1.07	324.95	.00	.72	1.37	1.500	.000	.00	1 .0
.930	.1200					.0312	.03	.44	2.60	.32	.013	.00	.00	PIPE
2116.670	323.546	.455	324.001	3.60	7.93	.98	324.98	.00	.72	1.38	1.500	.000	.00	1 .0
.785	.1200					.0273	.02	.46	2.44	.32	.013	.00	.00	PIPE
2117.454	323.640	.471	324.111	3.60	7.56	.89	325.00	.00	.72	1.39	1.500	.000	.00	1 .0
.663	.1200					.0239	.02	.47	2.28	.32	.013	.00	.00	PIPE
2118.117	323.720	.488	324.208	3.60	7.21	.81	325.01	.00	.72	1.41	1.500	.000	.00	1 .0
.569	.1200					.0209	.01	.49	2.13	.32	.013	.00	.00	PIPE

LINE_O
Q100 05/31/2024
LINE_O LINE_O_100.WSW

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
2118.686	323.788	.505	324.293	3.60	6.87	.73	325.03	.00	.72	1.42	1.500	.000	.00	1 .0
.479	.1200					.0183	.01	.51	1.99	.32	.013	.00	.00	PIPE
2119.165	323.845	.523	324.368	3.60	6.55	.67	325.04	.00	.72	1.43	1.500	.000	.00	1 .0
.400	.1200					.0161	.01	.52	1.86	.32	.013	.00	.00	PIPE
2119.565	323.893	.542	324.435	3.60	6.25	.61	325.04	.00	.72	1.44	1.500	.000	.00	1 .0
.341	.1200					.0141	.00	.54	1.74	.32	.013	.00	.00	PIPE
2119.906	323.934	.561	324.495	3.60	5.96	.55	325.05	.00	.72	1.45	1.500	.000	.00	1 .0
.270	.1200					.0124	.00	.56	1.63	.32	.013	.00	.00	PIPE
2120.176	323.967	.582	324.549	3.60	5.68	.50	325.05	.00	.72	1.46	1.500	.000	.00	1 .0
.225	.1200					.0109	.00	.58	1.52	.32	.013	.00	.00	PIPE
2120.401	323.994	.603	324.597	3.60	5.42	.46	325.05	.00	.72	1.47	1.500	.000	.00	1 .0
.176	.1200					.0095	.00	.60	1.42	.32	.013	.00	.00	PIPE
2120.577	324.015	.625	324.640	3.60	5.16	.41	325.05	.00	.72	1.48	1.500	.000	.00	1 .0
.131	.1200					.0084	.00	.63	1.33	.32	.013	.00	.00	PIPE
2120.708	324.030	.648	324.679	3.60	4.92	.38	325.05	.00	.72	1.49	1.500	.000	.00	1 .0
.091	.1200					.0073	.00	.65	1.24	.32	.013	.00	.00	PIPE
2120.799	324.041	.672	324.713	3.60	4.69	.34	325.06	.00	.72	1.49	1.500	.000	.00	1 .0
.054	.1200					.0065	.00	.67	1.15	.32	.013	.00	.00	PIPE

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 3-2024 Time: 6:54:45

LINE_O
Q100 05/31/2024
LINE_O LINE_O_100.WSW

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
2120.852	324.048	.697	324.745	3.60	4.48	.31	325.06	.00	.72	1.50	1.500	.000	.00	1 .0
.018	.1200					.0057	.00	.70	1.08	.32	.013	.00	.00	PIPE
2120.870	324.050	.724	324.774	3.60	4.26	.28	325.06	.00	.72	1.50	1.500	.000	.00	1 .0
WALL	ENTRANCE													
2120.870	324.050	1.724	325.774	3.60	.52	.00	325.78	.00	.29	4.00	4.000	4.000	.00	0 .0
JUNCT STR	.0825					.0000	.00	1.72	.07		.013	.00	.00	BOX
2124.870	324.380	1.397	325.777	1.20	.21	.00	325.78	.00	.14	4.00	4.000	4.000	.00	0 .0
WALL	EXIT													
2124.870	324.380	1.398	325.778	1.20	.70	.01	325.79	.00	.41	.76	1.500	.000	.00	1 .0
.748	.1200					.0001	.00	1.40	.08	.19	.013	.00	.00	PIPE
2125.618	324.470	1.307	325.777	1.20	.73	.01	325.79	.00	.41	1.00	1.500	.000	.00	1 .0
.585	.1200					.0001	.00	1.31	.10	.19	.013	.00	.00	PIPE
2126.203	324.540	1.236	325.776	1.20	.77	.01	325.79	.00	.41	1.14	1.500	.000	.00	1 .0
.501	.1200					.0001	.00	1.24	.12	.19	.013	.00	.00	PIPE
2126.704	324.600	1.175	325.775	1.20	.81	.01	325.79	.00	.41	1.24	1.500	.000	.00	1 .0
.442	.1200					.0002	.00	1.18	.13	.19	.013	.00	.00	PIPE
2127.146	324.653	1.121	325.774	1.20	.85	.01	325.79	.00	.41	1.30	1.500	.000	.00	1 .0
.408	.1200					.0002	.00	1.12	.14	.19	.013	.00	.00	PIPE

LINE_O
Q100 05/31/2024
LINE_O LINE_O_100.WSW

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
2127.554	324.702	1.071	325.773	1.20	.89	.01	325.79	.00	.41	1.36	1.500	.000	.00	1 .0
.365	.1200					.0002	.00	1.07	.16	.19	.013	.00	.00	PIPE
2127.920	324.746	1.026	325.772	1.20	.93	.01	325.79	.00	.41	1.39	1.500	.000	.00	1 .0
.348	.1200					.0002	.00	1.03	.17	.19	.013	.00	.00	PIPE
2128.268	324.788	.983	325.771	1.20	.98	.01	325.79	.00	.41	1.43	1.500	.000	.00	1 .0
.322	.1200					.0002	.00	.98	.19	.19	.013	.00	.00	PIPE
2128.589	324.826	.943	325.769	1.20	1.02	.02	325.79	.00	.41	1.45	1.500	.000	.00	1 .0
.295	.1200					.0003	.00	.94	.20	.19	.013	.00	.00	PIPE
2128.885	324.862	.906	325.768	1.20	1.07	.02	325.79	.00	.41	1.47	1.500	.000	.00	1 .0
.277	.1200					.0003	.00	.91	.22	.19	.013	.00	.00	PIPE
2129.162	324.895	.871	325.766	1.20	1.13	.02	325.79	.00	.41	1.48	1.500	.000	.00	1 .0
.268	.1200					.0003	.00	.87	.23	.19	.013	.00	.00	PIPE
2129.429	324.927	.837	325.764	1.20	1.18	.02	325.79	.00	.41	1.49	1.500	.000	.00	1 .0
.241	.1200					.0004	.00	.84	.25	.19	.013	.00	.00	PIPE
2129.670	324.956	.806	325.762	1.20	1.24	.02	325.79	.00	.41	1.50	1.500	.000	.00	1 .0
.231	.1200					.0004	.00	.81	.27	.19	.013	.00	.00	PIPE
2129.901	324.984	.776	325.760	1.20	1.30	.03	325.79	.00	.41	1.50	1.500	.000	.00	1 .0
.221	.1200					.0005	.00	.78	.29	.19	.013	.00	.00	PIPE

LINE_O
Q100 05/31/2024
LINE_O LINE_O_100.WSW

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
2130.122	325.010	.747	325.757	1.20	1.36	.03	325.79	.00	.41	1.50	1.500	.000	.00	1 .0
.202	.1200					.0006	.00	.75	.31	.19	.013	.00	.00	PIPE
2130.324	325.034	.720	325.755	1.20	1.43	.03	325.79	.00	.41	1.50	1.500	.000	.00	1 .0
.191	.1200					.0006	.00	.72	.34	.19	.013	.00	.00	PIPE
2130.515	325.057	.694	325.752	1.20	1.50	.03	325.79	.00	.41	1.50	1.500	.000	.00	1 .0
.180	.1200					.0007	.00	.69	.36	.19	.013	.00	.00	PIPE
2130.696	325.079	.669	325.748	1.20	1.57	.04	325.79	.00	.41	1.49	1.500	.000	.00	1 .0
.169	.1200					.0008	.00	.67	.39	.19	.013	.00	.00	PIPE
2130.865	325.099	.645	325.744	1.20	1.65	.04	325.79	.00	.41	1.49	1.500	.000	.00	1 .0
.158	.1200					.0009	.00	.65	.42	.19	.013	.00	.00	PIPE
2131.022	325.118	.622	325.740	1.20	1.73	.05	325.79	.00	.41	1.48	1.500	.000	.00	1 .0
.098	.1200					.0011	.00	.62	.45	.19	.013	.00	.00	PIPE
2131.120	325.130	.608	325.738	1.20	1.79	.05	325.79	.00	.41	1.47	1.500	.000	.00	1 .0
WALL	ENTRANCE													
2131.120	325.130	1.608	326.738	1.20	.19	.00	326.74	.00	.14	4.00	4.000	4.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.500														
CD	2	3	0	.000	4.000	4.000	.000	.000	.00										

W S P G W

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -

SD-O-1

HEADING LINE NO 2 IS -

Q100 OBR

HEADING LINE NO 3 IS -

SD-O-1 Q100

W S P G W

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1000.000	305.530	1	309.510

ELEMENT NO 2 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1004.250	306.810	1	.013	.000	.000	.000	0

ELEMENT NO 3 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1004.250	306.810	2	.500

ELEMENT NO 4 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1004.250	306.810	2	306.810

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 3-2024 Time: 7: 2:50

SD-O-1
Q100 OBR
SD-O-1 Q100

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1000.000	305.530	3.980	309.510	5.10	2.89	.13	309.64	.00	.87	.00	1.500	.000	.00	1 .0
4.250	.3012					.0024	.01	3.98	.00	.30	.013	.00	.00	PIPE
1004.250	306.810	2.710	309.520	5.10	2.89	.13	309.65	.00	.87	.00	1.500	.000	.00	1 .0
WALL	ENTRANCE													
1004.250	306.810	2.900	309.710	5.10	.44	.00	309.71	.00	.37	4.00	4.000	4.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.500														
CD	2	3	0	.000	4.000	4.000	.000	.000	.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -

SD-O-2

HEADING LINE NO 2 IS -

Q100 OBR

HEADING LINE NO 3 IS -

SD-O-2 Q100

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1002.000	305.530	1	309.510

ELEMENT NO 2 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1026.250	307.470	1	.013	.000	.000	.000	0

ELEMENT NO 3 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1026.250	307.470	2	.500

ELEMENT NO 4 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1026.250	307.470	2	306.810

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 3-2024 Time: 7: 2:53

SD-O-2
Q100 OBR
SD-O-2 Q100

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1002.000	305.530	3.980	309.510	7.10	4.02	.25	309.76	.00	1.03	.00	1.500	.000	.00	1 .0
24.250	.0800					.0046	.11	3.98	.00	.50	.013	.00	.00	PIPE
1026.250	307.470	2.151	309.621	7.10	4.02	.25	309.87	.00	1.03	.00	1.500	.000	.00	1 .0
WALL	ENTRANCE													
1026.250	307.470	2.515	309.985	7.10	.71	.01	309.99	.00	.46	4.00	4.000	4.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.500														
CD	2	3	0	.000	4.000	4.000	.000	.000	.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -

SD-O-3

HEADING LINE NO 2 IS -

Q100 OBR

HEADING LINE NO 3 IS -

SD-O-3 Q100

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1000.000	312.770	1	320.600

ELEMENT NO 2 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1004.250	314.050	1	.013	.000	.000	.000	0

ELEMENT NO 3 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1004.250	314.050	2	.500

ELEMENT NO 4 IS A SYSTEM HEADWORKS * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1004.250	314.050	2	314.050

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 3-2024 Time: 7: 2:57

SD-O-3
Q100 OBR
SD-O-3 Q100

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1000.000	312.770	7.830	320.600	5.40	3.06	.14	320.74	.00	.90	.00	1.500	.000	.00	1 .0
4.250	.3012					.0026	.01	7.83	.00	.31	.013	.00	.00	PIPE
1004.250	314.050	6.561	320.611	5.40	3.06	.14	320.76	.00	.90	.00	1.500	.000	.00	1 .0
WALL	ENTRANCE													
1004.250	314.050	6.776	320.826	5.40	.34	.00	320.83	.00	.38	4.00	4.000	4.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.500														
CD	2	3	0	.000	4.000	4.000	.000	.000	.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -

SD-O-4

HEADING LINE NO 2 IS -

Q100 OBR

HEADING LINE NO 3 IS -

SD-O-4 Q100

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1002.000	312.770	1	320.600

ELEMENT NO 2 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1026.320	315.200	1	.013	.000	.000	.000	0

ELEMENT NO 3 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1026.320	315.200	2	.500

ELEMENT NO 4 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1026.320	315.200	2	314.200

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 3-2024 Time: 8:19:17

SD-O-4
Q100 OBR
SD-O-4 Q100

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1002.000	312.770	7.830	320.600	5.20	2.94	.13	320.73	.00	.88	.00	1.500	.000	.00	1 .0
24.320	.0999					.0025	.06	7.83	.00	.40	.013	.00	.00	PIPE
1026.320	315.200	5.460	320.660	5.20	2.94	.13	320.79	.00	.88	.00	1.500	.000	.00	1 .0
WALL	ENTRANCE													
1026.320	315.200	5.659	320.859	5.20	.32	.00	320.86	.00	.37	4.00	4.000	4.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.500														
CD	2	3	0	.000	4.000	4.000	.000	.000	.00										

W S P G W

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -

SD-O-5

HEADING LINE NO 2 IS -

Q100 OBR

HEADING LINE NO 3 IS -

SD-O-5 Q100

W S P G W

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1002.000	319.670	1	322.930

ELEMENT NO 2 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1061.500	328.590	1	.013	.000	.000	.000	0

ELEMENT NO 3 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1061.500	328.590	2	.500

ELEMENT NO 4 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1061.500	328.590	2	328.590

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 3-2024 Time: 7: 3: 8

SD-O-5
Q100 OBR
SD-O-5 Q100

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1002.000	319.670	3.260	322.930	5.10	2.89	.13	323.06	.00	.87	.00	1.500	.000	.00	1 .0
9.297	.1499					.0024	.02	3.26	.00	.36	.013	.00	.00	PIPE
1011.297	321.064	1.887	322.951	5.10	2.89	.13	323.08	.00	.87	.00	1.500	.000	.00	1 .0
HYDRAULIC JUMP														
1011.297	321.064	.362	321.426	5.10	15.49	3.73	325.15	.00	.87	1.28	1.500	.000	.00	1 .0
7.124	.1499					.1388	.99	.36	5.39	.36	.013	.00	.00	PIPE
1018.421	322.132	.369	322.501	5.10	15.09	3.54	326.04	.00	.87	1.29	1.500	.000	.00	1 .0
12.561	.1499					.1253	1.57	.37	5.20	.36	.013	.00	.00	PIPE
1030.982	324.015	.381	324.396	5.10	14.39	3.22	327.61	.00	.87	1.31	1.500	.000	.00	1 .0
6.908	.1499					.1095	.76	.38	4.87	.36	.013	.00	.00	PIPE
1037.890	325.051	.394	325.445	5.10	13.72	2.92	328.37	.00	.87	1.32	1.500	.000	.00	1 .0
4.652	.1499					.0958	.45	.39	4.56	.36	.013	.00	.00	PIPE
1042.542	325.748	.408	326.156	5.10	13.08	2.66	328.81	.00	.87	1.34	1.500	.000	.00	1 .0
3.445	.1499					.0838	.29	.41	4.27	.36	.013	.00	.00	PIPE
1045.987	326.264	.422	326.686	5.10	12.47	2.42	329.10	.00	.87	1.35	1.500	.000	.00	1 .0
2.674	.1499					.0734	.20	.42	3.99	.36	.013	.00	.00	PIPE
1048.661	326.665	.437	327.102	5.10	11.89	2.20	329.30	.00	.87	1.36	1.500	.000	.00	1 .0
2.156	.1499					.0642	.14	.44	3.74	.36	.013	.00	.00	PIPE

SD-O-5 Q100 OBR SD-O-5 Q100

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1050.816	326.988	.452	327.440	5.10	11.34	2.00	329.44	.00	.87	1.38	1.500	.000	.00	1 .0
1.767	.1499					.0562	.10	.45	3.50	.36	.013	.00	.00	PIPE
1052.583	327.253	.468	327.721	5.10	10.81	1.82	329.54	.00	.87	1.39	1.500	.000	.00	1 .0
1.471	.1499					.0493	.07	.47	3.27	.36	.013	.00	.00	PIPE
1054.054	327.474	.485	327.959	5.10	10.31	1.65	329.61	.00	.87	1.40	1.500	.000	.00	1 .0
1.246	.1499					.0432	.05	.49	3.06	.36	.013	.00	.00	PIPE
1055.300	327.661	.502	328.163	5.10	9.83	1.50	329.66	.00	.87	1.42	1.500	.000	.00	1 .0
1.056	.1499					.0378	.04	.50	2.86	.36	.013	.00	.00	PIPE
1056.356	327.819	.520	328.339	5.10	9.37	1.36	329.70	.00	.87	1.43	1.500	.000	.00	1 .0
.908	.1499					.0331	.03	.52	2.68	.36	.013	.00	.00	PIPE
1057.264	327.955	.538	328.493	5.10	8.94	1.24	329.73	.00	.87	1.44	1.500	.000	.00	1 .0
.775	.1499					.0290	.02	.54	2.50	.36	.013	.00	.00	PIPE
1058.040	328.071	.557	328.628	5.10	8.52	1.13	329.76	.00	.87	1.45	1.500	.000	.00	1 .0
.663	.1499					.0255	.02	.56	2.34	.36	.013	.00	.00	PIPE
1058.702	328.171	.577	328.748	5.10	8.12	1.02	329.77	.00	.87	1.46	1.500	.000	.00	1 .0
.566	.1499					.0223	.01	.58	2.18	.36	.013	.00	.00	PIPE
1059.268	328.255	.598	328.854	5.10	7.75	.93	329.79	.00	.87	1.47	1.500	.000	.00	1 .0
.481	.1499					.0196	.01	.60	2.04	.36	.013	.00	.00	PIPE

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 3-2024 Time: 7: 3: 8

SD-O-5 Q100 OBR SD-O-5 Q100

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1059.749	328.328	.620	328.948	5.10	7.39	.85	329.79	.00	.87	1.48	1.500	.000	.00	1 .0
.407	.1499					.0172	.01	.62	1.90	.36	.013	.00	.00	PIPE
1060.156	328.389	.643	329.032	5.10	7.04	.77	329.80	.00	.87	1.48	1.500	.000	.00	1 .0
.341	.1499					.0151	.01	.64	1.78	.36	.013	.00	.00	PIPE
1060.497	328.440	.667	329.107	5.10	6.71	.70	329.81	.00	.87	1.49	1.500	.000	.00	1 .0
.283	.1499					.0133	.00	.67	1.66	.36	.013	.00	.00	PIPE
1060.780	328.482	.692	329.174	5.10	6.40	.64	329.81	.00	.87	1.50	1.500	.000	.00	1 .0
.238	.1499					.0117	.00	.69	1.55	.36	.013	.00	.00	PIPE
1061.017	328.518	.717	329.235	5.10	6.10	.58	329.81	.00	.87	1.50	1.500	.000	.00	1 .0
.176	.1499					.0103	.00	.72	1.44	.36	.013	.00	.00	PIPE
1061.194	328.544	.745	329.289	5.10	5.82	.53	329.82	.00	.87	1.50	1.500	.000	.00	1 .0
.141	.1499					.0091	.00	.75	1.34	.36	.013	.00	.00	PIPE
1061.334	328.565	.773	329.338	5.10	5.55	.48	329.82	.00	.87	1.50	1.500	.000	.00	1 .0
.095	.1499					.0080	.00	.77	1.25	.36	.013	.00	.00	PIPE
1061.429	328.579	.803	329.382	5.10	5.29	.43	329.82	.00	.87	1.50	1.500	.000	.00	1 .0
.053	.1499					.0070	.00	.80	1.16	.36	.013	.00	.00	PIPE
1061.482	328.587	.835	329.422	5.10	5.04	.40	329.82	.00	.87	1.49	1.500	.000	.00	1 .0
.018	.1499					.0062	.00	.84	1.08	.36	.013	.00	.00	PIPE

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 3-2024 Time: 7: 3: 8

SD-O-5
Q100 OBR
SD-O-5 Q100

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1061.500	328.590	.869	329.459	5.10	4.80	.36	329.82	.00	.87	1.48	1.500	.000	.00	1 .0
WALL ENTRANCE														
1061.500	328.590	1.869	330.459	5.10	.68	.01	330.47	.00	.37	4.00	4.000	4.000	.00	0 .0

WSPG OUTPUT

PLANNING AREA 2

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	2		4.000														
CD	2	4	2		3.500														
CD	3	4	2		3.000														
CD	4	4	2		2.500														
CD	5	4	1		2.000														
CD	6	3	0	.000	6.000	9.000	.000	.000	.00										
CD	7	4	1		1.500														
CD	8	3	0	.500	6.000	12.000	.000	.000	.00										
CD	9	1	0	.000	3.000	6.000	1.500	1.500	.00										
CD	10	3	0	.000	4.000	4.000	.000	.000	.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -

LINE SD_A1

HEADING LINE NO 2 IS -

Q100

HEADING LINE NO 3 IS -

OBR

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1267.510	182.330	9	183.240

ELEMENT NO 2 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1597.340	184.000	9	.013	.000	.000	.000	0

ELEMENT NO 3 IS A TRANSITION * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE
	1601.580	184.010	8	.013	.000	.000

WARNING - ADJACENT SECTIONS ARE NOT IDENTICAL - SEE SECTION NUMBERS AND CHANNEL DEFINITIONS

ELEMENT NO 4 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1650.160	184.240	1	.013	.000	.000	-334.110	4

ELEMENT NO 5 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1650.160	184.240	6	.200

ELEMENT NO 6 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1654.160	184.260	6	.012	.000	.000	.000	0

ELEMENT NO 7 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1654.160	184.260	1

ELEMENT NO 8 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1919.810	185.600	1	.012	.000	.000	-12.000	0

ELEMENT NO 9 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1919.810	185.600	6	.200

ELEMENT NO 10 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1923.810	185.620	6	.012	.000	.000	.000	0

ELEMENT NO 11 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT

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                          1923.810  185.620    1
ELEMENT NO  12 IS A REACH            *         *     *
                  U/S DATA   STATION    INVERT  SECT              N                        RADIUS    ANGLE     ANG PT  MAN H
                             2080.180  186.390    1              .012                         .000     .000   -12.000     0
ELEMENT NO  13 IS A  WALL  ENTRANCE                  *
                  U/S DATA   STATION    INVERT  SECT             FP
                             2080.180  186.390    6              .200
                                                W S P G W                                                      PAGE NO   3
                        WATER SURFACE PROFILE - ELEMENT CARD LISTING
ELEMENT NO  14 IS A REACH            *         *     *
                  U/S DATA   STATION    INVERT  SECT              N                        RADIUS    ANGLE     ANG PT  MAN H
                             2084.180  186.410    6              .012                         .000     .000      .000     0
ELEMENT NO  15 IS A  WALL  EXIT                      *
                  U/S DATA   STATION    INVERT  SECT
                             2084.180  186.410    1
ELEMENT NO  16 IS A REACH            *         *     *
                  U/S DATA   STATION    INVERT  SECT              N                        RADIUS    ANGLE     ANG PT  MAN H
                             2242.000  187.200    1              .012                         .000     .000      .000     0
ELEMENT NO  17 IS A  WALL  ENTRANCE                  *
                  U/S DATA   STATION    INVERT  SECT             FP
                             2242.000  187.200    6              .200
ELEMENT NO  18 IS A JUNCTION         *         *     *     *               *                  *              *
                  U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3        Q4     INVERT-3 INVERT-4  PHI 3  PHI 4
                             2246.000  187.220    6     4     7   .012     2.600    12.300   187.220   187.220 -90.000   44.000
                                                                                      RADIUS    ANGLE
                                                                                        .000     .000
ELEMENT NO  19 IS A  WALL  EXIT                      *
                  U/S DATA   STATION    INVERT  SECT
                             2246.000  187.220    1
ELEMENT NO  20 IS A REACH            *         *     *
                  U/S DATA   STATION    INVERT  SECT              N                        RADIUS    ANGLE     ANG PT  MAN H
                             2370.020  187.880    1              .012                         .000     .000      .000     0
ELEMENT NO  21 IS A REACH            *         *     *
                  U/S DATA   STATION    INVERT  SECT              N                        RADIUS    ANGLE     ANG PT  MAN H
                             2413.070  188.060    1              .012                         .000     .000      .000     0
ELEMENT NO  22 IS A  WALL  ENTRANCE                  *
                  U/S DATA   STATION    INVERT  SECT             FP
                             2413.070  188.060    6              .200
ELEMENT NO  23 IS A REACH            *         *     *
                  U/S DATA   STATION    INVERT  SECT              N                        RADIUS    ANGLE     ANG PT  MAN H
                             2417.070  188.080    6              .012                         .000     .000      .000     0
ELEMENT NO  24 IS A  WALL  EXIT                      *
                  U/S DATA   STATION    INVERT  SECT
                             2417.070  188.080    1
ELEMENT NO  25 IS A REACH            *         *     *
                  U/S DATA   STATION    INVERT  SECT              N                        RADIUS    ANGLE     ANG PT  MAN H
                             2578.240  188.880    1              .012                     4991.544   -1.850      .000     0
                                                W S P G W                                                      PAGE NO   4
                        WATER SURFACE PROFILE - ELEMENT CARD LISTING
ELEMENT NO  26 IS A REACH            *         *     *
                  U/S DATA   STATION    INVERT  SECT              N                        RADIUS    ANGLE     ANG PT  MAN H
                             2663.840  189.310    1              .012                         .000     .000      .000     0
ELEMENT NO  27 IS A  WALL  ENTRANCE                  *
                  U/S DATA   STATION    INVERT  SECT             FP
                             2663.840  189.310    6              .200
ELEMENT NO  28 IS A JUNCTION         *         *     *     *               *                  *              *
                  U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3        Q4     INVERT-3 INVERT-4  PHI 3  PHI 4
                             2667.840  189.340    6     5     0   .012    12.700      .000   189.340      .000  66.000     .400
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                                                                                                  RADIUS    ANGLE
                                                                                                    .000    .000
ELEMENT NO  29 IS A  WALL  EXIT                        *
                  U/S DATA   STATION    INVERT  SECT
                             2667.840  189.340    2
ELEMENT NO  30 IS A REACH             *         *     *
                  U/S DATA   STATION    INVERT  SECT               N                          RADIUS    ANGLE     ANG PT  MAN H
                             2740.380  189.700    2               .012                           .000     .000  -352.950     9
ELEMENT NO  31 IS A  WALL  ENTRANCE                    *
                  U/S DATA   STATION    INVERT  SECT              FP
                             2740.380  189.700    6               .200
ELEMENT NO  32 IS A JUNCTION          *         *     *     *               *                    *              *
                  U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3        Q4     INVERT-3 INVERT-4  PHI 3  PHI 4
                             2744.380  189.720    6     5     0   .012    11.900      .000   189.720      .000 -49.000     .600
                                                                                                  RADIUS    ANGLE
                                                                                                    .000    .000
ELEMENT NO  33 IS A  WALL  EXIT                        *
                  U/S DATA   STATION    INVERT  SECT
                             2744.380  189.720    3
ELEMENT NO  34 IS A REACH             *         *     *
                  U/S DATA   STATION    INVERT  SECT               N                          RADIUS    ANGLE     ANG PT  MAN H
                             2904.380  190.520    3               .012                           .000     .000   360.000     0
ELEMENT NO  35 IS A  WALL  ENTRANCE                    *
                  U/S DATA   STATION    INVERT  SECT              FP
                             2904.380  190.520    6               .200
                                                  W S P G W                                                          PAGE NO   5
                          WATER SURFACE PROFILE - ELEMENT CARD LISTING
ELEMENT NO  36 IS A JUNCTION          *         *     *     *               *                    *              *
                  U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3        Q4     INVERT-3 INVERT-4  PHI 3  PHI 4
                             2908.380  190.540    6     5     0   .012    10.700      .000   190.540      .000 -45.000     .100
                                                                                                  RADIUS    ANGLE
                                                                                                    .000    .000
ELEMENT NO  37 IS A  WALL  EXIT                        *
                  U/S DATA   STATION    INVERT  SECT
                             2908.380  190.540    3
ELEMENT NO  38 IS A REACH             *         *     *
                  U/S DATA   STATION    INVERT  SECT               N                          RADIUS    ANGLE     ANG PT  MAN H
                             3084.300  191.410    3               .012                           .000     .000      .000     0
ELEMENT NO  39 IS A REACH             *         *     *
                  U/S DATA   STATION    INVERT  SECT               N                          RADIUS    ANGLE     ANG PT  MAN H
                             3209.360  192.040    3               .012                        490.782  -14.600      .000     0
ELEMENT NO  40 IS A  WALL  ENTRANCE                    *
                  U/S DATA   STATION    INVERT  SECT              FP
                             3209.360  192.040    6               .200
ELEMENT NO  41 IS A JUNCTION          *         *     *     *               *                    *              *
                  U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3        Q4     INVERT-3 INVERT-4  PHI 3  PHI 4
                             3213.360  192.060    6     5     0   .012     9.400      .000   192.060      .000 -45.000     .100
                                                                                                  RADIUS    ANGLE
                                                                                                    .000    .000
ELEMENT NO  42 IS A  WALL  EXIT                        *
                  U/S DATA   STATION    INVERT  SECT
                             3213.360  192.060    3
ELEMENT NO  43 IS A REACH             *         *     *
                  U/S DATA   STATION    INVERT  SECT               N                          RADIUS    ANGLE     ANG PT  MAN H
                             3410.900  193.050    3               .012                           .000     .000    -1.460     1
ELEMENT NO  44 IS A  WALL  ENTRANCE                    *
                  U/S DATA   STATION    INVERT  SECT              FP
                             3410.900  193.050    6               .200
```

ELEMENT NO 45 IS A JUNCTION * * * * * * *

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	3414.900	193.070	6	5	5	.012	9.900	23.700	192.060	192.060	-45.100	24.000

RADIUS	ANGLE
.000	.000

W S P G W PAGE NO 6

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 46 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	3414.900	193.070	4

ELEMENT NO 47 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	3702.030	194.510	4	.012	.000	.000	-9.350	5

ELEMENT NO 48 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	3702.030	194.510	10	.200

ELEMENT NO 49 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	3706.030	194.530	10	.012	.000	.000	.000	0

ELEMENT NO 50 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	3706.030	194.530	4

ELEMENT NO 51 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	4020.930	196.100	4	.012	3782.481	-4.770	.000	0

ELEMENT NO 52 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	4020.930	196.100	10	.200

ELEMENT NO 53 IS A JUNCTION * * * * * * *

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	4024.930	196.130	10	5	0	.012	7.400	.000	196.130	.000	-88.000	.200

RADIUS	ANGLE
.000	.000

ELEMENT NO 54 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	4024.930	196.130	5

ELEMENT NO 55 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	4076.700	196.500	5	.012	896.134	-3.310	.000	0

ELEMENT NO 56 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	4076.700	196.500	5	.200

ELEMENT NO 57 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	4076.700	196.500	5	196.500

W S P G W PAGE NO 7

WATER SURFACE PROFILE - ELEMENT CARD LISTING

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 3-2024 Time: 6:37: 0

LINE SD_A1
Q100
OBR

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1267.510	182.330	1.583	183.913	117.20	8.84	1.21	185.13	.00	1.93	10.75	3.000	6.000	1.50	0 .0
26.205	.0051					.0051	.13	1.58	1.40	1.58	.013	.00	1.50	TRAP
1293.715	182.463	1.583	184.046	117.20	8.84	1.21	185.26	.00	1.93	10.75	3.000	6.000	1.50	0 .0
163.931	.0051					.0049	.81	1.58	1.40	1.58	.013	.00	1.50	TRAP
1457.646	183.293	1.605	184.897	117.20	8.69	1.17	186.07	.00	1.93	10.81	3.000	6.000	1.50	0 .0
85.069	.0051					.0045	.38	1.60	1.37	1.58	.013	.00	1.50	TRAP
1542.715	183.723	1.665	185.389	117.20	8.28	1.07	186.45	.00	1.93	11.00	3.000	6.000	1.50	0 .0
31.129	.0051					.0040	.12	1.67	1.29	1.58	.013	.00	1.50	TRAP
1573.844	183.881	1.727	185.608	117.20	7.90	.97	186.58	.00	1.93	11.18	3.000	6.000	1.50	0 .0
14.834	.0051					.0035	.05	1.73	1.21	1.58	.013	.00	1.50	TRAP
1588.679	183.956	1.792	185.748	117.20	7.53	.88	186.63	.00	1.93	11.37	3.000	6.000	1.50	0 .0
6.787	.0051					.0030	.02	1.79	1.13	1.58	.013	.00	1.50	TRAP
1595.466	183.991	1.858	185.848	117.20	7.18	.80	186.65	.00	1.93	11.57	3.000	6.000	1.50	0 .0
1.874	.0051					.0026	.00	1.86	1.07	1.58	.013	.00	1.50	TRAP
1597.340	184.000	1.927	185.927	117.20	6.84	.73	186.65	.00	1.93	11.78	3.000	6.000	1.50	0 .0
TRANS STR	.0024					.0005	.00	1.93	1.00		.013	.00	1.50	TRAP
1601.580	184.010	2.546	186.556	117.20	3.84	.23	186.78	.00	1.44	12.00	6.000	12.000	.00	0 .5
1601.580	184.010	2.217	186.227	117.20	8.20	1.04	187.27	.00	2.31	3.98	4.000	.000	.00	2 .0
23.469	.0047					.0047	.11	2.22	.76	2.22	.013	.00	.00	PIPE

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 3-2024 Time: 6:37: 0

LINE SD_A1
Q100
OBR

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1625.049	184.121	2.217	186.338	117.20	8.20	1.04	187.38	.00	2.31	3.98	4.000	.000	.00	2 .0
25.111	.0047					.0045	.11	2.22	.76	2.22	.013	.00	.00	PIPE
1650.160	184.240	2.305	186.545	117.20	7.81	.95	187.49	.00	2.31	3.95	4.000	.000	.00	2 .0
WALL ENTRANCE														
1650.160	184.240	3.305	187.545	117.20	3.94	.24	187.79	.00	1.74	9.00	6.000	9.000	.00	0 .0
4.000	.0050					.0004	.00	3.31	.38	1.42	.012	.00	.00	BOX
1654.160	184.260	3.284	187.544	117.20	3.97	.24	187.79	.00	1.74	9.00	6.000	9.000	.00	0 .0
HYDRAULIC JUMP														
1654.160	184.260	2.071	186.331	117.20	8.92	1.24	187.57	.00	2.31	4.00	4.000	.000	.00	2 .0
118.474	.0050					.0050	.60	2.07	.87	2.07	.012	.00	.00	PIPE
1772.634	184.858	2.071	186.928	117.20	8.92	1.24	188.17	.00	2.31	4.00	4.000	.000	.00	2 .0
113.840	.0050					.0048	.55	2.07	.87	2.07	.012	.00	.00	PIPE
1886.474	185.432	2.132	187.564	117.20	8.60	1.15	188.71	.00	2.31	3.99	4.000	.000	.00	2 .0
27.682	.0050					.0043	.12	2.13	.82	2.07	.012	.00	.00	PIPE
1914.155	185.571	2.216	187.788	117.20	8.20	1.04	188.83	.00	2.31	3.98	4.000	.000	.00	2 .0
5.655	.0050					.0038	.02	2.22	.76	2.07	.012	.00	.00	PIPE
1919.810	185.600	2.305	187.905	117.20	7.81	.95	188.85	.00	2.31	3.95	4.000	.000	.00	2 .0
WALL ENTRANCE														

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 3-2024 Time: 6:37: 0

LINE SD_A1
Q100
OBR

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1919.810	185.600	3.305	188.905	117.20	3.94	.24	189.15	.00	1.74	9.00	6.000	9.000	.00	0 .0
4.000	.0050					.0004	.00	3.31	.38	1.42	.012	.00	.00	BOX
1923.810	185.620	3.284	188.904	117.20	3.97	.24	189.15	.00	1.74	9.00	6.000	9.000	.00	0 .0
HYDRAULIC JUMP														
1923.810	185.620	2.086	187.706	117.20	8.84	1.21	188.92	.00	2.31	4.00	4.000	.000	.00	2 .0
5.760	.0049					.0049	.03	2.09	.86	2.09	.012	.00	.00	PIPE
1929.571	185.648	2.086	187.734	117.20	8.84	1.21	188.95	.00	2.31	4.00	4.000	.000	.00	2 .0
111.292	.0049					.0047	.53	2.09	.86	2.09	.012	.00	.00	PIPE
2040.862	186.196	2.132	188.328	117.20	8.60	1.15	189.48	.00	2.31	3.99	4.000	.000	.00	2 .0
33.058	.0049					.0043	.14	2.13	.82	2.09	.012	.00	.00	PIPE
2073.920	186.359	2.216	188.575	117.20	8.20	1.04	189.62	.00	2.31	3.98	4.000	.000	.00	2 .0
6.260	.0049					.0038	.02	2.22	.76	2.09	.012	.00	.00	PIPE
2080.180	186.390	2.305	188.695	117.20	7.81	.95	189.64	.00	2.31	3.95	4.000	.000	.00	2 .0
2080.180	186.390	2.393	188.783	117.20	7.47	.87	189.65	.00	2.31	3.92	4.000	.000	.00	2 .0
WALL ENTRANCE														
2080.180	186.390	3.393	189.783	117.20	3.84	.23	190.01	.00	1.74	9.00	6.000	9.000	.00	0 .0
4.000	.0050					.0004	.00	3.39	.37	1.42	.012	.00	.00	BOX
2084.180	186.410	3.372	189.782	117.20	3.86	.23	190.01	.00	1.74	9.00	6.000	9.000	.00	0 .0
HYDRAULIC JUMP														

LINE SD_A1
Q100
OBR

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT) / SF Ave	Water Elev / HF	Q (CFS) / SE Dpth	Vel (FPS) / Froude N	Vel Head / Norm Dp	Energy Grd.El. / "N"	Super Elev / X-Fall	Critical Depth / ZR	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip / Type Ch
2084.180	186.410	2.076	188.486	117.20	8.90	1.23	189.72	.00	2.31	4.00	4.000	.000	.00	2 .0
9.915	.0050					.0050	.05	2.08	.86	2.08	.012	.00	.00	PIPE
2094.095	186.460	2.076	188.535	117.20	8.90	1.23	189.76	.00	2.31	4.00	4.000	.000	.00	2 .0
112.859	.0050					.0048	.54	2.08	.86	2.08	.012	.00	.00	PIPE
2206.954	187.025	2.132	189.157	117.20	8.60	1.15	190.31	.00	2.31	3.99	4.000	.000	.00	2 .0
29.210	.0050					.0043	.13	2.13	.82	2.08	.012	.00	.00	PIPE
2236.164	187.171	2.216	189.387	117.20	8.20	1.04	190.43	.00	2.31	3.98	4.000	.000	.00	2 .0
5.836	.0050					.0038	.02	2.22	.76	2.08	.012	.00	.00	PIPE
2242.000	187.200	2.305	189.505	117.20	7.81	.95	190.45	.00	2.31	3.95	4.000	.000	.00	2 .0
2242.000	187.200	2.521	189.721	117.20	7.02	.77	190.49	.00	2.31	3.86	4.000	.000	.00	2 .0
WALL ENTRANCE														
2242.000	187.200	3.521	190.721	117.20	3.70	.21	190.93	.00	1.74	9.00	6.000	9.000	.00	0 .0
JUNCT STR	.0050					.0003	.00	3.52	.35		.012	.00	.00	BOX
2246.000	187.220	3.545	190.765	102.30	3.21	.16	190.92	.00	1.59	9.00	6.000	9.000	.00	0 .0
WALL EXIT														
2246.000	187.220	3.546	190.766	102.30	4.34	.29	191.06	.00	2.15	2.54	4.000	.000	.00	2 .0
26.955	.0053					.0010	.03	3.55	.25	1.88	.012	.00	.00	PIPE
2272.955	187.363	3.412	190.776	102.30	4.48	.31	191.09	.00	2.15	2.83	4.000	.000	.00	2 .0
HYDRAULIC JUMP														

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 3-2024 Time: 6:37: 0

LINE SD_A1
Q100
OBR

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT) / SF Ave	Water Elev / HF	Q (CFS) / SE Dpth	Vel (FPS) / Froude N	Vel Head / Norm Dp	Energy Grd.El. / "N"	Super Elev / X-Fall	Critical Depth / ZR	Flow Top Width / Type Ch	Height/ Dia.-FT / No Wth Prs/Pip
2272.955	187.363	1.904	189.267	102.30	8.67	1.17	190.43	.00	2.15	4.00	4.000
71.893	.0053					.0049	.35	1.90	.89	1.88	.012
2344.848	187.746	1.958	189.704	102.30	8.36	1.09	190.79	.00	2.15	4.00	4.000
25.172	.0053					.0044	.11	1.96	.84	1.88	.012
2370.020	187.880	2.033	189.913	102.30	7.97	.99	190.90	.00	2.15	4.00	4.000
32.407	.0042					.0040	.13	2.03	.78	2.02	.012
2402.427	188.016	2.065	190.081	102.30	7.81	.95	191.03	.00	2.15	4.00	4.000
10.643	.0042					.0036	.04	2.07	.76	2.02	.012
2413.070	188.060	2.147	190.207	102.30	7.45	.86	191.07	.00	2.15	3.99	4.000
2413.070	188.060	2.714	190.774	102.30	5.63	.49	191.27	.00	2.15	3.74	4.000
WALL ENTRANCE											
2413.070	188.060	3.714	191.774	102.30	3.06	.15	191.92	.00	1.59	9.00	6.000
4.000	.0050					.0002	.00	3.71	.28	1.29	.012
2417.070	188.080	3.693	191.773	102.30	3.08	.15	191.92	.00	1.59	9.00	6.000
WALL EXIT											
2417.070	188.080	3.694	191.774	102.30	4.22	.28	192.05	.00	2.15	2.13	4.000
50.723	.0050					.0010	.05	3.69	.22	1.92	.012
2467.793	188.332	3.463	191.795	102.30	4.42	.30	192.10	.00	2.15	2.73	4.000
16.951	.0050					.0010	.02	3.46	.27	1.92	.012

Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
.000	.00	2 .0
.00	.00	PIPE
.000	.00	2 .0
.00	.00	PIPE
.000	.00	2 .0
.00	.00	PIPE
.000	.00	2 .0
.00	.00	PIPE
.000	.00	2 .0
.000	.00	2 .0
9.000	.00	0 .0
.00	.00	BOX
9.000	.00	0 .0
.000	.00	2 .0
.00	.00	PIPE
.000	.00	2 .0
.00	.00	PIPE

LINE SD_A1
Q100
OBR

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
2484.744	188.416	3.387	191.803	102.30	4.51	.32	192.12	.00	2.15	2.88	4.000	.000	.00	2 .0
HYDRAULIC JUMP														
2484.744	188.416	1.921	190.337	102.30	8.57	1.14	191.48	.00	2.15	4.00	4.000	.000	.00	2 .0
93.496	.0050					.0049	.46	1.92	.87	1.92	.012	.00	.00	PIPE
2578.240	188.880	1.933	190.813	102.30	8.50	1.12	191.94	.00	2.15	4.00	4.000	.000	.00	2 .0
60.222	.0050					.0046	.28	1.93	.86	1.91	.012	.00	.00	PIPE
2638.462	189.183	1.989	191.172	102.30	8.20	1.04	192.21	.00	2.15	4.00	4.000	.000	.00	2 .0
21.245	.0050					.0041	.09	1.99	.82	1.91	.012	.00	.00	PIPE
2659.707	189.289	2.065	191.354	102.30	7.81	.95	192.30	.00	2.15	4.00	4.000	.000	.00	2 .0
4.133	.0050					.0036	.02	2.07	.76	1.91	.012	.00	.00	PIPE
2663.840	189.310	2.147	191.457	102.30	7.45	.86	192.32	.00	2.15	3.99	4.000	.000	.00	2 .0
2663.840	189.310	2.431	191.741	102.30	6.40	.64	192.38	.00	2.15	3.91	4.000	.000	.00	2 .0
WALL ENTRANCE														
2663.840	189.310	3.431	192.741	102.30	3.31	.17	192.91	.00	1.59	9.00	6.000	9.000	.00	0 .0
JUNCT STR	.0075					.0002	.00	3.43	.32		.012	.00	.00	BOX
2667.840	189.340	3.462	192.802	89.60	2.88	.13	192.93	.00	1.46	9.00	6.000	9.000	.00	0 .0
WALL EXIT														
2667.840	189.340	3.463	192.803	89.60	4.66	.34	193.14	.00	2.09	.72	3.500	.000	.00	2 .0
72.540	.0050					.0015	.11	3.46	.16	1.92	.012	.00	.00	PIPE

LINE SD_A1
Q100
OBR

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
2740.380	189.700	3.182	192.882	89.60	4.88	.37	193.25	.00	2.09	2.01	3.500	.000	.00	2 .0
WALL ENTRANCE														
2740.380	189.700	4.182	193.882	89.60	2.38	.09	193.97	.00	1.46	9.00	6.000	9.000	.00	0 .0
JUNCT STR	.0050					.0001	.00	4.18	.21		.012	.00	.00	BOX
2744.380	189.720	4.181	193.901	77.70	2.06	.07	193.97	.00	1.32	9.00	6.000	9.000	.00	0 .0
WALL EXIT														
2744.380	189.720	4.182	193.902	77.70	5.50	.47	194.37	.00	2.03	.00	3.000	.000	.00	2 .0
160.000	.0050					.0029	.46	4.18	.00	1.96	.012	.00	.00	PIPE
2904.380	190.520	4.401	194.921	77.70	5.50	.47	195.39	.00	2.03	.00	3.000	.000	.00	2 .0
WALL ENTRANCE														
2904.380	190.520	4.907	195.427	77.70	1.76	.05	195.48	.00	1.32	9.00	6.000	9.000	.00	0 .0
JUNCT STR	.0050					.0001	.00	4.91	.14		.012	.00	.00	BOX
2908.380	190.540	4.893	195.433	67.00	1.52	.04	195.47	.00	1.20	9.00	6.000	9.000	.00	0 .0
WALL EXIT														
2908.380	190.540	4.894	195.434	67.00	4.74	.35	195.78	.00	1.88	.00	3.000	.000	.00	2 .0
175.920	.0049					.0021	.38	4.89	.00	1.78	.012	.00	.00	PIPE
3084.300	191.410	4.402	195.812	67.00	4.74	.35	196.16	.00	1.88	.00	3.000	.000	.00	2 .0
125.060	.0050					.0021	.27	.00	.00	1.77	.012	.00	.00	PIPE

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 3-2024 Time: 6:37: 0

LINE SD_A1
Q100
OBR

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
3209.360	192.040	4.069	196.109	67.00	4.74	.35	196.46	.00	1.88	.00	3.000	.000	.00	2 .0
WALL	ENTRANCE													
3209.360	192.040	4.435	196.475	67.00	1.68	.04	196.52	.00	1.20	9.00	6.000	9.000	.00	0 .0
JUNCT STR	.0050					.0001	.00	4.44	.14		.012	.00	.00	BOX
3213.360	192.060	4.422	196.482	57.60	1.45	.03	196.51	.00	1.08	9.00	6.000	9.000	.00	0 .0
WALL	EXIT													
3213.360	192.060	4.423	196.483	57.60	4.07	.26	196.74	.00	1.74	.00	3.000	.000	.00	2 .0
197.540	.0050					.0016	.31	4.42	.00	1.61	.012	.00	.00	PIPE
3410.900	193.050	3.761	196.811	57.60	4.07	.26	197.07	.00	1.74	.00	3.000	.000	.00	2 .0
WALL	ENTRANCE													
3410.900	193.050	4.023	197.073	57.60	1.59	.04	197.11	.00	1.08	9.00	6.000	9.000	.00	0 .0
JUNCT STR	.0050					.0000	.00	4.02	.14		.012	.00	.00	BOX
3414.900	193.070	4.036	197.106	24.00	.66	.01	197.11	.00	.60	9.00	6.000	9.000	.00	0 .0
WALL	EXIT													
3414.900	193.070	4.037	197.107	24.00	2.44	.09	197.20	.00	1.16	.00	2.500	.000	.00	2 .0
287.130	.0050					.0007	.21	4.04	.00	1.07	.012	.00	.00	PIPE
3702.030	194.510	2.832	197.342	24.00	2.44	.09	197.44	.00	1.16	.00	2.500	.000	.00	2 .0
WALL	ENTRANCE													

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 3-2024 Time: 6:37: 0

LINE SD_A1
Q100
OBR

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
3702.030	194.510	2.863	197.373	24.00	2.10	.07	197.44	.00	1.04	4.00	4.000	4.000	.00	0 .0
4.000	.0050					.0002	.00	2.86	.22	.93	.012	.00	.00	BOX
3706.030	194.530	2.843	197.373	24.00	2.11	.07	197.44	.00	1.04	4.00	4.000	4.000	.00	0 .0
WALL	EXIT													
3706.030	194.530	2.843	197.373	24.00	2.44	.09	197.47	.00	1.16	.00	2.500	.000	.00	2 .0
81.049	.0050					.0007	.06	.00	.00	1.07	.012	.00	.00	PIPE
3787.079	194.934	2.500	197.434	24.00	2.44	.09	197.53	2.50	1.16	.00	2.500	.000	.00	2 .0
51.441	.0050					.0007	.03	2.50	.00	1.07	.012	.00	.00	PIPE
3838.520	195.191	2.268	197.459	24.00	2.56	.10	197.56	.00	1.16	1.45	2.500	.000	.00	2 .0
28.850	.0050					.0007	.02	2.27	.18	1.07	.012	.00	.00	PIPE
3867.370	195.334	2.133	197.467	24.00	2.69	.11	197.58	.00	1.16	1.77	2.500	.000	.00	2 .0
23.359	.0050					.0007	.02	2.13	.21	1.07	.012	.00	.00	PIPE
3890.730	195.451	2.022	197.473	24.00	2.82	.12	197.60	.00	1.16	1.97	2.500	.000	.00	2 .0
20.157	.0050					.0008	.02	2.02	.24	1.07	.012	.00	.00	PIPE
3910.887	195.551	1.925	197.476	24.00	2.96	.14	197.61	.00	1.16	2.10	2.500	.000	.00	2 .0
18.091	.0050					.0009	.02	1.93	.27	1.07	.012	.00	.00	PIPE
3928.978	195.642	1.837	197.479	24.00	3.10	.15	197.63	.00	1.16	2.21	2.500	.000	.00	2 .0
10.940	.0050					.0010	.01	1.84	.29	1.07	.012	.00	.00	PIPE

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 3-2024 Time: 6:37: 0

LINE SD_A1
Q100
OBR

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT) / SF Ave	Water Elev / HF	Q (CFS) / SE Dpth	Vel (FPS) / Froude N	Vel Head / Norm Dp	Energy Grd.El. / "N"	Super Elev / X-Fall	Critical Depth / ZR	Flow Top Width / Type Ch	Height/ Dia.-FT /	Base Wt or I.D. /	ZL /	No Wth Prs/Pip /
3939.918	195.696	1.782	197.478	24.00	3.21	.16	197.64	.00	1.16	2.26	2.500	.000	.00	2 .0
HYDRAULIC JUMP														
3939.918	195.696	1.072	196.768	24.00	5.97	.55	197.32	.00	1.16	2.47	2.500	.000	.00	2 .0
10.816	.0050					.0050	.05	1.07	.82	1.07	.012	.00	.00	PIPE
3950.734	195.750	1.072	196.822	24.00	5.97	.55	197.37	.00	1.16	2.47	2.500	.000	.00	2 .0
43.867	.0050					.0049	.22	1.07	.82	1.07	.012	.00	.00	PIPE
3994.602	195.969	1.079	197.048	24.00	5.92	.54	197.59	.00	1.16	2.48	2.500	.000	.00	2 .0
23.012	.0050					.0046	.11	1.08	.81	1.07	.012	.00	.00	PIPE
4017.614	196.083	1.119	197.203	24.00	5.64	.49	197.70	.00	1.16	2.49	2.500	.000	.00	2 .0
3.316	.0050					.0040	.01	1.12	.76	1.07	.012	.00	.00	PIPE
4020.930	196.100	1.162	197.262	24.00	5.37	.45	197.71	.00	1.16	2.49	2.500	.000	.00	2 .0
4020.930	196.100	1.353	197.453	24.00	4.42	.30	197.76	.00	1.16	2.49	2.500	.000	.00	2 .0
WALL ENTRANCE														
4020.930	196.100	2.353	198.453	24.00	2.55	.10	198.55	.00	1.04	4.00	4.000	4.000	.00	0 .0
JUNCT STR	.0075					.0003	.00	2.35	.29		.012	.00	.00	BOX
4024.930	196.130	2.429	198.559	16.60	1.71	.05	198.60	.00	.81	4.00	4.000	4.000	.00	0 .0
WALL EXIT														
4024.930	196.130	2.430	198.560	16.60	5.28	.43	198.99	.00	1.47	.00	2.000	.000	.00	1 .0
51.770	.0071					.0046	.24	.00	.00	1.35	.012	.00	.00	PIPE

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 3-2024 Time: 6:37: 0

LINE SD_A1
Q100
OBR

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
WALL	ENTRANCE													
4076.700	196.500	2.314	198.814	16.60	5.28	.43	199.25	.00	1.47	.00	2.000	.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		2.500														
CD	2	3	0	.000	4.000	4.000	.000	.000	.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -

SD-A1-1

HEADING LINE NO 2 IS -

Q100 OBR

HEADING LINE NO 3 IS -

SD-A1-1 Q100

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1000.000	187.220	1	190.770

ELEMENT NO 2 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1029.150	187.600	1	.013	.000	.000	.000	0

ELEMENT NO 3 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1029.150	187.600	2	.500

ELEMENT NO 4 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1029.150	187.600	2	187.600

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 2-2024 Time: 4: 2:21

SD-A1-1
Q100 OBR
SD-A1-1 Q100

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1000.000	187.220	3.550	190.770	18.80	3.83	.23	191.00	.00	1.47	.00	2.500	.000	.00	1 .0
29.150	.0130					.0021	.06	3.55	.00	1.10	.013	.00	.00	PIPE
1029.150	187.600	3.231	190.831	18.80	3.83	.23	191.06	.00	1.47	.00	2.500	.000	.00	1 .0
WALL	ENTRANCE													
1029.150	187.600	3.531	191.131	18.80	1.33	.03	191.16	.00	.88	4.00	4.000	4.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		2.000														
CD	2	3	0	.000	4.000	4.000	.000	.000	.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
SD-A1-2
HEADING LINE NO 2 IS -
Q100 OBR
HEADING LINE NO 3 IS -
SD-A1-2 Q100

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1006.000	187.220	1	190.770

ELEMENT NO 2 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1089.250	191.380	1	.013	.000	.000	.000	0

ELEMENT NO 3 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1089.250	191.380	2	.500

ELEMENT NO 4 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1089.250	191.380	2	191.380

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 3-2024 Time: 5:55:15

SD-A1-2
Q100 OBR
SD-A1-2 Q100

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1006.000	187.220	3.550	190.770	15.80	5.03	.39	191.16	.00	1.43	.00	2.000	.000	.00	1 .0
26.217	.0500					.0049	.13	3.55	.00	.77	.013	.00	.00	PIPE
1032.217	188.530	2.368	190.898	15.80	5.03	.39	191.29	.00	1.43	.00	2.000	.000	.00	1 .0
HYDRAULIC JUMP														
1032.217	188.530	.823	189.353	15.80	12.97	2.61	191.97	.00	1.43	1.97	2.000	.000	.00	1 .0
4.627	.0500					.0381	.18	.82	2.91	.77	.013	.00	.00	PIPE
1036.844	188.761	.831	189.592	15.80	12.79	2.54	192.13	.00	1.43	1.97	2.000	.000	.00	1 .0
13.464	.0500					.0350	.47	.83	2.85	.77	.013	.00	.00	PIPE
1050.308	189.434	.861	190.295	15.80	12.20	2.31	192.60	.00	1.43	1.98	2.000	.000	.00	1 .0
9.274	.0500					.0308	.29	.86	2.66	.77	.013	.00	.00	PIPE
1059.582	189.897	.893	190.791	15.80	11.63	2.10	192.89	.00	1.43	1.99	2.000	.000	.00	1 .0
6.849	.0500					.0271	.19	.89	2.48	.77	.013	.00	.00	PIPE
1066.430	190.240	.927	191.167	15.80	11.09	1.91	193.08	.00	1.43	1.99	2.000	.000	.00	1 .0
5.332	.0500					.0238	.13	.93	2.31	.77	.013	.00	.00	PIPE
1071.762	190.506	.961	191.467	15.80	10.57	1.74	193.20	.00	1.43	2.00	2.000	.000	.00	1 .0
4.160	.0500					.0209	.09	.96	2.15	.77	.013	.00	.00	PIPE
1075.922	190.714	.998	191.712	15.80	10.08	1.58	193.29	.00	1.43	2.00	2.000	.000	.00	1 .0
3.344	.0500					.0184	.06	1.00	2.01	.77	.013	.00	.00	PIPE

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 3-2024 Time: 5:55:15

SD-A1-2 Q100 OBR SD-A1-2 Q100

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1079.265	190.881	1.036	191.917	15.80	9.61	1.43	193.35	.00	1.43	2.00	2.000	.000	.00	1 .0
2.680	.0500					.0163	.04	1.04	1.87	.77	.013	.00	.00	PIPE
1081.945	191.015	1.076	192.091	15.80	9.16	1.30	193.39	.00	1.43	1.99	2.000	.000	.00	1 .0
2.120	.0500					.0143	.03	1.08	1.74	.77	.013	.00	.00	PIPE
1084.065	191.121	1.119	192.240	15.80	8.74	1.19	193.43	.00	1.43	1.99	2.000	.000	.00	1 .0
1.709	.0500					.0127	.02	1.12	1.61	.77	.013	.00	.00	PIPE
1085.773	191.206	1.163	192.369	15.80	8.33	1.08	193.45	.00	1.43	1.97	2.000	.000	.00	1 .0
1.314	.0500					.0112	.01	1.16	1.50	.77	.013	.00	.00	PIPE
1087.087	191.272	1.210	192.482	15.80	7.94	.98	193.46	.00	1.43	1.96	2.000	.000	.00	1 .0
.975	.0500					.0099	.01	1.21	1.39	.77	.013	.00	.00	PIPE
1088.062	191.321	1.260	192.581	15.80	7.57	.89	193.47	.00	1.43	1.93	2.000	.000	.00	1 .0
.679	.0500					.0088	.01	1.26	1.28	.77	.013	.00	.00	PIPE
1088.740	191.355	1.313	192.668	15.80	7.22	.81	193.48	.00	1.43	1.90	2.000	.000	.00	1 .0
.394	.0500					.0078	.00	1.31	1.19	.77	.013	.00	.00	PIPE
1089.134	191.374	1.370	192.744	15.80	6.88	.74	193.48	.00	1.43	1.86	2.000	.000	.00	1 .0
.116	.0500					.0070	.00	1.37	1.09	.77	.013	.00	.00	PIPE
1089.250	191.380	1.433	192.813	15.80	6.56	.67	193.48	.00	1.43	1.80	2.000	.000	.00	1 .0
WALL	ENTRANCE													

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 3-2024 Time: 5:55:15

SD-A1-2
Q100
SD-A1-2 OBR
Q100

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1089.250	191.380	2.433	193.813	15.80	1.62	.04	193.85	.00	.79	4.00	4.000	4.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.500														
CD	2	3	0	.000	4.000	4.000	.000	.000	.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
SD-A1-3

HEADING LINE NO 2 IS -
Q100 OBR

HEADING LINE NO 3 IS -
SD-A1-3 Q100

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1005.500	188.080	1	191.770

ELEMENT NO 2 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1067.640	188.390	1	.013	.000	.000	.000	0

ELEMENT NO 3 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1067.640	188.390	2	.500

ELEMENT NO 4 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1067.640	188.390	2	188.390

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 2-2024 Time: 4: 2:51

SD-A1-3
Q100 OBR
SD-A1-3 Q100

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1005.500	188.080	3.690	191.770	2.40	1.36	.03	191.80	.00	.59	.00	1.500	.000	.00	1 .0
62.140	.0050					.0005	.03	3.69	.00	.59	.013	.00	.00	PIPE
1067.640	188.390	3.412	191.802	2.40	1.36	.03	191.83	.00	.59	.00	1.500	.000	.00	1 .0
WALL	ENTRANCE													
1067.640	188.390	3.455	191.845	2.40	.17	.00	191.85	.00	.22	4.00	4.000	4.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.500														
CD	2	3	0	.000	4.000	4.000	.000	.000	.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
SD-A1-4

HEADING LINE NO 2 IS -
Q100 OBR

HEADING LINE NO 3 IS -
SD-A1-4 Q100

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1005.500	189.330	1	192.800

ELEMENT NO 2 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1035.630	189.480	1	.013	.000	.000	.000	0

ELEMENT NO 3 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1035.630	189.480	2	.500

ELEMENT NO 4 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1035.630	189.480	2	189.480

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 2-2024 Time: 4: 3: 3

SD-A1-4
Q100 OBR
SD-A1-4 Q100

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1005.500	189.330	3.470	192.800	15.20	8.60	1.15	193.95	.00	1.41	.00	1.500	.000	.00	1 .0
30.130	.0050					.0209	.63	3.47	.00	1.50	.013	.00	.00	PIPE
1035.630	189.480	3.951	193.431	15.20	8.60	1.15	194.58	.00	1.41	.00	1.500	.000	.00	1 .0
WALL	ENTRANCE													
1035.630	189.480	5.653	195.133	15.20	.95	.01	195.15	.00	.77	4.00	4.000	4.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		2.500														
CD	2	3	0	.000	4.000	4.000	.000	.000	.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -

SD-A1-5

HEADING LINE NO 2 IS -

Q100 OBR

HEADING LINE NO 3 IS -

SD-A1-5 Q100

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1005.500	189.720	1	193.900

ELEMENT NO 2 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1086.500	190.200	1	.013	.000	.000	.000	0

ELEMENT NO 3 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1086.500	190.200	2	.500

ELEMENT NO 4 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1086.500	190.200	2	190.200

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 2-2024 Time: 4: 3:37

SD-A1-5
Q100 OBR
SD-A1-5 Q100

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1005.500	189.720	4.180	193.900	12.50	2.55	.10	194.00	.00	1.19	.00	2.500	.000	.00	1 .0
81.000	.0059					.0009	.08	4.18	.00	1.09	.013	.00	.00	PIPE
1086.500	190.200	3.775	193.975	12.50	2.55	.10	194.08	.00	1.19	.00	2.500	.000	.00	1 .0
WALL	ENTRANCE													
1086.500	190.200	3.912	194.112	12.50	.80	.01	194.12	.00	.67	4.00	4.000	4.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING PAGE 1

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		2.000														
CD	2	3	0	.000	4.000	4.000	.000	.000	.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
SD-A1-6

HEADING LINE NO 2 IS -
Q100 OBR

HEADING LINE NO 3 IS -
SD-A1-6 Q100

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1004.500	192.060	1	196.480

ELEMENT NO 2 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1089.730	192.600	1	.013	.000	.000	.000	0

ELEMENT NO 3 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1089.730	192.600	2	.500

ELEMENT NO 4 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1089.730	192.600	2	194.600

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 2-2024 Time: 4: 3:53

SD-A1-6
Q100 OBR
SD-A1-6 Q100

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1004.500	192.060	4.420	196.480	9.80	3.12	.15	196.63	.00	1.12	.00	2.000	.000	.00	1 .0
85.230	.0063					.0019	.16	4.42	.00	1.05	.013	.00	.00	PIPE
1089.730	192.600	4.040	196.640	9.80	3.12	.15	196.79	.00	1.12	.00	2.000	.000	.00	1 .0
WALL	ENTRANCE													
1089.730	192.600	4.258	196.858	9.80	.61	.01	196.86	.00	.57	4.00	4.000	4.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING PAGE 1

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		2.000														
CD	2	3	0	.000	4.000	4.000	.000	.000	.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
SD-A1-7

HEADING LINE NO 2 IS -
Q100 OBR

HEADING LINE NO 3 IS -
SD-A1-7 Q100

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1000.000	193.070	1	197.110

ELEMENT NO 2 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1075.550	193.500	1	.013	.000	.000	.000	0

ELEMENT NO 3 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1075.550	193.500	2	.500

ELEMENT NO 4 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1075.550	193.500	2	195.500

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 2-2024 Time: 4: 4: 4

SD-A1-7
Q100 OBR
SD-A1-7 Q100

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1000.000	193.070	4.040	197.110	11.80	3.76	.22	197.33	.00	1.23	.00	2.000	.000	.00	1 .0
75.550	.0057					.0027	.21	4.04	.00	1.22	.013	.00	.00	PIPE
1075.550	193.500	3.816	197.316	11.80	3.76	.22	197.53	.00	1.23	.00	2.000	.000	.00	1 .0
WALL	ENTRANCE													
1075.550	193.500	4.131	197.631	11.80	.74	.01	197.64	.00	.65	4.00	4.000	4.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		2.500														
CD	2	3	0	.000	4.000	4.000	.000	.000	.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
SD-A1-8

HEADING LINE NO 2 IS -
Q100 OBR

HEADING LINE NO 3 IS -
SD-A1-8 Q100

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1004.500	193.070	1	197.110

ELEMENT NO 2 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1030.700	193.200	1	.013	.000	.000	.000	0

ELEMENT NO 3 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1030.700	193.200	2	.500

ELEMENT NO 4 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1030.700	193.200	2	193.200

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 2-2024 Time: 4: 4:22

SD-A1-8
Q100 OBR
SD-A1-8 Q100

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1004.500	193.070	4.040	197.110	28.40	5.79	.52	197.63	.00	1.82	.00	2.500	.000	.00	1 .0
26.200	.0050					.0048	.13	4.04	.00	2.01	.013	.00	.00	PIPE
1030.700	193.200	4.036	197.236	28.40	5.79	.52	197.76	.00	1.82	.00	2.500	.000	.00	1 .0
WALL	ENTRANCE													
1030.700	193.200	4.742	197.942	28.40	1.77	.05	197.99	.00	1.16	4.00	4.000	4.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		2.000														
CD	2	3	0	.000	4.000	4.000	.000	.000	.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
SD-A1-9

HEADING LINE NO 2 IS -
Q100 OBR

HEADING LINE NO 3 IS -
SD-A1-9 Q100

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1002.000	196.130	1	198.560

ELEMENT NO 2 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1056.680	196.500	1	.013	.000	.000	.000	0

ELEMENT NO 3 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1056.680	196.500	2	.500

ELEMENT NO 4 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1056.680	196.500	2	198.500

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 3-2024 Time: 6:21:59

SD-A1-9
Q100 OBR
SD-A1-9 Q100

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1002.000	196.130	2.430	198.560	16.60	5.28	.43	198.99	.00	1.47	.00	2.000	.000	.00	1 .0
54.680	.0068					.0054	.29	2.43	.00	1.47	.013	.00	.00	PIPE
1056.680	196.500	2.354	198.854	16.60	5.28	.43	199.29	.00	1.47	.00	2.000	.000	.00	1 .0
WALL	ENTRANCE													
1056.680	196.500	2.959	199.459	16.60	1.40	.03	199.49	.00	.81	4.00	4.000	4.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		2.000														
CD	2	3	0	.000	4.000	4.000	.000	.000	.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
SD-A1-10

HEADING LINE NO 2 IS -
Q100 OBR

HEADING LINE NO 3 IS -
SD-A1-10 Q100

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	992.080	196.130	1	198.560

ELEMENT NO 2 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1195.770	197.150	1	.013	.000	.000	.000	0

ELEMENT NO 3 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1195.770	197.150	2	.500

ELEMENT NO 4 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1195.770	197.150	2	197.150

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 3-2024 Time: 6:40:50

SD-A1-10
Q100 OBR
SD-A1-10 Q100

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
992.080	196.130	2.430	198.560	11.60	3.69	.21	198.77	.00	1.22	.00	2.000	.000	.00	1 .0
180.801	.0050					.0026	.47	2.43	.00	1.26	.013	.00	.00	PIPE
1172.881	197.035	2.000	199.035	11.60	3.69	.21	199.25	.00	1.22	.00	2.000	.000	.00	1 .0
22.889	.0050					.0024	.06	2.00	.00	1.26	.013	.00	.00	PIPE
1195.770	197.150	1.936	199.086	11.60	3.73	.22	199.30	.00	1.22	.70	2.000	.000	.00	1 .0
WALL	ENTRANCE													
1195.770	197.150	2.936	200.086	11.60	.99	.02	200.10	.00	.64	4.00	4.000	4.000	.00	0 .0

FILE: SD-A1-11.WSW W S P G W - EDIT LISTING - Version 14.11 Date: 6- 3-2024 Time: 6:27:33

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING PAGE 1

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		2.000														
CD	2	3	0	.000	4.000	4.000	.000	.000	.00										

W S P G W PAGE NO 1

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -

SD-A1-11

HEADING LINE NO 2 IS -

Q100 OBR

HEADING LINE NO 3 IS -

SD-A1-11 Q100

W S P G W PAGE NO 2

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1004.500	190.540	1	195.430

ELEMENT NO 2 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1101.730	191.100	1	.013	.000	.000	.000	0

ELEMENT NO 3 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1101.730	191.100	2	.500

ELEMENT NO 4 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1101.730	191.100	2	194.100

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 3-2024 Time: 6:27:34

SD-A1-11
Q100 OBR
SD-A1-11 Q100

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1004.500	190.540	4.890	195.430	11.20	3.57	.20	195.63	.00	1.20	.00	2.000	.000	.00	1 .0
97.230	.0058					.0025	.24	4.89	.00	1.18	.013	.00	.00	PIPE
1101.730	191.100	4.568	195.668	11.20	3.57	.20	195.87	.00	1.20	.00	2.000	.000	.00	1 .0
WALL	ENTRANCE													
1101.730	191.100	4.853	195.953	11.20	.70	.01	195.96	.00	.62	4.00	4.000	4.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.500														
CD	2	2	0	.000	10.000	3.000			.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -

OCEAN BREEZE RANCH

HEADING LINE NO 2 IS -

Q100

HEADING LINE NO 3 IS -

LINE A2

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	736.310	182.000	2	183.240

ELEMENT NO 2 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	736.310	182.000	1

ELEMENT NO 3 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1065.730	184.400	1	.013	.000	.000	.000	0

ELEMENT NO 4 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1065.730	184.400	2	.200

ELEMENT NO 5 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1065.730	184.400	2	189.730

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 3-2024 Time: 7:57:33

OCEAN BREEZE RANCH
Q100
LINE A2

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
736.310	182.000	.467	182.467	13.50	9.63	1.44	183.91	.00	.86	3.00	10.000	3.000	.00	0 .0
WALL EXIT														
736.310	182.000	1.367	183.367	13.50	7.99	.99	184.36	.00	1.37	.85	1.500	.000	.00	1 .0
6.369	.0073					.0149	.09	1.37	1.00	1.50	.013	.00	.00	PIPE
742.679	182.046	1.500	183.546	13.50	7.64	.91	184.45	.00	1.37	.00	1.500	.000	.00	1 .0
323.051	.0073					.0159	5.15	1.50	.00	1.50	.013	.00	.00	PIPE
1065.730	184.400	4.482	188.882	13.50	7.64	.91	189.79	.00	1.37	.00	1.500	.000	.00	1 .0
WALL ENTRANCE														
1065.730	184.400	5.558	189.958	13.50	.81	.01	189.97	.00	.86	3.00	10.000	3.000	.00	0 .0

FILE: LINE_A3.WSW W S P G W - EDIT LISTING - Version 14.11 Date: 6- 2-2024 Time: 1:13:55

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING PAGE 1

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	2	0	.000	4.000	11.000			.00										
CD	2	4	2		3.000														

W S P G W PAGE NO 1

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -

OBR

HEADING LINE NO 2 IS -

LINE A3

HEADING LINE NO 3 IS -

100 YR UNDETAINED FLOW-EMERGENCY "SPILLWAY"

W S P G W PAGE NO 2

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1000.000	187.020	1	187.020

ELEMENT NO 2 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1000.000	187.020	2

ELEMENT NO 3 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1034.300	187.190	2	.013	.000	.000	.000	0

ELEMENT NO 4 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1034.300	187.190	1	.200

ELEMENT NO 5 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1034.300	187.190	1	187.190

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 2-2024 Time: 1:13:58

OBR

LINE A3

100 YR UNDETAINED FLOW-EMERGENCY "SPILLWAY"

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1000.000	187.020	.650	187.670	69.20	9.67	1.45	189.12	.00	1.07	11.00	4.000	11.000	.00	0 .0
WALL	EXIT													
1000.000	187.020	1.911	188.931	69.20	7.28	.82	189.75	.00	1.91	2.89	3.000	.000	.00	2 .0
6.251	.0050					.0050	.03	1.91	.71	1.91	.013	.00	.00	PIPE
1006.251	187.051	1.915	188.966	69.20	7.26	.82	189.79	.00	1.91	2.88	3.000	.000	.00	2 .0
28.049	.0050					.0049	.14	1.91	.70	1.91	.013	.00	.00	PIPE
1034.300	187.190	1.915	189.105	69.20	7.26	.82	189.92	.00	1.91	2.88	3.000	.000	.00	2 .0
WALL	ENTRANCE													
1034.300	187.190	2.915	190.105	69.20	2.16	.07	190.18	.00	1.07	11.00	4.000	11.000	.00	0 .0

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 5-21-2024 Time: 4:45:20

SD-A4
Q100 05/16/2024
SD-A4 Q100 DOWNSTREAM

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
982.970	187.420	2.460	189.880	26.30	5.38	.45	190.33	.00	1.75	.63	2.500	.000	.00	0 .0
WALL EXIT														
982.970	187.420	2.460	189.880	26.30	5.38	.45	190.33	.00	1.75	.63	2.500	.000	.00	1 .0
22.490	.0049					.0037	.08	2.46	.34	1.88	.013	.00	.00	PIPE
1005.460	187.530	2.428	189.958	26.30	5.40	.45	190.41	.00	1.75	.83	2.500	.000	.00	1 .0
WALL ENTRANCE														
1005.460	187.530	3.428	190.958	26.30	1.92	.06	191.02	.00	1.10	4.00	4.000	4.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	2	0	.000	4.000	4.000			.00										
CD	2	4	1		2.500														

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
SD-A4

HEADING LINE NO 2 IS -
Q100 05/16/2024

HEADING LINE NO 3 IS -
SD-A4 Q100 DOWNSTREAM

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	982.970	187.420	2	189.880

ELEMENT NO 2 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	982.970	187.420	2

ELEMENT NO 3 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1005.460	187.530	2	.013	.000	.000	.000	0

ELEMENT NO 4 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1005.460	187.530	1	.500

ELEMENT NO 5 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1005.460	187.530	1	187.530

Oldcastle Infrastructure
A CRH COMPANY

Nutrient Separating Baffle Box® (NSBB™) Head Loss Calculator

V2020.01; *6/6/2024*

Project Information

Project Name:	**Ocean Breeze Ranch**
Location:	**Basin 2A-2**
Design Basis:	**80% of 150µm**
Screen Basket Capacity (% Full):	**0% (Empty)**
Treatment Flow Rate (cfs):	**0.79**
Peak Flow Rate (cfs):	**26.30**
NSBB Model:	**NSBB-612**

Inlet & Outlet Pipe Information

Inlet Pipe Diameter (in):	**30**
Inlet Invert Elevation (ft):	**187.58**
Outlet Pipe Diameter (in):	**30**
Outlet Invert Elevation (ft):	**187.50**
Outlet Slope %:	**0.50%**
Manning's Roughness Coefficient (n):	**0.012**
Tailwater Present?	**Yes**
Tailwater Elevation:	190.05

Outlet Pipe Flow Characteristics

	Treatment	*Peak*
Normal Depth During Design Flow (ft):	**0.273**	**1.75**
Flow Area (sq ft):	**0.29**	**3.66**
Velocity (ft/s):	**2.72**	**7.18**
Wetted Perimeter (ft):	**1.68**	**4.95**
Downstream Depth of Flow (ft):	**0.296**	**2.550**

NSBB Discharge Coefficients

Screen Orifice Coefficient, Co:	**0.60**
Outlet Pipe Entrance Coefficient, K:	**0.20**

System Design Summary

Rim Elevation (ft):	**194.48**
Rim to Invert Out Depth (ft):	**6.98**
Upstream WSE during Treatment (ft):	**187.796**
Upstream WSE during Peak Flow (ft):	**190.529**

Disclaimer: Calculations are best estimate based on information available and are intended only for use by the party to whom they were transmitted and for the project referenced.

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		2.500														
CD	2	4	1		1.500														
CD	3	3	0	.000	6.000	4.000	.000	.000	.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -

LINE_A4

HEADING LINE NO 2 IS -

Q100

HEADING LINE NO 3 IS -

OBR

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1013.430	187.610	3	190.530

ELEMENT NO 2 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1013.430	187.610	3

WARNING - ADJACENT SECTIONS ARE NOT IDENTICAL - SEE SECTION NUMBERS AND CHANNEL DEFINITIONS

ELEMENT NO 3 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1049.480	187.790	1	.013	32.651	-63.260	.000	0

ELEMENT NO 4 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1049.480	187.790	3	.200

ELEMENT NO 5 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1053.480	187.890	3	.013	.000	.000	.000	0

ELEMENT NO 6 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1053.480	187.890	1

ELEMENT NO 7 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1200.620	188.630	1	.013	1245.274	6.770	.000	0

ELEMENT NO 8 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1200.620	188.630	3	.200

ELEMENT NO 9 IS A JUNCTION * * * * * *

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	1204.620	188.730	3	2	2	.013	4.400	4.700	188.730	188.730	65.300	-65.300

RADIUS	ANGLE
.000	.000

ELEMENT NO 10 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT

```
                          1204.620  188.730    1
ELEMENT NO  11 IS A REACH            *         *     *
                  U/S DATA   STATION    INVERT  SECT              N                        RADIUS    ANGLE     ANG PT  MAN H
                             1470.300  190.050    1              .013                     3125.738    4.870      .000     0
ELEMENT NO  12 IS A  WALL  ENTRANCE                  *
                  U/S DATA   STATION    INVERT  SECT              FP
                             1470.300  190.050    3              .200
                                                 W S P G W                                                    PAGE NO   3
                        WATER SURFACE PROFILE - ELEMENT CARD LISTING
ELEMENT NO  13 IS A REACH            *         *     *
                  U/S DATA   STATION    INVERT  SECT              N                        RADIUS    ANGLE     ANG PT  MAN H
                             1474.300  190.150    3              .013                       84.883    2.700      .000     0
ELEMENT NO  14 IS A  WALL  EXIT                      *
                  U/S DATA   STATION    INVERT  SECT
                             1474.300  190.150    1
ELEMENT NO  15 IS A REACH            *         *     *
                  U/S DATA   STATION    INVERT  SECT              N                        RADIUS    ANGLE     ANG PT  MAN H
                             1522.360  190.390    1              .013                     1019.864    2.700      .000     0
ELEMENT NO  16 IS A REACH            *         *     *
                  U/S DATA   STATION    INVERT  SECT              N                        RADIUS    ANGLE     ANG PT  MAN H
                             1668.450  191.120    1              .013                     3100.125    2.700      .000     0
ELEMENT NO  17 IS A  WALL  ENTRANCE                  *
                  U/S DATA   STATION    INVERT  SECT              FP
                             1668.450  191.120    3              .200
ELEMENT NO  18 IS A JUNCTION         *         *     *     *              *                  *              *
                  U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3        Q4     INVERT-3 INVERT-4  PHI 3  PHI 4
                             1672.450  191.330    3     2     2   .013     1.400     2.500   191.330   191.330 -90.000   90.000
                                                                                          RADIUS    ANGLE
                                                                                            .000    .000
ELEMENT NO  19 IS A  WALL  EXIT                      *
                  U/S DATA   STATION    INVERT  SECT
                             1672.450  191.330    1
ELEMENT NO  20 IS A REACH            *         *     *
                  U/S DATA   STATION    INVERT  SECT              N                        RADIUS    ANGLE     ANG PT  MAN H
                             1898.900  193.590    1              .013                     3816.069    3.400      .000     0
ELEMENT NO  21 IS A  WALL  ENTRANCE                  *
                  U/S DATA   STATION    INVERT  SECT              FP
                             1898.900  193.590    3              .200
ELEMENT NO  22 IS A JUNCTION         *         *     *     *              *                  *              *
                  U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3        Q4     INVERT-3 INVERT-4  PHI 3  PHI 4
                             1902.900  193.920    3     2     0   .013     4.200      .000   193.920      .000  90.000     .000
                                                                                          RADIUS    ANGLE
                                                                                            .000    .000
                                                 W S P G W                                                    PAGE NO   4
                        WATER SURFACE PROFILE - ELEMENT CARD LISTING
ELEMENT NO  23 IS A  WALL  EXIT                      *
                  U/S DATA   STATION    INVERT  SECT
                             1902.900  193.920    1
ELEMENT NO  24 IS A REACH            *         *     *
                  U/S DATA   STATION    INVERT  SECT              N                        RADIUS    ANGLE     ANG PT  MAN H
```

```
                          2149.650  196.390    1              .013                      4158.155    3.400      .000     0
ELEMENT NO  25 IS A  WALL  ENTRANCE                    *
                  U/S DATA   STATION    INVERT  SECT             FP
                             2149.650  196.390    3              .500
ELEMENT NO  26 IS A SYSTEM HEADWORKS                   *                      *
                  U/S DATA   STATION    INVERT  SECT                                W S ELEV
                             2149.650  196.390    3                                 196.390
```

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 5-29-2024 Time: 8:18: 9

LINE_A4
Q100
OBR

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT) / SF Ave	Water Elev / HF	Q (CFS) / SE Dpth	Vel (FPS) / Froude N	Vel Head / Norm Dp	Energy Grd.El. / "N"	Super Elev / X-Fall	Critical Depth / ZR	Flow Top Width / Type Ch	Height/Dia.-FT /	Base Wt or I.D. /	ZL /	No Wth Prs/Pip /
1013.430	187.610	2.920	190.530	26.30	2.25	.08	190.61	.02	1.10	4.00	6.000	4.000	.00	0 .0
WALL	EXIT													
1013.430	187.610	2.920	190.530	26.30	5.36	.45	190.98	.00	1.75	.00	2.500	.000	.00	1 .0
36.050	.0050					.0041	.15	.00	.00	1.87	.013	.00	.00	PIPE
1049.480	187.790	2.963	190.753	26.30	5.36	.45	191.20	.00	1.75	.00	2.500	.000	.00	1 .0
WALL	ENTRANCE													
1049.480	187.790	3.430	191.220	26.30	1.92	.06	191.28	.00	1.10	4.00	6.000	4.000	.00	0 .0
4.000	.0250					.0002	.00	3.43	.18	.61	.013	.00	.00	BOX
1053.480	187.890	3.327	191.217	26.30	1.98	.06	191.28	.00	1.10	4.00	6.000	4.000	.00	0 .0
WALL	EXIT													
1053.480	187.890	3.328	191.218	26.30	5.36	.45	191.66	.00	1.75	.00	2.500	.000	.00	1 .0
147.140	.0050					.0041	.60	.00	.00	1.86	.013	.00	.00	PIPE
1200.620	188.630	3.217	191.847	26.30	5.36	.45	192.29	.00	1.75	.00	2.500	.000	.00	1 .0
WALL	ENTRANCE													
1200.620	188.630	3.692	192.322	26.30	1.78	.05	192.37	.00	1.10	4.00	6.000	4.000	.00	0 .0
JUNCT STR	.0250					.0001	.00	3.69	.16		.013	.00	.00	BOX
1204.620	188.730	3.628	192.358	17.20	1.19	.02	192.38	.00	.83	4.00	6.000	4.000	.00	0 .0
WALL	EXIT													

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 5-29-2024 Time: 8:18: 9

LINE_A4
Q100
OBR

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1204.620	188.730	3.629	192.359	17.20	3.50	.19	192.55	.00	1.40	.00	2.500	.000	.00	1 .0
265.680	.0050					.0018	.47	.00	.00	1.39	.013	.00	.00	PIPE
1470.300	190.050	2.785	192.835	17.20	3.50	.19	193.03	.00	1.40	.00	2.500	.000	.00	1 .0
WALL	ENTRANCE													
1470.300	190.050	2.975	193.025	17.20	1.45	.03	193.06	.00	.83	4.00	6.000	4.000	.00	0 .0
4.000	.0250					.0001	.00	2.98	.15	.46	.013	.00	.00	BOX
1474.300	190.150	2.874	193.024	17.20	1.50	.03	193.06	.00	.83	4.00	6.000	4.000	.00	0 .0
WALL	EXIT													
1474.300	190.150	2.874	193.024	17.20	3.50	.19	193.21	.00	1.40	.00	2.500	.000	.00	1 .0
48.060	.0050					.0018	.08	.00	.00	1.39	.013	.00	.00	PIPE
1522.360	190.390	2.725	193.115	17.20	3.50	.19	193.31	.00	1.40	.00	2.500	.000	.00	1 .0
70.906	.0050					.0017	.12	.00	.00	1.39	.013	.00	.00	PIPE
1593.266	190.744	2.500	193.244	17.20	3.50	.19	193.43	2.50	1.40	.00	2.500	.000	.00	1 .0
62.984	.0050					.0016	.10	2.50	.00	1.39	.013	.00	.00	PIPE
1656.250	191.059	2.268	193.327	17.20	3.68	.21	193.54	.00	1.40	1.45	2.500	.000	.00	1 .0
12.200	.0050					.0016	.02	2.27	.36	1.39	.013	.00	.00	PIPE
1668.450	191.120	2.220	193.340	17.20	3.73	.22	193.56	.00	1.40	1.58	2.500	.000	.00	1 .0
WALL	ENTRANCE													

LINE_A4
Q100
OBR

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1668.450	191.120	3.220	194.340	17.20	1.34	.03	194.37	.00	.83	4.00	6.000	4.000	.00	0 .0
JUNCT STR	.0525					.0001	.00	3.22	.13		.013	.00	.00	BOX
1672.450	191.330	3.031	194.361	13.30	1.10	.02	194.38	.00	.70	4.00	6.000	4.000	.00	0 .0
WALL	EXIT													
1672.450	191.330	3.031	194.361	13.30	2.71	.11	194.48	.00	1.23	.00	2.500	.000	.00	1 .0
59.729	.0100					.0010	.06	.00	.00	.98	.013	.00	.00	PIPE
1732.179	191.926	2.500	194.426	13.30	2.71	.11	194.54	2.50	1.23	.00	2.500	.000	.00	1 .0
24.380	.0100					.0010	.02	2.50	.00	.98	.013	.00	.00	PIPE
1756.559	192.169	2.268	194.438	13.30	2.84	.13	194.56	.00	1.23	1.45	2.500	.000	.00	1 .0
13.564	.0100					.0010	.01	2.27	.28	.98	.013	.00	.00	PIPE
1770.123	192.305	2.133	194.438	13.30	2.98	.14	194.58	.00	1.23	1.77	2.500	.000	.00	1 .0
10.861	.0100					.0010	.01	2.13	.33	.98	.013	.00	.00	PIPE
1780.985	192.413	2.022	194.435	13.30	3.13	.15	194.59	.00	1.23	1.97	2.500	.000	.00	1 .0
9.250	.0100					.0011	.01	2.02	.37	.98	.013	.00	.00	PIPE
1790.234	192.506	1.925	194.431	13.30	3.28	.17	194.60	.00	1.23	2.10	2.500	.000	.00	1 .0
8.176	.0100					.0013	.01	1.93	.42	.98	.013	.00	.00	PIPE
1798.410	192.587	1.837	194.424	13.30	3.44	.18	194.61	.00	1.23	2.21	2.500	.000	.00	1 .0
7.187	.0100					.0014	.01	1.84	.46	.98	.013	.00	.00	PIPE

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 5-29-2024 Time: 8:18: 9

LINE_A4
Q100
OBR

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1805.597	192.659	1.757	194.416	13.30	3.61	.20	194.62	.00	1.23	2.29	2.500	.000	.00	1 .0
6.400	.0100					.0016	.01	1.76	.50	.98	.013	.00	.00	PIPE
1811.997	192.723	1.683	194.406	13.30	3.78	.22	194.63	.00	1.23	2.35	2.500	.000	.00	1 .0
5.697	.0100					.0018	.01	1.68	.54	.98	.013	.00	.00	PIPE
1817.694	192.780	1.614	194.394	13.30	3.97	.24	194.64	.00	1.23	2.39	2.500	.000	.00	1 .0
5.077	.0100					.0020	.01	1.61	.59	.98	.013	.00	.00	PIPE
1822.771	192.830	1.549	194.379	13.30	4.16	.27	194.65	.00	1.23	2.43	2.500	.000	.00	1 .0
3.732	.0100					.0022	.01	1.55	.64	.98	.013	.00	.00	PIPE
1826.503	192.867	1.488	194.356	13.30	4.37	.30	194.65	.00	1.23	2.45	2.500	.000	.00	1 .0
HYDRAULIC JUMP														
1826.503	192.867	.985	193.853	13.30	7.40	.85	194.70	.00	1.23	2.44	2.500	.000	.00	1 .0
39.419	.0100					.0092	.36	.99	1.52	.98	.013	.00	.00	PIPE
1865.922	193.261	1.020	194.281	13.30	7.06	.77	195.05	.00	1.23	2.46	2.500	.000	.00	1 .0
16.811	.0100					.0081	.14	1.02	1.42	.98	.013	.00	.00	PIPE
1882.733	193.429	1.058	194.487	13.30	6.73	.70	195.19	.00	1.23	2.47	2.500	.000	.00	1 .0
8.587	.0100					.0071	.06	1.06	1.33	.98	.013	.00	.00	PIPE
1891.319	193.514	1.097	194.611	13.30	6.41	.64	195.25	.00	1.23	2.48	2.500	.000	.00	1 .0
4.811	.0100					.0062	.03	1.10	1.24	.98	.013	.00	.00	PIPE

LINE_A4
Q100
OBR

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1896.131	193.562	1.137	194.699	13.30	6.12	.58	195.28	.00	1.23	2.49	2.500	.000	.00	1 .0
2.174	.0100					.0055	.01	1.14	1.15	.98	.013	.00	.00	PIPE
1898.305	193.584	1.180	194.764	13.30	5.83	.53	195.29	.00	1.23	2.50	2.500	.000	.00	1 .0
.595	.0100					.0048	.00	1.18	1.08	.98	.013	.00	.00	PIPE
1898.900	193.590	1.226	194.816	13.30	5.55	.48	195.30	.00	1.23	2.50	2.500	.000	.00	1 .0
WALL	ENTRANCE													
1898.900	193.590	2.226	195.816	13.30	1.49	.03	195.85	.00	.70	4.00	6.000	4.000	.00	0 .0
JUNCT STR	.0825					.0001	.00	2.23	.18		.013	.00	.00	BOX
1902.900	193.920	1.931	195.851	9.10	1.18	.02	195.87	.00	.54	4.00	6.000	4.000	.00	0 .0
WALL	EXIT													
1902.900	193.920	1.931	195.851	9.10	2.24	.08	195.93	.00	1.01	2.10	2.500	.000	.00	1 .0
8.578	.0100					.0006	.01	1.93	.28	.80	.013	.00	.00	PIPE
1911.479	194.006	1.842	195.848	9.10	2.35	.09	195.93	.00	1.01	2.20	2.500	.000	.00	1 .0
7.636	.0100					.0007	.00	1.84	.31	.80	.013	.00	.00	PIPE
1919.115	194.082	1.762	195.844	9.10	2.46	.09	195.94	.00	1.01	2.28	2.500	.000	.00	1 .0
7.070	.0100					.0007	.01	1.76	.34	.80	.013	.00	.00	PIPE
1926.184	194.153	1.687	195.840	9.10	2.58	.10	195.94	.00	1.01	2.34	2.500	.000	.00	1 .0
6.384	.0100					.0008	.01	1.69	.37	.80	.013	.00	.00	PIPE

LINE_A4
Q100
OBR

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1932.568	194.217	1.618	195.835	9.10	2.71	.11	195.95	.00	1.01	2.39	2.500	.000	.00	1 .0
5.903	.0100					.0009	.01	1.62	.40	.80	.013	.00	.00	PIPE
1938.471	194.276	1.553	195.829	9.10	2.84	.13	195.95	.00	1.01	2.43	2.500	.000	.00	1 .0
5.408	.0100					.0010	.01	1.55	.44	.80	.013	.00	.00	PIPE
1943.879	194.330	1.492	195.822	9.10	2.98	.14	195.96	.00	1.01	2.45	2.500	.000	.00	1 .0
5.009	.0100					.0012	.01	1.49	.47	.80	.013	.00	.00	PIPE
1948.888	194.380	1.434	195.814	9.10	3.12	.15	195.97	.00	1.01	2.47	2.500	.000	.00	1 .0
4.594	.0100					.0013	.01	1.43	.51	.80	.013	.00	.00	PIPE
1953.483	194.426	1.379	195.805	9.10	3.28	.17	195.97	.00	1.01	2.49	2.500	.000	.00	1 .0
4.159	.0100					.0015	.01	1.38	.55	.80	.013	.00	.00	PIPE
1957.642	194.468	1.327	195.795	9.10	3.44	.18	195.98	.00	1.01	2.50	2.500	.000	.00	1 .0
3.698	.0100					.0017	.01	1.33	.59	.80	.013	.00	.00	PIPE
1961.340	194.505	1.278	195.783	9.10	3.60	.20	195.98	.00	1.01	2.50	2.500	.000	.00	1 .0
2.187	.0100					.0019	.00	1.28	.63	.80	.013	.00	.00	PIPE
1963.527	194.527	1.231	195.758	9.10	3.78	.22	195.98	.00	1.01	2.50	2.500	.000	.00	1 .0
HYDRAULIC JUMP														
1963.527	194.527	.800	195.327	9.10	6.72	.70	196.03	.00	1.01	2.33	2.500	.000	.00	1 .0
77.600	.0100					.0100	.78	.80	1.55	.80	.013	.00	.00	PIPE

LINE_A4
Q100
OBR

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
2041.126	195.304	.800	196.104	9.10	6.72	.70	196.80	.00	1.01	2.33	2.500	.000	.00	1 .0
60.169	.0100					.0097	.58	.80	1.55	.80	.013	.00	.00	PIPE
2101.296	195.906	.813	196.719	9.10	6.56	.67	197.39	.00	1.01	2.34	2.500	.000	.00	1 .0
26.147	.0100					.0088	.23	.81	1.50	.80	.013	.00	.00	PIPE
2127.443	196.168	.842	197.010	9.10	6.26	.61	197.62	.00	1.01	2.36	2.500	.000	.00	1 .0
10.978	.0100					.0077	.08	.84	1.41	.80	.013	.00	.00	PIPE
2138.421	196.278	.872	197.150	9.10	5.97	.55	197.70	.00	1.01	2.38	2.500	.000	.00	1 .0
5.918	.0100					.0068	.04	.87	1.31	.80	.013	.00	.00	PIPE
2144.339	196.337	.903	197.240	9.10	5.69	.50	197.74	.00	1.01	2.40	2.500	.000	.00	1 .0
3.350	.0100					.0059	.02	.90	1.23	.80	.013	.00	.00	PIPE
2147.689	196.370	.935	197.305	9.10	5.43	.46	197.76	.00	1.01	2.42	2.500	.000	.00	1 .0
1.566	.0100					.0052	.01	.94	1.15	.80	.013	.00	.00	PIPE
2149.256	196.386	.969	197.355	9.10	5.17	.42	197.77	.00	1.01	2.44	2.500	.000	.00	1 .0
.394	.0100					.0045	.00	.97	1.07	.80	.013	.00	.00	PIPE
2149.650	196.390	1.006	197.396	9.10	4.93	.38	197.77	.00	1.01	2.45	2.500	.000	.00	1 .0
WALL ENTRANCE														
2149.650	196.390	2.006	198.396	9.10	1.13	.02	198.42	.00	.54	4.00	6.000	4.000	.00	0 .0

FILE: SD-A4-1.WSW W S P G W - EDIT LISTING - Version 14.11 Date: 5-29-2024 Time: 4:39:33

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING PAGE 1

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.500														
CD	2	3	0	.000	4.000	4.000	.000	.000	.00										

W S P G W PAGE NO 1

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
SD-A4-1
HEADING LINE NO 2 IS -
Q100 OBR
HEADING LINE NO 3 IS -
SD-A4-1 Q100

W S P G W PAGE NO 2

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1000.000	188.730	1	192.360

ELEMENT NO 2 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1005.250	188.780	1	.013	.000	.000	.000	0

ELEMENT NO 3 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1005.250	188.780	2	.200

ELEMENT NO 4 IS A JUNCTION * * * * * * *

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	1009.250	188.880	2	1	0	.013	1.000	.000	188.880	.000	.000	.000

RADIUS	ANGLE
.000	.000

ELEMENT NO 5 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1009.250	188.880	1

ELEMENT NO 6 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1028.000	189.070	1	.013	.000	.000	.000	0

ELEMENT NO 7 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1028.000	189.070	2	.500

ELEMENT NO 8 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1028.000	189.070	2	189.070

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 5-29-2024 Time: 4:39:35

SD-A4-1
Q100 OBR
SD-A4-1 Q100

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1000.000	188.730	3.630	192.360	5.30	3.00	.14	192.50	.00	.89	.00	1.500	.000	.00	1 .0
5.250	.0095					.0025	.01	3.63	.00	.76	.013	.00	.00	PIPE
1005.250	188.780	3.593	192.373	5.30	3.00	.14	192.51	.00	.89	.00	1.500	.000	.00	1 .0
WALL ENTRANCE														
1005.250	188.780	3.759	192.539	5.30	.35	.00	192.54	.00	.38	4.00	4.000	4.000	.00	0 .0
JUNCT STR	.0250					.0000	.00	3.76	.03		.013	.00	.00	BOX
		---------- WARNING - Flow depth near top of box conduit ----------												
1009.250	188.880	3.659	192.539	4.30	.29	.00	192.54	.00	.33	4.00	4.000	4.000	.00	0 .0
WALL EXIT														
		---------- WARNING - Flow depth near top of box conduit ----------												
1009.250	188.880	3.659	192.539	4.30	2.43	.09	192.63	.00	.79	.00	1.500	.000	.00	1 .0
18.750	.0101					.0017	.03	3.66	.00	.67	.013	.00	.00	PIPE
1028.000	189.070	3.500	192.570	4.30	2.43	.09	192.66	.00	.79	.00	1.500	.000	.00	1 .0
WALL ENTRANCE														
1028.000	189.070	3.637	192.707	4.30	.30	.00	192.71	.00	.33	4.00	4.000	4.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.500														
CD	2	3	0	.000	4.000	4.000	.000	.000	.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
SD-A4-2

HEADING LINE NO 2 IS -
Q100 OBR

HEADING LINE NO 3 IS -
SD-A4-2 Q100

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1002.000	188.730	1	192.360

ELEMENT NO 2 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1033.250	189.040	1	.013	.000	.000	.000	0

ELEMENT NO 3 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1033.250	189.040	2	.200

ELEMENT NO 4 IS A JUNCTION * * * * * * *

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	1037.250	189.140	2	2	0	.013	5.000	.000	189.140	.000	.000	.000

RADIUS	ANGLE
.000	.000

ELEMENT NO 5 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1037.250	189.140	1

ELEMENT NO 6 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1050.000	189.270	1	.013	.000	.000	.000	0

ELEMENT NO 7 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1050.000	189.270	2	.500

ELEMENT NO 8 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1050.000	189.270	2	189.270

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 5-29-2024 Time: 5:20:24

SD-A4-2
Q100 OBR
SD-A4-2 Q100

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1002.000	188.730	3.630	192.360	5.70	3.23	.16	192.52	.00	.92	.00	1.500	.000	.00	1 .0
31.250	.0099					.0029	.09	3.63	.00	.79	.013	.00	.00	PIPE
1033.250	189.040	3.412	192.452	5.70	3.23	.16	192.61	.00	.92	.00	1.500	.000	.00	1 .0
WALL ENTRANCE														
1033.250	189.040	3.604	192.644	5.70	.40	.00	192.65	.00	.40	4.00	4.000	4.000	.00	0 .0
JUNCT STR	.0250					.0000	.00	3.60	.04		.013	.00	.00	BOX
		---------- WARNING - Flow depth near top of box conduit ----------												
1037.250	189.140	3.504	192.644	.70	.05	.00	192.64	.00	.10	4.00	4.000	4.000	.00	0 .0
WALL EXIT														
1037.250	189.140	3.505	192.645	.70	.40	.00	192.65	.00	.31	.00	1.500	.000	.00	1 .0
12.750	.0102					.0000	.00	3.50	.00	.26	.013	.00	.00	PIPE
WALL ENTRANCE														
1050.000	189.270	3.379	192.649	.70	.05	.00	192.65	.00	.10	4.00	4.000	4.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.500														
CD	2	3	0	.000	4.000	4.000	.000	.000	.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
SD-A4-3
HEADING LINE NO 2 IS -
Q100 OBR
HEADING LINE NO 3 IS -
SD-A4-3 Q100

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1000.000	191.330	1	194.360

ELEMENT NO 2 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1005.250	191.380	1	.013	.000	.000	.000	0

ELEMENT NO 3 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1005.250	191.380	2	.500

ELEMENT NO 4 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1005.250	191.380	2	191.380

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 5-29-2024 Time: 4:40:53

SD-A4-3
Q100 OBR
SD-A4-3 Q100

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1000.000	191.330	3.030	194.360	1.70	.96	.01	194.37	.00	.49	.00	1.500	.000	.00	1 .0
5.250	.0095					.0003	.00	3.03	.00	.41	.013	.00	.00	PIPE
1005.250	191.380	2.981	194.361	1.70	.96	.01	194.38	.00	.49	.00	1.500	.000	.00	1 .0
WALL	ENTRANCE													
1005.250	191.380	3.003	194.383	1.70	.14	.00	194.38	.00	.18	4.00	4.000	4.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.500														
CD	2	3	0	.000	4.000	4.000	.000	.000	.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
SD-A4-4
HEADING LINE NO 2 IS -
Q100 OBR
HEADING LINE NO 3 IS -
SD-A4-4 Q100

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1002.000	191.330	1	194.360

ELEMENT NO 2 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1033.250	191.640	1	.013	.000	.000	.000	0

ELEMENT NO 3 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1033.250	191.640	2	.500

ELEMENT NO 4 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1033.250	191.640	2	191.640

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 5-29-2024 Time: 4:41:54

SD-A4-4
Q100 OBR
SD-A4-4 Q100

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1002.000	191.330	3.030	194.360	3.10	1.75	.05	194.41	.00	.67	.00	1.500	.000	.00	1 .0
31.250	.0099					.0009	.03	3.03	.00	.56	.013	.00	.00	PIPE
1033.250	191.640	2.747	194.387	3.10	1.75	.05	194.43	.00	.67	.00	1.500	.000	.00	1 .0
WALL	ENTRANCE													
1033.250	191.640	2.818	194.458	3.10	.28	.00	194.46	.00	.27	4.00	4.000	4.000	.00	0 .0

FILE: SD-A4-5.WSW W S P G W - EDIT LISTING - Version 14.11 Date: 5-29-2024 Time: 5:32:10

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING PAGE 1

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.500														
CD	2	3	0	.000	4.000	4.000	.000	.000	.00										

W S P G W PAGE NO 1

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
SD-A4-5
HEADING LINE NO 2 IS -
Q100 OBR
HEADING LINE NO 3 IS -
SD-A4-5 Q100

W S P G W PAGE NO 2

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1000.000	196.720	1	198.400

ELEMENT NO 2 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1005.250	196.770	1	.013	.000	.000	.000	0

ELEMENT NO 3 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1005.250	196.770	2	.200

ELEMENT NO 4 IS A JUNCTION * * * * * * *

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	1009.250	196.870	2	1	0	.013	2.400	.000	196.870	.000	90.000	.000

RADIUS	ANGLE
.000	.000

ELEMENT NO 5 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1009.250	196.870	1

ELEMENT NO 6 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1024.000	197.020	1	.013	.000	.000	.000	0

ELEMENT NO 7 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1024.000	197.020	2	.500

ELEMENT NO 8 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1024.000	197.020	2	197.020

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 5-29-2024 Time: 5:32:12

SD-A4-5
Q100 OBR
SD-A4-5 Q100

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1000.000	196.720	1.680	198.400	3.30	1.87	.05	198.45	.00	.69	.00	1.500	.000	.00	1 .0
5.250	.0095					.0010	.01	1.68	.00	.59	.013	.00	.00	PIPE
1005.250	196.770	1.635	198.405	3.30	1.87	.05	198.46	.00	.69	.00	1.500	.000	.00	1 .0
WALL	ENTRANCE													
1005.250	196.770	1.697	198.467	3.30	.49	.00	198.47	.00	.28	4.00	4.000	4.000	.00	0 .0
JUNCT STR	.0250					.0000	.00	1.70	.07		.013	.00	.00	BOX
1009.250	196.870	1.603	198.473	.90	.14	.00	198.47	.00	.12	4.00	4.000	4.000	.00	0 .0
WALL	EXIT													
1009.250	196.870	1.604	198.474	.90	.51	.00	198.48	.00	.35	.00	1.500	.000	.00	1 .0
10.329	.0102					.0001	.00	1.60	.00	.30	.013	.00	.00	PIPE
1019.579	196.975	1.500	198.475	.90	.51	.00	198.48	.00	.35	.00	1.500	.000	.00	1 .0
4.421	.0102					.0001	.00	1.50	.00	.30	.013	.00	.00	PIPE
1024.000	197.020	1.454	198.474	.90	.51	.00	198.48	.00	.35	.52	1.500	.000	.00	1 .0
WALL	ENTRANCE													
1024.000	197.020	2.454	199.474	.90	.09	.00	199.47	.00	.12	4.00	4.000	4.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.500														
CD	2	3	0	.000	4.000	4.000	.000	.000	.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
SD-A4-6

HEADING LINE NO 2 IS -
Q100 OBR

HEADING LINE NO 3 IS -
SD-A4-6 Q100

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	998.000	196.720	1	198.400

ELEMENT NO 2 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1054.140	197.280	1	.013	.000	.000	.000	0

ELEMENT NO 3 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1054.140	197.280	2	.500

ELEMENT NO 4 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1054.140	197.280	2	197.280

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 5-29-2024 Time: 4:46:16

SD-A4-6
Q100 OBR
SD-A4-6 Q100

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
998.000	196.720	1.680	198.400	5.90	3.34	.17	198.57	.00	.94	.00	1.500	.000	.00	1 .0
26.391	.0100					.0031	.08	1.68	.00	.80	.013	.00	.00	PIPE
1024.391	196.983	1.500	198.483	5.90	3.34	.17	198.66	.00	.94	.00	1.500	.000	.00	1 .0
17.239	.0100					.0029	.05	1.50	.00	.80	.013	.00	.00	PIPE
1041.630	197.155	1.360	198.515	5.90	3.50	.19	198.71	.00	.94	.87	1.500	.000	.00	1 .0
8.562	.0100					.0029	.02	1.36	.44	.80	.013	.00	.00	PIPE
1050.192	197.241	1.280	198.521	5.90	3.67	.21	198.73	.00	.94	1.06	1.500	.000	.00	1 .0
3.948	.0100					.0030	.01	1.28	.53	.80	.013	.00	.00	PIPE
1054.140	197.280	1.241	198.521	5.90	3.77	.22	198.74	.00	.94	1.13	1.500	.000	.00	1 .0
WALL	ENTRANCE													
1054.140	197.280	2.241	199.521	5.90	.66	.01	199.53	.00	.41	4.00	4.000	4.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.500														
CD	2	3	0	.000	4.000	4.000	.000	.000	.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
SD-A4-7
HEADING LINE NO 2 IS -
Q100 OBR
HEADING LINE NO 3 IS -
SD-A4-7 Q100

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1002.000	187.890	1	191.220

ELEMENT NO 2 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1032.180	188.190	1	.013	.000	.000	.000	0

ELEMENT NO 3 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1032.180	188.190	2	.500

ELEMENT NO 4 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1032.180	188.190	2	188.190

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 5-29-2024 Time: 4:47:31

SD-A4-7
Q100 OBR
SD-A4-7 Q100

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1002.000	187.890	3.330	191.220	.80	.45	.00	191.22	.00	.33	.00	1.500	.000	.00	1 .0
30.180	.0099					.0001	.00	3.33	.00	.28	.013	.00	.00	PIPE
WALL ENTRANCE														
1032.180	188.190	3.036	191.226	.80	.07	.00	191.23	.00	.11	4.00	4.000	4.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.500														
CD	2	3	0	.000	4.000	4.000	.000	.000	.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
SD-A4-8
HEADING LINE NO 2 IS -
Q100 OBR
HEADING LINE NO 3 IS -
SD-A4-8 Q100

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1002.000	193.920	1	195.850

ELEMENT NO 2 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1033.250	194.230	1	.013	.000	.000	.000	0

ELEMENT NO 3 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1033.250	194.230	2	.500

ELEMENT NO 4 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1033.250	194.230	2	194.230

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 5-29-2024 Time: 4:47:50

SD-A4-8
Q100 OBR
SD-A4-8 Q100

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1002.000	193.920	1.930	195.850	4.90	2.77	.12	195.97	.00	.85	.00	1.500	.000	.00	1 .0
31.250	.0099					.0022	.07	1.93	.00	.72	.013	.00	.00	PIPE
1033.250	194.230	1.688	195.918	4.90	2.77	.12	196.04	.00	.85	.00	1.500	.000	.00	1 .0
WALL	ENTRANCE													
1033.250	194.230	1.857	196.087	4.90	.66	.01	196.09	.00	.36	4.00	4.000	4.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		3.000														

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
SD-A5

HEADING LINE NO 2 IS -
Q100 05/21/2024

HEADING LINE NO 3 IS -
SD-A5 Q100 DOWNSTREAM

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1074.400	193.520	1	196.230

ELEMENT NO 2 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1074.400	193.520	1

ELEMENT NO 3 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1095.030	193.660	1	.013	.000	.000	.000	0

ELEMENT NO 4 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1095.030	193.660	1	193.660

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 5-30-2024 Time: 7:17:30

SD-A5
Q100 05/21/2024
SD-A5 Q100 DOWNSTREAM

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1074.400	193.520	2.710	196.230	25.80	3.84	.23	196.46	.00	1.64	1.77	3.000	.000	.00	0 .0
WALL	EXIT													
1074.400	193.520	2.711	196.231	25.80	3.84	.23	196.46	.00	1.64	1.77	3.000	.000	.00	1 .0
20.630	.0068					.0013	.03	2.71	.35	1.45	.013	.00	.00	PIPE
1095.030	193.660	2.580	196.240	25.80	3.99	.25	196.49	.00	1.64	2.08	3.000	.000	.00	1 .0

Oldcastle Infrastructure
A CRH COMPANY

Nutrient Separating Baffle Box® (NSBB™) Head Loss Calculator

V2020.01; *5/28/2024*

Project Information

Project Name:	**Ocean Breeze Ranch**
Location:	**Basin 2B-2**
Design Basis:	**80% of 150µm**
Screen Basket Capacity (% Full):	**0% (Empty)**
Treatment Flow Rate (cfs):	**0.68**
Peak Flow Rate (cfs):	**25.20**
NSBB Model:	**NSBB-612**

Inlet & Outlet Pipe Information

Inlet Pipe Diameter (in):	**30**
Inlet Invert Elevation (ft):	**193.76**
Outlet Pipe Diameter (in):	**30**
Outlet Invert Elevation (ft):	**193.66**
Outlet Slope %:	**0.68%**
Manning's Roughness Coefficient (n):	**0.012**
Tailwater Present?	**Yes**
Tailwater Elevation:	196.40

Outlet Pipe Flow Characteristics

	Treatment	*Peak*
Normal Depth During Design Flow (ft):	**0.236**	**1.52**
Flow Area (sq ft):	**0.23**	**3.13**
Velocity (ft/s):	**2.89**	**8.06**
Wetted Perimeter (ft):	**1.56**	**4.47**
Downstream Depth of Flow (ft):	**0.262**	**2.740**

NSBB Discharge Coefficients

Screen Orifice Coefficient, Co:	**0.60**
Outlet Pipe Entrance Coefficient, K:	**0.20**

System Design Summary

Rim Elevation (ft):	**201.88**
Rim to Invert Out Depth (ft):	**8.22**
Upstream WSE during Treatment (ft):	**193.918**
Upstream WSE during Peak Flow (ft):	**196.773**

Disclaimer: Calculations are best estimate based on information available and are intended only for use by the party to whom they were transmitted and for the project referenced.

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		2.500														
CD	2	4	1		2.000														
CD	3	4	1		1.500														
CD	4	3	0	.000	4.000	4.000	.000	.000	.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -

SD-A5

HEADING LINE NO 2 IS -

Q100 05/29/2024

HEADING LINE NO 3 IS -

SD-A5 Q100

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1103.000	193.760	4	196.770

ELEMENT NO 2 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1103.000	193.760	1

ELEMENT NO 3 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1131.500	193.930	1	.013	.000	.000	-335.141	0

ELEMENT NO 4 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1131.500	193.930	4	.200

ELEMENT NO 5 IS A JUNCTION * * * * * * *

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	1135.500	194.430	4	2	0	.013	9.400	.000	194.430	.000	90.000	.000

RADIUS	ANGLE
.000	.000

ELEMENT NO 6 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1135.500	194.430	2

ELEMENT NO 7 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1358.990	196.660	2	.013	.000	.000	.000	0

ELEMENT NO 8 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1358.990	196.660	4	.200

ELEMENT NO 9 IS A JUNCTION * * * * * * *

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	1362.990	197.160	4	3	3	.013	5.900	3.700	197.160	197.160	-65.100	65.100

RADIUS	ANGLE
.000	.000

ELEMENT NO 10 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1362.990	197.160	3

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 11 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1457.500	197.840	3	.013	.000	.000	.000	0

```
ELEMENT NO  12 IS A  WALL  ENTRANCE                  *
                  U/S DATA   STATION    INVERT  SECT              FP
                             1457.500  197.840    3               .500
ELEMENT NO  13 IS A SYSTEM HEADWORKS                 *                      *
                  U/S DATA   STATION    INVERT  SECT                                  W S ELEV
                             1457.500  197.840    3                                   217.240
```

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 4-2024 Time:11: 1:40

SD-A5
Q100 05/29/2024
SD-A5 Q100

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT) / SF Ave	Water Elev / HF	Q (CFS) / SE Dpth	Vel (FPS) / Froude N	Vel Head / Norm Dp	Energy Grd.El. / "N"	Super Elev / X-Fall	Critical Depth / ZR	Flow Top Width	Height/ Dia.-FT / Type Ch	Base Wt or I.D.	ZL	No Wth Prs/Pip
1103.000	193.760	3.010	196.770	25.80	2.14	.07	196.84	.00	1.09	4.00	4.000	4.000	.00	0 .0
WALL EXIT														
1103.000	193.760	3.011	196.771	25.80	5.26	.43	197.20	.00	1.73	.00	2.500	.000	.00	1 .0
28.500	.0060					.0040	.11	3.01	.00	1.71	.013	.00	.00	PIPE
1131.500	193.930	3.428	197.358	25.80	5.26	.43	197.79	.00	1.73	.00	2.500	.000	.00	1 .0
WALL ENTRANCE														
1131.500	193.930	3.892	197.822	25.80	1.66	.04	197.86	.00	1.09	4.00	4.000	4.000	.00	0 .0
JUNCT STR	.1250					.0001	.00	3.89	.15		.013	.00	.00	BOX
---------- WARNING - Flow depth near top of box conduit ----------														
1135.500	194.430	3.442	197.872	16.40	1.19	.02	197.89	.00	.81	4.00	4.000	4.000	.00	0 .0
WALL EXIT														
1135.500	194.430	3.442	197.872	16.40	5.22	.42	198.30	.00	1.46	.00	2.000	.000	.00	1 .0
223.490	.0100					.0053	1.17	3.44	.00	1.26	.013	.00	.00	PIPE
1358.990	196.660	2.386	199.046	16.40	5.22	.42	199.47	.00	1.46	.00	2.000	.000	.00	1 .0
WALL ENTRANCE														
1358.990	196.660	2.856	199.516	16.40	1.44	.03	199.55	.00	.81	4.00	4.000	4.000	.00	0 .0
JUNCT STR	.1250					.0001	.00	2.86	.15		.013	.00	.00	BOX

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 4-2024 Time:11: 1:40

SD-A5
Q100 05/29/2024
SD-A5 Q100

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1362.990	197.160	2.378	199.538	6.80	.71	.01	199.55	.00	.45	4.00	4.000	4.000	.00	0 .0
WALL EXIT														
1362.990	197.160	2.378	199.538	6.80	3.85	.23	199.77	.00	1.01	.00	1.500	.000	.00	1 .0
94.510	.0072					.0042	.40	2.38	.00	.98	.013	.00	.00	PIPE
WALL ENTRANCE														
1457.500	197.840	2.094	199.934	6.80	3.85	.23	200.16	.00	1.01	.00	1.500	.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.500														
CD	2	3	0	.000	4.000	4.000	.000	.000	.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
SD-A5-1

HEADING LINE NO 2 IS -
Q100 OBR

HEADING LINE NO 3 IS -
SD-A5-1 Q100

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1000.000	197.160	1	199.540

ELEMENT NO 2 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1006.250	197.220	1	.013	.000	.000	.000	0

ELEMENT NO 3 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1006.250	197.220	2	.500

ELEMENT NO 4 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1006.250	197.220	2	197.220

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 4-2024 Time:11:12:16

SD-A5-1
Q100 OBR
SD-A5-1 Q100

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1000.000	197.160	2.380	199.540	3.70	2.09	.07	199.61	.00	.73	.00	1.500	.000	.00	1 .0
6.250	.0096					.0012	.01	2.38	.00	.62	.013	.00	.00	PIPE
1006.250	197.220	2.328	199.548	3.70	2.09	.07	199.62	.00	.73	.00	1.500	.000	.00	1 .0
WALL	ENTRANCE													
1006.250	197.220	2.427	199.647	3.70	.38	.00	199.65	.00	.30	4.00	4.000	4.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.500														
CD	2	3	0	.000	4.000	4.000	.000	.000	.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -

SD-A5-2

HEADING LINE NO 2 IS -

Q100 OBR

HEADING LINE NO 3 IS -

SD-A5-2 Q100

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1002.000	197.160	1	199.540

ELEMENT NO 2 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1028.250	197.420	1	.013	.000	.000	.000	0

ELEMENT NO 3 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1028.250	197.420	2	.500

ELEMENT NO 4 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1028.250	197.420	2	197.420

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 4-2024 Time:11:12:23

SD-A5-2
Q100 OBR
SD-A5-2 Q100

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1002.000	197.160	2.380	199.540	6.00	3.40	.18	199.72	.00	.95	.00	1.500	.000	.00	1 .0
26.250	.0099				.0033	.09	2.38	.00	.81	.013		.00	.00	PIPE
1028.250	197.420	2.206	199.626	6.00	3.40	.18	199.80	.00	.95	.00	1.500	.000	.00	1 .0
WALL ENTRANCE														
1028.250	197.420	2.465	199.885	6.00	.61	.01	199.89	.00	.41	4.00	4.000	4.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		2.000														
CD	2	3	0	.000	4.000	4.000	.000	.000	.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -

SD-A6

HEADING LINE NO 2 IS -

Q100 OBR

HEADING LINE NO 3 IS -

SD-A6 Q100

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1135.500	194.430	1	197.870

ELEMENT NO 2 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1159.210	194.670	1	.013	.000	.000	.000	0

ELEMENT NO 3 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1215.580	195.230	1	.013	.000	.000	.000	0

ELEMENT NO 4 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1215.580	195.230	2	.200

ELEMENT NO 5 IS A JUNCTION * * * * * * *

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	1219.580	195.330	2	1	0	.013	1.100	.000	195.330	.000	90.000	.000

RADIUS	ANGLE
.000	.000

ELEMENT NO 6 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1219.580	195.330	1

ELEMENT NO 7 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1270.360	195.780	1	.013	.000	.000	.000	0

ELEMENT NO 8 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1270.360	195.780	2	.500

ELEMENT NO 9 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1270.360	195.780	2	195.780

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 4-2024 Time:11:12: 4

SD-A6
Q100 OBR
SD-A6 Q100

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT) / SF Ave	Water Elev / HF	Q (CFS) / SE Dpth	Vel (FPS) / Froude N	Vel Head / Norm Dp	Energy Grd.El. / "N"	Super Elev / X-Fall	Critical Depth / ZR	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip / Type Ch
1135.500	194.430	3.440	197.870	11.30	3.60	.20	198.07	.00	1.21	.00	2.000	.000	.00	1 .0
23.710	.0101					.0025	.06	3.44	.00	1.00	.013	.00	.00	PIPE
1159.210	194.670	3.259	197.929	11.30	3.60	.20	198.13	.00	1.21	.00	2.000	.000	.00	1 .0
56.370	.0099					.0025	.14	3.26	.00	1.00	.013	.00	.00	PIPE
1215.580	195.230	2.840	198.070	11.30	3.60	.20	198.27	.00	1.21	.00	2.000	.000	.00	1 .0
WALL ENTRANCE														
1215.580	195.230	3.065	198.295	11.30	.92	.01	198.31	.00	.63	4.00	4.000	4.000	.00	0 .0
JUNCT STR	.0250					.0001	.00	3.07	.09		.013	.00	.00	BOX
1219.580	195.330	2.970	198.300	10.20	.86	.01	198.31	.00	.59	4.00	4.000	4.000	.00	0 .0
WALL EXIT														
1219.580	195.330	2.970	198.300	10.20	3.25	.16	198.46	.00	1.14	.00	2.000	.000	.00	1 .0
50.780	.0089					.0020	.10	2.97	.00	.98	.013	.00	.00	PIPE
1270.360	195.780	2.623	198.403	10.20	3.25	.16	198.57	.00	1.14	.00	2.000	.000	.00	1 .0
WALL ENTRANCE														
1270.360	195.780	2.850	198.630	10.20	.89	.01	198.64	.00	.59	4.00	4.000	4.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.500														
CD	2	3	0	.000	4.000	4.000	.000	.000	.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -

SD-A6-1

HEADING LINE NO 2 IS -

Q100 OBR

HEADING LINE NO 3 IS -

SD-A6-1 Q100

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1000.500	196.280	1	198.630

ELEMENT NO 2 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1008.250	196.490	1	.013	.000	.000	.000	0

ELEMENT NO 3 IS A WALL ENTRANCE

U/S DATA	STATION	INVERT	SECT	FP
	1008.250	196.490	2	.200

ELEMENT NO 4 IS A JUNCTION

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	1012.250	196.590	2	2	0	.013	2.500	.000	197.160	.000	.000	.000

RADIUS	ANGLE
.000	.000

ELEMENT NO 5 IS A WALL EXIT

U/S DATA	STATION	INVERT	SECT
	1012.250	196.590	1

ELEMENT NO 6 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1035.450	196.820	1	.013	.000	.000	.000	0

ELEMENT NO 7 IS A WALL ENTRANCE

U/S DATA	STATION	INVERT	SECT	FP
	1035.450	196.820	2	.500

ELEMENT NO 8 IS A SYSTEM HEADWORKS

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1035.450	196.820	2	196.820

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 4-2024 Time:12:26: 1

SD-A6-1
Q100 OBR
SD-A6-1 Q100

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1000.500	196.280	2.350	198.630	4.30	2.43	.09	198.72	.00	.79	.00	1.500	.000	.00	1 .0
7.750	.0271					.0017	.01	2.35	.00	.51	.013	.00	.00	PIPE
1008.250	196.490	2.153	198.643	4.30	2.43	.09	198.73	.00	.79	.00	1.500	.000	.00	1 .0
WALL ENTRANCE														
1008.250	196.490	2.260	198.750	4.30	.48	.00	198.75	.00	.33	4.00	4.000	4.000	.00	0 .0
JUNCT STR	.0250					.0000	.00	2.26	.06		.013	.00	.00	BOX
1012.250	196.590	2.162	198.752	1.80	.21	.00	198.75	.00	.18	4.00	4.000	4.000	.00	0 .0
WALL EXIT														
1012.250	196.590	2.163	198.753	1.80	1.02	.02	198.77	.00	.50	.00	1.500	.000	.00	1 .0
23.200	.0099					.0003	.01	2.16	.0					

FILE: SD-A6-2.WSW W S P G W - EDIT LISTING - Version 14.11 Date: 6- 4-2024 Time:11:14:57

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING PAGE 1

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.500														
CD	2	3	0	.000	4.000	4.000	.000	.000	.00										

W S P G W PAGE NO 1

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -

SD-A6-2

HEADING LINE NO 2 IS -

Q100 OBR

HEADING LINE NO 3 IS -

SD-A6-2 Q100

W S P G W PAGE NO 2

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1002.000	196.280	1	198.630

ELEMENT NO 2 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1030.250	196.690	1	.013	.000	.000	.000	0

ELEMENT NO 3 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1030.250	196.690	2	.500

ELEMENT NO 4 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1030.250	196.690	2	196.690

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 4-2024 Time:11:15: 1

SD-A6-2
Q100 OBR
SD-A6-2 Q100

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1002.000	196.280	2.350	198.630	5.90	3.34	.17	198.80	.00	.94	.00	1.500	.000	.00	1 .0
28.250	.0145					.0032	.09	2.35	.00	.72	.013	.00	.00	PIPE
1030.250	196.690	2.029	198.719	5.90	3.34	.17	198.89	.00	.94	.00	1.500	.000	.00	1 .0
WALL	ENTRANCE													
1030.250	196.690	2.278	198.968	5.90	.65	.01	198.97	.00	.41	4.00	4.000	4.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.500														
CD	2	3	0	.000	4.000	4.000	.000	.000	.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -

SD-A6-3

HEADING LINE NO 2 IS -

Q100 OBR

HEADING LINE NO 3 IS -

SD-A6-3 Q100

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1002.000	195.830	1	198.300

ELEMENT NO 2 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1033.500	196.140	1	.013	.000	.000	.000	0

ELEMENT NO 3 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1033.500	196.140	2	.500

ELEMENT NO 4 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1033.500	196.140	2	196.140

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 4-2024 Time:12: 2:21

SD-A6-3
Q100 OBR
SD-A6-3 Q100

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1002.000	195.830	2.470	198.300	1.30	.74	.01	198.31	.00	.43	.00	1.500	.000	.00	1 .0
31.500	.0098					.0002	.00	2.47	.00	.36	.013	.00	.00	PIPE
1033.500	196.140	2.165	198.305	1.30	.74	.01	198.31	.00	.43	.00	1.500	.000	.00	1 .0
WALL	ENTRANCE													
1033.500	196.140	2.177	198.317	1.30	.15	.00	198.32	.00	.15	4.00	4.000	4.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		3.000														

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
SD-A7
HEADING LINE NO 2 IS -
Q100 05/16/2024
HEADING LINE NO 3 IS -
SD-A7 Q100 DOWNSTREAM

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	979.200	193.520	1	196.230

ELEMENT NO 2 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	979.200	193.520	1

ELEMENT NO 3 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1001.250	193.630	1	.013	.000	.000	.000	0

ELEMENT NO 4 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1001.250	193.630	1	193.630

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 5-22-2024 Time: 1: 0: 6

SD-A7
Q100 05/16/2024
SD-A7 Q100 DOWNSTREAM

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
979.200	193.520	2.710	196.230	40.40	6.01	.56	196.79	.00	2.07	1.77	3.000	.000	.00	0 .0
WALL	EXIT													
979.200	193.520	2.711	196.231	40.40	6.01	.56	196.79	.00	2.07	1.77	3.000	.000	.00	1 .0
22.050	.0050					.0033	.07	2.71	.54	2.14	.013	.00	.00	PIPE
1001.250	193.630	2.655	196.285	40.40	6.11	.58	196.86	.00	2.07	1.92	3.000	.000	.00	1 .0

Oldcastle Infrastructure
A CRH COMPANY

Nutrient Separating Baffle Box® (NSBB™) Head Loss Calculator

V2020.01; *5/31/2024*

Project Information

Project Name:	**Ocean Breeze Ranch**
Location:	**Basin 2B-1**
Design Basis:	**80% of 150µm**
Screen Basket Capacity (% Full):	**0% (Empty)**
Treatment Flow Rate (cfs):	**1.33**
Peak Flow Rate (cfs):	**40.40**
NSBB Model:	**NSBB-612**

Inlet & Outlet Pipe Information

Inlet Pipe Diameter (in):	**36**
Inlet Invert Elevation (ft):	**193.73**
Outlet Pipe Diameter (in):	**36**
Outlet Invert Elevation (ft):	**193.63**
Outlet Slope %:	**0.50%**
Manning's Roughness Coefficient (n):	**0.012**
Tailwater Present?	**Yes**
Tailwater Elevation:	196.24

Outlet Pipe Flow Characteristics

	Treatment	*Peak*
Normal Depth During Design Flow (ft):	**0.333**	**2.01**
Flow Area (sq ft):	**0.43**	**5.03**
Velocity (ft/s):	**3.10**	**8.03**
Wetted Perimeter (ft):	**2.04**	**5.75**
Downstream Depth of Flow (ft):	**0.363**	**2.610**

NSBB Discharge Coefficients

Screen Orifice Coefficient, Co:	**0.60**
Outlet Pipe Entrance Coefficient, K:	**0.20**

System Design Summary

Rim Elevation (ft):	**201.21**
Rim to Invert Out Depth (ft):	**7.58**
Upstream WSE during Treatment (ft):	**193.993**
Upstream WSE during Peak Flow (ft):	**197.022**

Disclaimer: Calculations are best estimate based on information available and are intended only for use by the party to whom they were transmitted and for the project referenced.

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		2.500														
CD	2	4	1		2.000														
CD	3	4	1		1.500														
CD	4	3	0	.000	4.000	4.000	.000	.000	.00										
CD	5	4	1		3.000														

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -

SD-A7

HEADING LINE NO 2 IS -

Q100 05/16/2024

HEADING LINE NO 3 IS -

SD-A7 Q100

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1013.250	193.730	4	197.020

ELEMENT NO 2 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1013.250	193.730	4

WARNING - ADJACENT SECTIONS ARE NOT IDENTICAL - SEE SECTION NUMBERS AND CHANNEL DEFINITIONS

ELEMENT NO 3 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1029.500	193.810	5	.013	.000	.000	.000	0

ELEMENT NO 4 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1029.500	193.810	4	.200

ELEMENT NO 5 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1033.500	193.910	4	.013	.000	.000	.000	0

ELEMENT NO 6 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1033.500	193.910	5

ELEMENT NO 7 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1041.750	193.950	5	.013	.000	.000	-270.000	0

ELEMENT NO 8 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1041.750	193.950	4	.200

ELEMENT NO 9 IS A JUNCTION * * * * * *

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	1045.750	194.050	4	3	0	.013	8.900	.000	194.600	.000	77.300	.000

RADIUS	ANGLE
.000	.000

ELEMENT NO 10 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1045.750	194.050	5

ELEMENT NO 11 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1336.750	196.510	5	.013	.000	.000	.000	0

ELEMENT NO 12 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP

```
                          1336.750  196.510    4               .200
                                        W S P G W                                                    PAGE NO   3
                     WATER SURFACE PROFILE - ELEMENT CARD LISTING
ELEMENT NO  13 IS A REACH             *         *     *
                  U/S DATA   STATION    INVERT  SECT               N                        RADIUS    ANGLE     ANG PT  MAN H
                             1340.750  196.610    4               .013                         .000     .000      .000     0
ELEMENT NO  14 IS A  WALL  EXIT                     *
                  U/S DATA   STATION    INVERT  SECT
                             1340.750  196.610    1
ELEMENT NO  15 IS A REACH             *         *     *
                  U/S DATA   STATION    INVERT  SECT               N                        RADIUS    ANGLE     ANG PT  MAN H
                             1354.060  196.740    1               .013                         .000     .000      .000     0
ELEMENT NO  16 IS A REACH             *         *     *
                  U/S DATA   STATION    INVERT  SECT               N                        RADIUS    ANGLE     ANG PT  MAN H
                             1482.730  198.030    1               .013                      509.837   14.460      .000     0
ELEMENT NO  17 IS A  WALL  ENTRANCE                 *
                  U/S DATA   STATION    INVERT  SECT              FP
                             1482.730  198.030    4               .500
ELEMENT NO  18 IS A JUNCTION          *         *     *     *               *                  *              *
                  U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3        Q4     INVERT-3 INVERT-4  PHI 3  PHI 4
                             1486.730  198.130    4     3     0   .013     2.300      .000   198.170      .000  81.900     .000
                                                                                          RADIUS    ANGLE
                                                                                            .000     .000
ELEMENT NO  19 IS A  WALL  EXIT                     *
                  U/S DATA   STATION    INVERT  SECT
                             1486.730  198.130    1
ELEMENT NO  20 IS A REACH             *         *     *
                  U/S DATA   STATION    INVERT  SECT               N                        RADIUS    ANGLE     ANG PT  MAN H
                             1627.180  199.540    1               .013                      510.285   15.770      .000     0
ELEMENT NO  21 IS A  WALL  ENTRANCE                 *
                  U/S DATA   STATION    INVERT  SECT              FP
                             1627.180  199.540    1               .200
ELEMENT NO  22 IS A REACH             *         *     *
                  U/S DATA   STATION    INVERT  SECT               N                        RADIUS    ANGLE     ANG PT  MAN H
                             1631.180  199.640    1               .013                         .000     .000      .000     0
ELEMENT NO  23 IS A  WALL  EXIT                     *
                  U/S DATA   STATION    INVERT  SECT
                             1631.180  199.640    1
ELEMENT NO  24 IS A REACH             *         *     *
                  U/S DATA   STATION    INVERT  SECT               N                        RADIUS    ANGLE     ANG PT  MAN H
                             1825.230  201.580    1               .013                      510.011   21.800      .000     0
                                        W S P G W                                                    PAGE NO   4
                     WATER SURFACE PROFILE - ELEMENT CARD LISTING
ELEMENT NO  25 IS A  WALL  ENTRANCE                 *
                  U/S DATA   STATION    INVERT  SECT              FP
                             1825.230  201.580    4               .200
ELEMENT NO  26 IS A JUNCTION          *         *     *     *               *                  *              *
                  U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3        Q4     INVERT-3 INVERT-4  PHI 3  PHI 4
                             1829.230  201.680    4     3     3   .013      .900     3.000   202.150   202.150 -87.600  -90.000
                                                                                          RADIUS    ANGLE
                                                                                            .000     .000
ELEMENT NO  27 IS A  WALL  EXIT                     *
                  U/S DATA   STATION    INVERT  SECT
                             1829.230  201.680    2
ELEMENT NO  28 IS A REACH             *         *     *
                  U/S DATA   STATION    INVERT  SECT               N                        RADIUS    ANGLE     ANG PT  MAN H
                             1868.340  202.070    2               .013                      510.441    4.390      .000     0
ELEMENT NO  29 IS A REACH             *         *     *
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                  U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                             2069.440  204.080    2              .013                           .000     .000      .000     0
ELEMENT NO  30 IS A  WALL  ENTRANCE                *
                  U/S DATA   STATION    INVERT  SECT             FP
                             2069.440  204.080    4              .200
ELEMENT NO  31 IS A JUNCTION          *         *     *     *              *                  *              *
                  U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3        Q4     INVERT-3 INVERT-4  PHI 3  PHI 4
                             2073.440  204.180    4     3     0   .013     7.700      .002     4.180      .000  90.000     .000
                                                                                             RADIUS    ANGLE
                                                                                               .000     .000
ELEMENT NO  32 IS A  WALL  EXIT                    *
                  U/S DATA   STATION    INVERT  SECT
                             2073.440  204.180    2
ELEMENT NO  33 IS A REACH             *         *     *
                  U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                             2165.060  205.740    2              .013                           .000     .000      .000     0
ELEMENT NO  34 IS A  WALL  ENTRANCE                *
                  U/S DATA   STATION    INVERT  SECT             FP
                             2165.060  205.740    4              .200
                                                 W S P G W                                                      PAGE NO   5
                        WATER SURFACE PROFILE - ELEMENT CARD LISTING
ELEMENT NO  35 IS A JUNCTION          *         *     *     *              *                  *              *
                  U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3        Q4     INVERT-3 INVERT-4  PHI 3  PHI 4
                             2169.060  205.840    4     3     0   .013     3.300      .002     4.840      .000  90.000     .000
                                                                                             RADIUS    ANGLE
                                                                                               .000     .000
ELEMENT NO  36 IS A  WALL  EXIT                    *
                  U/S DATA   STATION    INVERT  SECT
                             2169.060  205.840    2
ELEMENT NO  37 IS A REACH             *         *     *
                  U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                             2204.390  207.310    2              .013                       128.361   15.770      .000     0
ELEMENT NO  38 IS A  WALL  ENTRANCE                *
                  U/S DATA   STATION    INVERT  SECT             FP
                             2204.390  207.310    4              .200
ELEMENT NO  39 IS A JUNCTION          *         *     *     *              *                  *              *
                  U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3        Q4     INVERT-3 INVERT-4  PHI 3  PHI 4
                             2208.390  207.640    4     2     3   .014     4.500      5.700  207.640  207.640    .000  -90.000
                                                                                             RADIUS    ANGLE
                                                                                               .000     .000
ELEMENT NO  40 IS A  WALL  EXIT                    *
                  U/S DATA   STATION    INVERT  SECT
                             2208.390  207.640    3
ELEMENT NO  41 IS A REACH             *         *     *
                  U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                             2354.010  212.730    3              .013                           .000     .000      .000     0
ELEMENT NO  42 IS A REACH             *         *     *
                  U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                             2432.320  215.470    3              .013                       302.551  -14.830      .000     0
ELEMENT NO  43 IS A REACH             *         *     *
                  U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                             2477.330  217.240    3              .013                           .000     .000   -15.140     0
ELEMENT NO  44 IS A  WALL  ENTRANCE                *
                  U/S DATA   STATION    INVERT  SECT             FP
                             2477.330  217.240    3              .500
                                                 W S P G W                                                      PAGE NO   6
                        WATER SURFACE PROFILE - ELEMENT CARD LISTING
ELEMENT NO  45 IS A SYSTEM HEADWORKS                *                    *
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U/S DATA	STATION	INVERT	SECT	W S ELEV
	2477.330	217.240	3	217.240

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 5-31-2024 Time: 8:46:29

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Station / L/Elem	Invert Elev / Ch Slope	Depth (FT) / SF Ave	Water Elev / HF	Q (CFS) / SE Dpth	Vel (FPS) / Froude N	Vel Head / Norm Dp	Energy Grd.El. / "N"	Super Elev / X-Fall	Critical Depth / ZR	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip / Type Ch
1013.250	193.730	3.290	197.020	40.40	3.07	.15	197.17	.00	1.47	4.00	4.000	4.000	.00	0 .0
WALL	EXIT													
1013.250	193.730	3.290	197.020	40.40	5.72	.51	197.53	.00	2.07	.00	3.000	.000	.00	1 .0
16.250	.0049					.0037	.06	3.29	.00	2.15	.013	.00	.00	PIPE
1029.500	193.810	3.270	197.080	40.40	5.72	.51	197.59	.00	2.07	.00	3.000	.000	.00	1 .0
WALL	ENTRANCE													
1029.500	193.810	3.743	197.553	40.40	2.70	.11	197.67	.00	1.47	4.00	4.000	4.000	.00	0 .0
4.000	.0250					.0004	.00	3.74	.25	.81	.013	.00	.00	BOX
		---------- WARNING - Flow depth near top of box conduit ----------												
1033.500	193.910	3.638	197.548	40.40	2.78	.12	197.67	.00	1.47	4.00	4.000	4.000	.00	0 .0
WALL	EXIT													
		---------- WARNING - Flow depth near top of box conduit ----------												
1033.500	193.910	3.639	197.549	40.40	5.72	.51	198.06	.00	2.07	.00	3.000	.000	.00	1 .0
8.250	.0048					.0037	.03	3.64	.00	2.16	.013	.00	.00	PIPE
1041.750	193.950	4.081	198.031	40.40	5.72	.51	198.54	.00	2.07	.00	3.000	.000	.00	1 .0
WALL	ENTRANCE													

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Q100 05/16/2024
SD-A7 Q100

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1041.750	193.950	4.571	198.521	40.40	2.53	.10	198.62	.00	1.47	4.00	4.000	4.000	.00	0 .0
JUNCT STR	.0250					.0005	.00	4.57	.22		.013	.00	.00	BOX
1045.750	194.050	4.531	198.581	31.50	1.97	.06	198.64	.00	1.24	4.00	4.000	4.000	.00	0 .0
WALL	EXIT													
1045.750	194.050	4.531	198.581	31.50	4.46	.31	198.89	.00	1.82	.00	3.000	.000	.00	1 .0
246.041	.0085					.0022	.54	4.53	.00	1.52	.013	.00	.00	PIPE
1291.791	196.130	3.000	199.130	31.50	4.46	.31	199.44	.00	1.82	.00	3.000	.000	.00	1 .0
38.725	.0085					.0021	.08	3.00	.00	1.52	.013	.00	.00	PIPE
1330.516	196.457	2.721	199.178	31.50	4.67	.34	199.52	.00	1.82	1.74	3.000	.000	.00	1 .0
6.234	.0085					.0020	.01	2.72	.42	1.52	.013	.00	.00	PIPE
1336.750	196.510	2.672	199.182	31.50	4.74	.35	199.53	.00	1.82	1.87	3.000	.000	.00	1 .0
WALL	ENTRANCE													
1336.750	196.510	3.672	200.182	31.50	2.15	.07	200.25	.00	1.24	4.00	4.000	4.000	.00	0 .0
4.000	.0250					.0002	.00	3.67	.20	.68	.013	.00	.00	BOX
		---------- WARNING - Flow depth near top of box conduit ----------												
1340.750	196.610	3.568	200.178	31.50	2.21	.08	200.25	.00	1.24	4.00	4.000	4.000	.00	0 .0
WALL	EXIT													

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Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1340.750	196.610	3.569	200.179	31.50	6.42	.64	200.82	.00	1.91	.00	2.500	.000	.00	1 .0
13.310	.0098					.0059	.08	3.57	.00	1.66	.013	.00	.00	PIPE
1354.060	196.740	3.517	200.257	31.50	6.42	.64	200.90	.00	1.91	.00	2.500	.000	.00	1 .0
128.670	.0100					.0059	.76	.00	.00	1.64	.013	.00	.00	PIPE
1482.730	198.030	3.038	201.068	31.50	6.42	.64	201.71	.00	1.91	.00	2.500	.000	.00	1 .0
WALL	ENTRANCE													
1482.730	198.030	3.903	201.933	31.50	2.02	.06	202.00	.00	1.24	4.00	4.000	4.000	.00	0 .0
JUNCT STR	.0250					.0002	.00	3.90	.18		.013	.00	.00	BOX
		---------- WARNING - Flow depth near top of box conduit ----------												
1486.730	198.130	3.818	201.948	29.20	1.91	.06	202.01	.00	1.18	4.00	4.000	4.000	.00	0 .0
WALL	EXIT													
		---------- WARNING - Flow depth near top of box conduit ----------												
1486.730	198.130	3.818	201.948	29.20	5.95	.55	202.50	.00	1.84	.00	2.500	.000	.00	1 .0
140.450	.0100					.0051	.71	.00	.00	1.56	.013	.00	.00	PIPE
WALL	ENTRANCE													

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Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1627.180	199.540	3.166	202.706	29.20	5.95	.55	203.26	.00	1.84	.00	2.500	.000	.00	1 .0
4.000	.0250					.0051	.02	3.17	.00	1.18	.013	.00	.00	PIPE
1631.180	199.640	3.087	202.727	29.20	5.95	.55	203.28	.00	1.84	.00	2.500	.000	.00	0 .0
WALL EXIT														
1631.180	199.640	3.087	202.727	29.20	5.95	.55	203.28	.00	1.84	.00	2.500	.000	.00	1 .0
128.096	.0100					.0050	.64	.00	.00	1.56	.013	.00	.00	PIPE
1759.276	200.921	2.500	203.421	29.20	5.95	.55	203.97	2.50	1.84	.00	2.500	.000	.00	1 .0
33.271	.0100					.0047	.16	2.50	.00	1.56	.013	.00	.00	PIPE
1792.547	201.253	2.268	203.521	29.20	6.24	.60	204.13	.00	1.84	1.45	2.500	.000	.00	1 .0
13.784	.0100					.0046	.06	2.27	.61	1.56	.013	.00	.00	PIPE
1806.330	201.391	2.133	203.524	29.20	6.54	.67	204.19	.00	1.84	1.77	2.500	.000	.00	1 .0
8.845	.0100					.0050	.04	2.14	.73	1.56	.013	.00	.00	PIPE
1815.175	201.479	2.022	203.502	29.20	6.86	.73	204.23	.01	1.84	1.97	2.500	.000	.00	1 .0
2.846	.0100					.0055	.02	2.03	.82	1.56	.013	.00	.00	PIPE
1818.021	201.508	1.925	203.433	29.20	7.20	.80	204.24	.01	1.84	2.10	2.500	.000	.00	1 .0
HYDRAULIC JUMP														
1818.021	201.508	1.686	203.194	29.20	8.29	1.07	204.26	.01	1.84	2.34	2.500	.000	.00	1 .0
5.072	.0100					.0076	.04	1.70	1.19	1.56	.013	.00	.00	PIPE

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Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1823.093	201.559	1.760	203.319	29.20	7.90	.97	204.29	.01	1.84	2.28	2.500	.000	.00	1 .0
2.137	.0100					.0067	.01	1.77	1.09	1.56	.013	.00	.00	PIPE
1825.230	201.580	1.842	203.422	29.20	7.53	.88	204.30	.01	1.84	2.20	2.500	.000	.00	1 .0
WALL	ENTRANCE													
1825.230	201.580	3.842	205.422	29.20	1.90	.06	205.48	.00	1.18	4.00	4.000	4.000	.00	0 .0
JUNCT STR	.0250					.0002	.00	3.84	.17		.013	.00	.00	BOX
		---------- WARNING - Flow depth near top of box conduit ----------												
1829.230	201.680	3.770	205.450	25.30	1.68	.04	205.49	.00	1.08	4.00	4.000	4.000	.00	0 .0
WALL	EXIT													
		---------- WARNING - Flow depth near top of box conduit ----------												
1829.230	201.680	3.770	205.450	25.30	8.05	1.01	206.46	.00	1.77	.00	2.000	.000	.00	1 .0
39.110	.0100					.0125	.49	.00	.00	2.00	.013	.00	.00	PIPE
1868.340	202.070	3.914	205.984	25.30	8.05	1.01	206.99	.00	1.77	.00	2.000	.000	.00	1 .0
201.100	.0100					.0125	2.52	3.91	.00	2.00	.013	.00	.00	PIPE
2069.440	204.080	4.420	208.500	25.30	8.05	1.01	209.51	.00	1.77	.00	2.000	.000	.00	1 .0
WALL	ENTRANCE													

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SD-A7 Q100

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
2069.440	204.080	5.582	209.662	25.30	1.58	.04	209.70	.00	1.08	4.00	4.000	4.000	.00	0 .0
JUNCT STR	.0250					.0002	.00	5.58	.14		.013	.00	.00	BOX
2073.440	204.180	5.523	209.703	17.60	1.10	.02	209.72	.00	.84	4.00	4.000	4.000	.00	0 .0
WALL	EXIT													
2073.440	204.180	5.524	209.704	17.60	5.60	.49	210.19	.00	1.51	.00	2.000	.000	.00	1 .0
91.620	.0170					.0061	.55	5.52	.00	1.11	.013	.00	.00	PIPE
2165.060	205.740	4.518	210.258	17.60	5.60	.49	210.75	.00	1.51	.00	2.000	.000	.00	1 .0
WALL	ENTRANCE													
2165.060	205.740	5.081	210.821	17.60	1.10	.02	210.84	.00	.84	4.00	4.000	4.000	.00	0 .0
JUNCT STR	.0250					.0001	.00	5.08	.10		.013	.00	.00	BOX
2169.060	205.840	4.994	210.834	14.30	.89	.01	210.85	.00	.73	4.00	4.000	4.000	.00	0 .0
WALL	EXIT													
2169.060	205.840	4.994	210.834	14.30	4.55	.32	211.16	.00	1.36	.00	2.000	.000	.00	1 .0
35.330	.0416					.0040	.14	.00	.00	.76	.013	.00	.00	PIPE
2204.390	207.310	3.692	211.002	14.30	4.55	.32	211.32	.00	1.36	.00	2.000	.000	.00	1 .0
WALL	ENTRANCE													
2204.390	207.310	4.063	211.373	14.30	.89	.01	211.39	.00	.73	4.00	4.000	4.000	.00	0 .0
JUNCT STR	.0825					.0001	.00	.00	.08		.014	.00	.00	BOX

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Q100 05/16/2024
SD-A7 Q100

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
2208.390	207.640	3.744	211.384	4.10	.27	.00	211.38	.00	.32	4.00	4.000	4.000	.00	0 .0
WALL EXIT														
---------- WARNING - Flow depth near top of box conduit ----------														
2208.390	207.640	3.744	211.384	4.10	2.32	.08	211.47	.00	.78	.00	1.500	.000	.00	1 .0
67.135	.0350					.0015	.10	3.74	.00	.47	.013	.00	.00	PIPE
2275.525	209.987	1.500	211.487	4.10	2.32	.08	211.57	.00	.78	.00	1.500	.000	.00	1 .0
3.892	.0350					.0014	.01	1.50	.00	.47	.013	.00	.00	PIPE
2279.417	210.123	1.360	211.483	4.10	2.43	.09	211.57	.00	.78	.87	1.500	.000	.00	1 .0
2.109	.0350					.0014	.00	1.36	.31	.47	.013	.00	.00	PIPE
2281.525	210.196	1.280	211.476	4.10	2.55	.10	211.58	.00	.78	1.06	1.500	.000	.00	1 .0
1.296	.0350					.0015	.00	1.28	.37	.47	.013	.00	.00	PIPE
2282.822	210.242	1.213	211.455	4.10	2.68	.11	211.57	.00	.78	1.18	1.500	.000	.00	1 .0
HYDRAULIC JUMP														
2282.822	210.242	.465	210.707	4.10	8.78	1.20	211.90	.00	.78	1.39	1.500	.000	.00	1 .0
44.282	.0350					.0350	1.55	.47	2.67	.47	.013	.00	.00	PIPE
2327.104	211.790	.465	212.255	4.10	8.78	1.20	213.45	.00	.78	1.39	1.500	.000	.00	1 .0
26.906	.0350					.0350	.94	.47	2.67	.47	.013	.00	.00	PIPE

SD-A7
Q100 05/16/2024
SD-A7 Q100

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
2354.010	212.730	.465	213.195	4.10	8.79	1.20	214.39	.01	.78	1.39	1.500	.000	.00	1 .0
36.310	.0350					.0350	1.27	.48	2.67	.47	.013	.00	.00	PIPE
2390.320	214.000	.465	214.465	4.10	8.79	1.20	215.66	.01	.78	1.39	1.500	.000	.00	1 .0
42.000	.0350					.0354	1.49	.48	2.67	.47	.013	.00	.00	PIPE
2432.320	215.470	.462	215.932	4.10	8.85	1.22	217.15	.00	.78	1.39	1.500	.000	.00	1 .0
8.001	.0393					.0348	.28	.46	2.70	.45	.013	.00	.00	PIPE
2440.321	215.785	.468	216.253	4.10	8.68	1.17	217.42	.00	.78	1.39	1.500	.000	.00	1 .0
11.775	.0393					.0317	.37	.47	2.63	.45	.013	.00	.00	PIPE
2452.096	216.248	.485	216.733	4.10	8.28	1.06	217.80	.00	.78	1.40	1.500	.000	.00	1 .0
6.923	.0393					.0278	.19	.49	2.46	.45	.013	.00	.00	PIPE
2459.019	216.520	.502	217.022	4.10	7.89	.97	217.99	.00	.78	1.42	1.500	.000	.00	1 .0
4.676	.0393					.0244	.11	.50	2.30	.45	.013	.00	.00	PIPE
2463.694	216.704	.520	217.224	4.10	7.53	.88	218.10	.00	.78	1.43	1.500	.000	.00	1 .0
3.394	.0393					.0214	.07	.52	2.15	.45	.013	.00	.00	PIPE
2467.088	216.837	.539	217.376	4.10	7.18	.80	218.18	.00	.78	1.44	1.500	.000	.00	1 .0
2.607	.0393					.0187	.05	.54	2.01	.45	.013	.00	.00	PIPE
2469.696	216.940	.558	217.498	4.10	6.84	.73	218.22	.00	.78	1.45	1.500	.000	.00	1 .0
2.012	.0393					.0164	.03	.56	1.88	.45	.013	.00	.00	PIPE

SD-A7
Q100 05/16/2024
SD-A7 Q100

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
2471.708	217.019	.578	217.597	4.10	6.52	.66	218.26	.00	.78	1.46	1.500	.000	.00	1 .0
1.568	.0393					.0144	.02	.58	1.75	.45	.013	.00	.00	PIPE
2473.277	217.081	.599	217.680	4.10	6.22	.60	218.28	.00	.78	1.47	1.500	.000	.00	1 .0
1.223	.0393					.0126	.02	.60	1.64	.45	.013	.00	.00	PIPE
2474.499	217.129	.621	217.750	4.10	5.93	.55	218.30	.00	.78	1.48	1.500	.000	.00	1 .0
.980	.0393					.0111	.01	.62	1.53	.45	.013	.00	.00	PIPE
2475.479	217.167	.643	217.810	4.10	5.66	.50	218.31	.00	.78	1.48	1.500	.000	.00	1 .0
.715	.0393					.0097	.01	.64	1.43	.45	.013	.00	.00	PIPE
2476.194	217.195	.667	217.862	4.10	5.39	.45	218.31	.00	.78	1.49	1.500	.000	.00	1 .0
.521	.0393					.0086	.00	.67	1.33	.45	.013	.00	.00	PIPE
2476.715	217.216	.692	217.908	4.10	5.14	.41	218.32	.00	.78	1.50	1.500	.000	.00	1 .0
.356	.0393					.0075	.00	.69	1.24	.45	.013	.00	.00	PIPE
2477.071	217.230	.718	217.948	4.10	4.90	.37	218.32	.00	.78	1.50	1.500	.000	.00	1 .0
.212	.0393					.0066	.00	.72	1.16	.45	.013	.00	.00	PIPE
2477.283	217.238	.745	217.983	4.10	4.67	.34	218.32	.00	.78	1.50	1.500	.000	.00	1 .0
.047	.0393					.0058	.00	.75	1.08	.45	.013	.00	.00	PIPE
2477.330	217.240	.775	218.015	4.10	4.45	.31	218.32	.00	.78	1.50	1.500	.000	.00	1 .0
WALL	ENTRANCE													

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 5-31-2024 Time: 8:46:29

SD-A7
Q100 05/16/2024
SD-A7 Q100

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
2477.330	217.240	.965	218.205	4.10	3.41	.18	218.39	.00	.78	1.44	1.500	.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.500														
CD	2	3	0	.000	4.000	4.000	.000	.000	.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
SD-A7-1

HEADING LINE NO 2 IS -
Q100 OBR

HEADING LINE NO 3 IS -
SD-A7-1 Q100

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1045.780	194.600	1	198.580

ELEMENT NO 2 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1074.740	194.890	1	.013	.000	.000	.000	0

ELEMENT NO 3 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1074.740	194.890	2	.500

ELEMENT NO 4 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1074.740	194.890	2	194.890

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 3-2024 Time: 8:53:30

SD-A7-1
Q100 OBR
SD-A7-1 Q100

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1045.780	194.600	3.980	198.580	8.40	4.75	.35	198.93	.00	1.12	.00	1.500	.000	.00	1 .0
28.960	.0100					.0064	.19	3.98	.00	1.01	.013	.00	.00	PIPE
1074.740	194.890	3.875	198.765	8.40	4.75	.35	199.12	.00	1.12	.00	1.500	.000	.00	1 .0
WALL	ENTRANCE													
1074.740	194.890	4.395	199.285	8.40	.52	.00	199.29	.00	.52	4.00	4.000	4.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.500														
CD	2	3	0	.000	4.000	4.000	.000	.000	.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -

SD-A7-2

HEADING LINE NO 2 IS -

Q100 OBR

HEADING LINE NO 3 IS -

SD-A7-2 Q100

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1002.000	198.170	1	201.950

ELEMENT NO 2 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1030.250	198.450	1	.013	.000	.000	.000	0

ELEMENT NO 3 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1030.250	198.450	2	.500

ELEMENT NO 4 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1030.250	198.450	2	198.450

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 5-31-2024 Time: 8:54:19

SD-A7-2
Q100 OBR
SD-A7-2 Q100

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1002.000	198.170	3.780	201.950	3.90	2.21	.08	202.03	.00	.76	.00	1.500	.000	.00	1 .0
28.250	.0099					.0014	.04	3.78	.00	.63	.013	.00	.00	PIPE
1030.250	198.450	3.539	201.989	3.90	2.21	.08	202.06	.00	.76	.00	1.500	.000	.00	1 .0
WALL	ENTRANCE													
1030.250	198.450	3.651	202.101	3.90	.27	.00	202.10	.00	.31	4.00	4.000	4.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.500														
CD	2	3	0	.000	4.000	4.000	.000	.000	.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -

SD-A7-3

HEADING LINE NO 2 IS -

Q100 OBR

HEADING LINE NO 3 IS -

SD-A7-3 Q100

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1002.000	202.150	1	205.450

ELEMENT NO 2 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1010.300	202.230	1	.013	.000	.000	.000	0

ELEMENT NO 3 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1010.300	202.230	2	.500

ELEMENT NO 4 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1010.300	202.230	2	202.230

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 5-31-2024 Time: 8:54:32

SD-A7-3
Q100 OBR
SD-A7-3 Q100

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1002.000	202.150	3.300	205.450	1.20	.68	.01	205.46	.00	.41	.00	1.500	.000	.00	1 .0
8.300	.0096					.0001	.00	3.30	.00	.35	.013	.00	.00	PIPE
1010.300	202.230	3.221	205.451	1.20	.68	.01	205.46	.00	.41	.00	1.500	.000	.00	1 .0
WALL ENTRANCE														
1010.300	202.230	3.232	205.462	1.20	.09	.00	205.46	.00	.14	4.00	4.000	4.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.500														
CD	2	3	0	.000	4.000	4.000	.000	.000	.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
SD-A7-3R

HEADING LINE NO 2 IS -
Q100 OBR

HEADING LINE NO 3 IS -
SD-A7-3R Q100

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1000.000	202.150	1	205.450

ELEMENT NO 2 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1029.600	202.450	1	.013	.000	.000	.000	0

ELEMENT NO 3 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1029.600	202.450	2	.500

ELEMENT NO 4 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1029.600	202.450	2	202.450

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 3-2024 Time: 5:42:26

SD-A7-3R
Q100 OBR
SD-A7-3R Q100

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1000.000	202.150	3.300	205.450	4.10	2.32	.08	205.53	.00	.78	.00	1.500	.000	.00	1 .0
29.600	.0101					.0015	.05	3.30	.00	.65	.013	.00	.00	PIPE
1029.600	202.450	3.045	205.495	4.10	2.32	.08	205.58	.00	.78	.00	1.500	.000	.00	1 .0
WALL	ENTRANCE													
1029.600	202.450	3.169	205.619	4.10	.32	.00	205.62	.00	.32	4.00	4.000	4.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.500														
CD	2	3	0	.000	4.000	4.000	.000	.000	.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
SD-A7-4

HEADING LINE NO 2 IS -
Q100 OBR

HEADING LINE NO 3 IS -
SD-A7-4 Q100

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1002.000	206.570	1	210.830

ELEMENT NO 2 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1045.600	208.500	1	.013	.000	.000	.000	0

ELEMENT NO 3 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1045.600	208.500	2	.500

ELEMENT NO 4 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1045.600	208.500	2	206.500

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 5-31-2024 Time: 9: 7: 5

SD-A7-4
Q100 OBR
SD-A7-4 Q100

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1002.000	206.570	4.260	210.830	3.30	1.87	.05	210.88	.00	.69	.00	1.500	.000	.00	1 .0
43.600	.0443					.0010	.04	4.26	.00	.39	.013	.00	.00	PIPE
1045.600	208.500	2.373	210.873	3.30	1.87	.05	210.93	.00	.69	.00	1.500	.000	.00	1 .0
WALL	ENTRANCE													
1045.600	208.500	2.452	210.952	3.30	.34	.00	210.95	.00	.28	4.00	4.000	4.000	.00	0 .0

FILE: SD-A7-5.WSW W S P G W - EDIT LISTING - Version 14.11 Date: 5-31-2024 Time: 8:54:58

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING PAGE 1

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.500														
CD	2	3	0	.000	4.000	4.000	.000	.000	.00										

W S P G W PAGE NO 1

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -

SD-A7-5

HEADING LINE NO 2 IS -

Q100 OBR

HEADING LINE NO 3 IS -

SD-A7-5 Q100

W S P G W PAGE NO 2

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1000.000	207.640	1	211.380

ELEMENT NO 2 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1008.250	207.910	1	.013	.000	.000	.000	0

ELEMENT NO 3 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1008.250	207.910	2	.500

ELEMENT NO 4 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1008.250	207.910	2	207.910

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 5-31-2024 Time: 8:54:59

SD-A7-5
Q100 OBR
SD-A7-5 Q100

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1000.000	207.640	3.740	211.380	5.80	3.28	.17	211.55	.00	.93	.00	1.500	.000	.00	1 .0
8.250	.0327					.0030	.03	3.74	.00	.57	.013	.00	.00	PIPE
1008.250	207.910	3.495	211.405	5.80	3.28	.17	211.57	.00	.93	.00	1.500	.000	.00	1 .0
WALL	ENTRANCE													
1008.250	207.910	3.743	211.653	5.80	.39	.00	211.66	.00	.40	4.00	4.000	4.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.500														
CD	2	3	0	.000	4.000	4.000	.000	.000	.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
SD-A7-6

HEADING LINE NO 2 IS -
Q100 OBR

HEADING LINE NO 3 IS -
SD-A7-6 Q100

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1002.000	207.640	1	211.380

ELEMENT NO 2 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1030.250	208.110	1	.013	.000	.000	.000	0

ELEMENT NO 3 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1030.250	208.110	2	.500

ELEMENT NO 4 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1030.250	208.110	2	208.110

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 5-31-2024 Time: 8:55:13

SD-A7-6
Q100 OBR
SD-A7-6 Q100

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1002.000	207.640	3.740	211.380	4.50	2.55	.10	211.48	.00	.81	.00	1.500	.000	.00	1 .0
28.250	.0166					.0018	.05	3.74	.00	.60	.013	.00	.00	PIPE
1030.250	208.110	3.322	211.432	4.50	2.55	.10	211.53	.00	.81	.00	1.500	.000	.00	1 .0
WALL	ENTRANCE													
1030.250	208.110	3.471	211.581	4.50	.32	.00	211.58	.00	.34	4.00	4.000	4.000	.00	0 .0

FILE: SD-A7-7.WSW W S P G W - EDIT LISTING - Version 14.11 Date: 5-31-2024 Time: 8:55:28

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING PAGE 1

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.500														
CD	2	3	0	.000	4.000	4.000	.000	.000	.00										

W S P G W PAGE NO 1

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -

SD-A7-7

HEADING LINE NO 2 IS -

Q100 OBR

HEADING LINE NO 3 IS -

SD-A7-7 Q100

W S P G W PAGE NO 2

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1002.000	204.680	1	209.700

ELEMENT NO 2 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1010.250	204.760	1	.013	.000	.000	.000	0

ELEMENT NO 3 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1010.250	204.760	2	.200

ELEMENT NO 4 IS A JUNCTION * * * * * * *

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	1014.250	205.090	2	1	0	.013	4.200	.000	205.090	.000	.000	.000

RADIUS	ANGLE
.000	.000

ELEMENT NO 5 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1014.250	205.090	1

ELEMENT NO 6 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1045.950	205.410	1	.013	.000	.000	.000	0

ELEMENT NO 7 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1045.950	205.410	2	.500

ELEMENT NO 8 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1045.950	205.410	2	205.410

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 5-31-2024 Time: 8:55:29

SD-A7-7 Q100 OBR SD-A7-7 Q100

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1002.000	204.680	5.020	209.700	8.20	4.64	.33	210.03	.00	1.11	.00	1.500	.000	.00	1 .0
8.250	.0097					.0061	.05	5.02	.00	1.01	.013	.00	.00	PIPE
1010.250	204.760	4.990	209.750	8.20	4.64	.33	210.08	.00	1.11	.00	1.500	.000	.00	1 .0
WALL	ENTRANCE													
1010.250	204.760	5.387	210.147	8.20	.51	.00	210.15	.00	.51	4.00	4.000	4.000	.00	0 .0
JUNCT STR	.0825					.0000	.00	5.39	.05		.013	.00	.00	BOX
1014.250	205.090	5.043	210.133	4.00	.25	.00	210.13	.00	.31	4.00	4.000	4.000	.00	0 .0
WALL	EXIT													
1014.250	205.090	5.044	210.134	4.00	2.26	.08	210.21	.00	.77	.00	1.500	.000	.00	1 .0
31.700	.0101					.0015	.05	5.04	.00	.64	.013	.00	.00	PIPE
1045.950	205.410	4.770	210.180	4.00	2.26	.08	210.26	.00	.77	.00	1.500	.000	.00	1 .0
WALL	ENTRANCE													
1045.950	205.410	4.888	210.298	4.00	.25	.00	210.30	.00	.31	4.00	4.000	4.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING PAGE 1

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	2	0	.000	4.000	14.900			.00										
CD	2	4	2		2.500														

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
OBR
HEADING LINE NO 2 IS -
LINE A8
HEADING LINE NO 3 IS -
100 YR DETAINED FLOW

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1000.000	190.040	1	190.730

ELEMENT NO 2 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1000.000	190.040	2

ELEMENT NO 3 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1091.060	190.500	2	.013	.000	.000	.000	0

ELEMENT NO 4 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1091.060	190.500	1	.200

ELEMENT NO 5 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1091.060	190.500	1	190.500

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 2-2024 Time:12:58: 9

OBR

LINE A8

100 YR DETAINED FLOW

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1000.000	190.040	.221	190.261	26.40	8.02	1.00	191.26	.00	.46	14.90	4.000	14.900	.00	0 .0
WALL EXIT														
1000.000	190.040	1.180	191.220	26.40	5.79	.52	191.74	.00	1.22	2.50	2.500	.000	.00	2 .0
80.820	.0051					.0051	.41	1.18	.76	1.18	.013	.00	.00	PIPE
1080.820	190.448	1.180	191.628	26.40	5.79	.52	192.15	.00	1.22	2.50	2.500	.000	.00	2 .0
10.240	.0051					.0048	.05	1.18	.76	1.18	.013	.00	.00	PIPE
1091.060	190.500	1.221	191.721	26.40	5.54	.48	192.20	.00	1.22	2.50	2.500	.000	.00	2 .0
WALL ENTRANCE														
1091.060	190.500	2.221	192.721	26.40	.80	.01	192.73	.00	.46	14.90	4.000	14.900	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.500														
CD	2	2	0	.000	10.000	3.000			.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -

OCEAN BREEZE RANCH

HEADING LINE NO 2 IS -

Q100

HEADING LINE NO 3 IS -

LINE A10

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET		*		*	*						
U/S DATA	STATION	INVERT	SECT			W S ELEV					
	901.110	220.960	2			220.960					
ELEMENT NO 2 IS A WALL EXIT					*						
U/S DATA	STATION	INVERT	SECT								
	901.110	220.960	1								
ELEMENT NO 3 IS A REACH		*		*	*						
U/S DATA	STATION	INVERT	SECT	N			RADIUS	ANGLE	ANG PT	MAN H	
	970.570	226.520	1	.013			.000	.000	.000	0	
ELEMENT NO 4 IS A WALL ENTRANCE					*						
U/S DATA	STATION	INVERT	SECT	FP							
	970.570	226.520	2	.200							
ELEMENT NO 5 IS A REACH		*		*	*						
U/S DATA	STATION	INVERT	SECT	N			RADIUS	ANGLE	ANG PT	MAN H	
	974.570	226.850	2	.013			.000	.000	.000	0	
ELEMENT NO 6 IS A WALL EXIT					*						
U/S DATA	STATION	INVERT	SECT								
	974.570	226.850	1								
ELEMENT NO 7 IS A REACH		*		*	*						
U/S DATA	STATION	INVERT	SECT	N			RADIUS	ANGLE	ANG PT	MAN H	
	1025.430	230.920	1	.013			.000	.000	.000	0	
ELEMENT NO 8 IS A WALL ENTRANCE					*						
U/S DATA	STATION	INVERT	SECT	FP							
	1025.430	230.920	2	.200							
ELEMENT NO 9 IS A REACH		*		*	*						
U/S DATA	STATION	INVERT	SECT	N			RADIUS	ANGLE	ANG PT	MAN H	
	1029.430	231.250	2	.013			.000	.000	.000	0	
ELEMENT NO 10 IS A WALL EXIT					*						
U/S DATA	STATION	INVERT	SECT								
	1029.430	231.250	1								
ELEMENT NO 11 IS A REACH		*		*	*						
U/S DATA	STATION	INVERT	SECT	N			RADIUS	ANGLE	ANG PT	MAN H	
	1057.240	233.500	1	.013			.000	.000	.000	0	
ELEMENT NO 12 IS A WALL ENTRANCE					*						
U/S DATA	STATION	INVERT	SECT	FP							
	1057.240	233.500	2	.200							
ELEMENT NO 13 IS A SYSTEM HEADWORKS					*	*					
U/S DATA	STATION	INVERT	SECT			W S ELEV					
	1057.240	233.500	2			233.500					

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 5-29-2024 Time: 8: 6:58

OCEAN BREEZE RANCH
Q100
LINE A10

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
901.110	220.960	.204	221.164	8.90	14.55	3.29	224.45	.00	.65	3.00	10.000	3.000	.00	0 .0
WALL	EXIT													
901.110	220.960	.577	221.537	8.90	14.20	3.13	224.67	.00	1.15	1.46	1.500	.000	.00	1 .0
18.583	.0800					.0697	1.29	.58	3.82	.56	.013	.00	.00	PIPE
919.693	222.447	.592	223.040	8.90	13.73	2.93	225.96	.00	1.15	1.47	1.500	.000	.00	1 .0
13.799	.0800					.0623	.86	.59	3.64	.56	.013	.00	.00	PIPE
933.492	223.552	.613	224.165	8.90	13.09	2.66	226.82	.00	1.15	1.47	1.500	.000	.00	1 .0
8.626	.0800					.0547	.47	.61	3.40	.56	.013	.00	.00	PIPE
942.118	224.243	.636	224.879	8.90	12.48	2.42	227.30	.00	1.15	1.48	1.500	.000	.00	1 .0
6.148	.0800					.0480	.30	.64	3.17	.56	.013	.00	.00	PIPE
948.266	224.735	.659	225.394	8.90	11.90	2.20	227.59	.00	1.15	1.49	1.500	.000	.00	1 .0
4.644	.0800					.0422	.20	.66	2.96	.56	.013	.00	.00	PIPE
952.909	225.106	.683	225.789	8.90	11.34	2.00	227.79	.00	1.15	1.49	1.500	.000	.00	1 .0
3.623	.0800					.0371	.13	.68	2.76	.56	.013	.00	.00	PIPE
956.532	225.396	.709	226.105	8.90	10.82	1.82	227.92	.00	1.15	1.50	1.500	.000	.00	1 .0
2.914	.0800					.0326	.10	.71	2.57	.56	.013	.00	.00	PIPE
959.446	225.630	.736	226.366	8.90	10.31	1.65	228.02	.00	1.15	1.50	1.500	.000	.00	1 .0
2.380	.0800					.0287	.07	.74	2.40	.56	.013	.00	.00	PIPE

OCEAN BREEZE RANCH
Q100
LINE A10

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
961.826	225.820	.764	226.584	8.90	9.83	1.50	228.09	.00	1.15	1.50	1.500	.000	.00	1 .0
1.963	.0800					.0253	.05	.76	2.23	.56	.013	.00	.00	PIPE
963.789	225.977	.793	226.770	8.90	9.37	1.36	228.13	.00	1.15	1.50	1.500	.000	.00	1 .0
1.612	.0800					.0223	.04	.79	2.07	.56	.013	.00	.00	PIPE
965.401	226.106	.824	226.930	8.90	8.94	1.24	228.17	.00	1.15	1.49	1.500	.000	.00	1 .0
1.322	.0800					.0197	.03	.82	1.93	.56	.013	.00	.00	PIPE
966.723	226.212	.857	227.069	8.90	8.52	1.13	228.20	.00	1.15	1.48	1.500	.000	.00	1 .0
1.078	.0800					.0174	.02	.86	1.79	.56	.013	.00	.00	PIPE
967.801	226.298	.892	227.190	8.90	8.13	1.03	228.22	.00	1.15	1.47	1.500	.000	.00	1 .0
.885	.0800					.0154	.01	.89	1.66	.56	.013	.00	.00	PIPE
968.686	226.369	.928	227.297	8.90	7.75	.93	228.23	.00	1.15	1.46	1.500	.000	.00	1 .0
.689	.0800					.0137	.01	.93	1.54	.56	.013	.00	.00	PIPE
969.375	226.424	.967	227.391	8.90	7.39	.85	228.24	.00	1.15	1.44	1.500	.000	.00	1 .0
.530	.0800					.0121	.01	.97	1.42	.56	.013	.00	.00	PIPE
969.905	226.467	1.008	227.475	8.90	7.04	.77	228.25	.00	1.15	1.41	1.500	.000	.00	1 .0
.376	.0800					.0108	.00	1.01	1.31	.56	.013	.00	.00	PIPE
970.281	226.497	1.052	227.549	8.90	6.72	.70	228.25	.00	1.15	1.37	1.500	.000	.00	1 .0
.222	.0800					.0096	.00	1.05	1.20	.56	.013	.00	.00	PIPE

OCEAN BREEZE RANCH
Q100
LINE A10

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT) / SF Ave	Water Elev / HF	Q (CFS) / SE Dpth	Vel (FPS) / Froude N	Vel Head / Norm Dp	Energy Grd.El. / "N"	Super Elev / X-Fall	Critical Depth / ZR	Flow Top Width / Type Ch	Height/ Dia.-FT / No Wth Prs/Pip
970.503	226.515	1.100	227.615	8.90	6.40	.64	228.25	.00	1.15	1.33	1.500
.067	.0800					.0086	.00	1.10	1.10	.56	.013
970.570	226.520	1.154	227.674	8.90	6.10	.58	228.25	.00	1.15	1.26	1.500
WALL ENTRANCE											
970.570	226.520	2.154	228.674	8.90	1.38	.03	228.70	.00	.65	3.00	10.000
1.182	.0825					.0002	.00	2.15	.17	.25	.013
971.752	226.618	2.054	228.671	8.90	1.44	.03	228.70	.00	.65	3.00	10.000
1.122	.0825					.0002	.00	2.05	.18	.25	.013
972.874	226.710	1.958	228.668	8.90	1.51	.04	228.70	.00	.65	3.00	10.000
1.065	.0825					.0002	.00	1.96	.19	.25	.013
973.939	226.798	1.867	228.665	8.90	1.59	.04	228.70	.00	.65	3.00	10.000
.631	.0825					.0003	.00	1.87	.20	.25	.013
974.570	226.850	1.813	228.663	8.90	1.64	.04	228.70	.00	.65	3.00	10.000
HYDRAULIC JUMP											
974.570	226.850	.592	227.442	8.90	13.73	2.93	230.37	.00	1.15	1.47	1.500
13.759	.0800					.0623	.86	.59	3.64	.56	.013
988.329	227.951	.613	228.564	8.90	13.09	2.66	231.22	.00	1.15	1.47	1.500
8.634	.0800					.0547	.47	.61	3.40	.56	.013

Station / L/Elem	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
970.503	.000	.00	1 .0
.067	.00	.00	PIPE
970.570	.000	.00	1 .0
WALL ENTRANCE			
970.570	3.000	.00	0 .0
1.182	.00	.00	RECTANG
971.752	3.000	.00	0 .0
1.122	.00	.00	RECTANG
972.874	3.000	.00	0 .0
1.065	.00	.00	RECTANG
973.939	3.000	.00	0 .0
.631	.00	.00	RECTANG
974.570	3.000	.00	0 .0
HYDRAULIC JUMP			
974.570	.000	.00	1 .0
13.759	.00	.00	PIPE
988.329	.000	.00	1 .0
8.634	.00	.00	PIPE

OCEAN BREEZE RANCH
Q100
LINE A10

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
996.963	228.642	.636	229.278	8.90	12.48	2.42	231.70	.00	1.15	1.48	1.500	.000	.00	1 .0
6.152	.0800					.0480	.30	.64	3.17	.56	.013	.00	.00	PIPE
1003.115	229.134	.659	229.793	8.90	11.90	2.20	231.99	.00	1.15	1.49	1.500	.000	.00	1 .0
4.646	.0800					.0422	.20	.66	2.96	.56	.013	.00	.00	PIPE
1007.762	229.506	.683	230.189	8.90	11.34	2.00	232.19	.00	1.15	1.49	1.500	.000	.00	1 .0
3.625	.0800					.0371	.13	.68	2.76	.56	.013	.00	.00	PIPE
1011.387	229.796	.709	230.505	8.90	10.82	1.82	232.32	.00	1.15	1.50	1.500	.000	.00	1 .0
2.915	.0800					.0326	.10	.71	2.57	.56	.013	.00	.00	PIPE
1014.302	230.029	.736	230.766	8.90	10.31	1.65	232.42	.00	1.15	1.50	1.500	.000	.00	1 .0
2.381	.0800					.0287	.07	.74	2.40	.56	.013	.00	.00	PIPE
1016.683	230.220	.764	230.984	8.90	9.83	1.50	232.49	.00	1.15	1.50	1.500	.000	.00	1 .0
1.964	.0800					.0253	.05	.76	2.23	.56	.013	.00	.00	PIPE
1018.647	230.377	.793	231.170	8.90	9.37	1.36	232.53	.00	1.15	1.50	1.500	.000	.00	1 .0
1.612	.0800					.0223	.04	.79	2.07	.56	.013	.00	.00	PIPE
1020.259	230.506	.824	231.330	8.90	8.94	1.24	232.57	.00	1.15	1.49	1.500	.000	.00	1 .0
1.322	.0800					.0197	.03	.82	1.93	.56	.013	.00	.00	PIPE
1021.582	230.612	.857	231.469	8.90	8.52	1.13	232.60	.00	1.15	1.48	1.500	.000	.00	1 .0
1.078	.0800					.0174	.02	.86	1.79	.56	.013	.00	.00	PIPE

OCEAN BREEZE RANCH
Q100
LINE A10

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1022.660	230.698	.892	231.590	8.90	8.13	1.03	232.62	.00	1.15	1.47	1.500	.000	.00	1 .0
.885	.0800					.0154	.01	.89	1.66	.56	.013	.00	.00	PIPE
1023.545	230.769	.928	231.697	8.90	7.75	.93	232.63	.00	1.15	1.46	1.500	.000	.00	1 .0
.689	.0800					.0137	.01	.93	1.54	.56	.013	.00	.00	PIPE
1024.234	230.824	.967	231.791	8.90	7.39	.85	232.64	.00	1.15	1.44	1.500	.000	.00	1 .0
.531	.0800					.0121	.01	.97	1.42	.56	.013	.00	.00	PIPE
1024.765	230.867	1.008	231.875	8.90	7.04	.77	232.65	.00	1.15	1.41	1.500	.000	.00	1 .0
.376	.0800					.0108	.00	1.01	1.31	.56	.013	.00	.00	PIPE
1025.141	230.897	1.052	231.949	8.90	6.72	.70	232.65	.00	1.15	1.37	1.500	.000	.00	1 .0
.222	.0800					.0096	.00	1.05	1.20	.56	.013	.00	.00	PIPE
1025.363	230.915	1.100	232.015	8.90	6.40	.64	232.65	.00	1.15	1.33	1.500	.000	.00	1 .0
.067	.0800					.0086	.00	1.10	1.10	.56	.013	.00	.00	PIPE
1025.430	230.920	1.154	232.074	8.90	6.10	.58	232.65	.00	1.15	1.26	1.500	.000	.00	1 .0
WALL	ENTRANCE													
1025.430	230.920	2.154	233.074	8.90	1.38	.03	233.10	.00	.65	3.00	10.000	3.000	.00	0 .0
1.182	.0825					.0002	.00	2.15	.17	.25	.013	.00	.00	RECTANG
1026.612	231.018	2.054	233.071	8.90	1.44	.03	233.10	.00	.65	3.00	10.000	3.000	.00	0 .0
1.122	.0825					.0002	.00	2.05	.18	.25	.013	.00	.00	RECTANG

OCEAN BREEZE RANCH
Q100
LINE A10

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1027.734	231.110	1.958	233.068	8.90	1.51	.04	233.10	.00	.65	3.00	10.000	3.000	.00	0 .0
1.064	.0825					.0002	.00	1.96	.19	.25	.013	.00	.00	RECTANG
1028.799	231.198	1.867	233.065	8.90	1.59	.04	233.10	.00	.65	3.00	10.000	3.000	.00	0 .0
.631	.0825					.0003	.00	1.87	.20	.25	.013	.00	.00	RECTANG
1029.430	231.250	1.813	233.063	8.90	1.64	.04	233.10	.00	.65	3.00	10.000	3.000	.00	0 .0
HYDRAULIC JUMP														
1029.430	231.250	.637	231.887	8.90	12.46	2.41	234.30	.00	1.15	1.48	1.500	.000	.00	1 .0
5.893	.0809					.0480	.28	.64	3.17	.56	.013	.00	.00	PIPE
1035.323	231.727	.659	232.386	8.90	11.90	2.20	234.58	.00	1.15	1.49	1.500	.000	.00	1 .0
4.540	.0809					.0422	.19	.66	2.96	.56	.013	.00	.00	PIPE
1039.864	232.094	.683	232.777	8.90	11.34	2.00	234.78	.00	1.15	1.49	1.500	.000	.00	1 .0
3.552	.0809					.0371	.13	.68	2.76	.56	.013	.00	.00	PIPE
1043.416	232.382	.709	233.091	8.90	10.82	1.82	234.91	.00	1.15	1.50	1.500	.000	.00	1 .0
2.862	.0809					.0326	.09	.71	2.57	.56	.013	.00	.00	PIPE
1046.277	232.613	.736	233.349	8.90	10.31	1.65	235.00	.00	1.15	1.50	1.500	.000	.00	1 .0
2.341	.0809					.0287	.07	.74	2.40	.56	.013	.00	.00	PIPE
1048.618	232.802	.764	233.567	8.90	9.83	1.50	235.07	.00	1.15	1.50	1.500	.000	.00	1 .0
1.933	.0809					.0253	.05	.76	2.23	.56	.013	.00	.00	PIPE

OCEAN BREEZE RANCH
Q100
LINE A10

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1050.551	232.959	.793	233.752	8.90	9.37	1.36	235.12	.00	1.15	1.50	1.500	.000	.00	1 .0
1.588	.0809					.0223	.04	.79	2.07	.56	.013	.00	.00	PIPE
1052.139	233.087	.824	233.911	8.90	8.94	1.24	235.15	.00	1.15	1.49	1.500	.000	.00	1 .0
1.303	.0809					.0197	.03	.82	1.93	.56	.013	.00	.00	PIPE
1053.443	233.193	.857	234.050	8.90	8.52	1.13	235.18	.00	1.15	1.48	1.500	.000	.00	1 .0
1.063	.0809					.0174	.02	.86	1.79	.56	.013	.00	.00	PIPE
1054.506	233.279	.892	234.171	8.90	8.13	1.03	235.20	.00	1.15	1.47	1.500	.000	.00	1 .0
.873	.0809					.0154	.01	.89	1.66	.56	.013	.00	.00	PIPE
1055.380	233.349	.928	234.278	8.90	7.75	.93	235.21	.00	1.15	1.46	1.500	.000	.00	1 .0
.680	.0809					.0137	.01	.93	1.54	.56	.013	.00	.00	PIPE
1056.059	233.404	.967	234.372	8.90	7.39	.85	235.22	.00	1.15	1.44	1.500	.000	.00	1 .0
.524	.0809					.0121	.01	.97	1.42	.56	.013	.00	.00	PIPE
1056.583	233.447	1.008	234.455	8.90	7.04	.77	235.23	.00	1.15	1.41	1.500	.000	.00	1 .0
.371	.0809					.0108	.00	1.01	1.31	.56	.013	.00	.00	PIPE
1056.954	233.477	1.052	234.529	8.90	6.72	.70	235.23	.00	1.15	1.37	1.500	.000	.00	1 .0
.220	.0809					.0096	.00	1.05	1.20	.56	.013	.00	.00	PIPE
1057.174	233.495	1.100	234.595	8.90	6.40	.64	235.23	.00	1.15	1.33	1.500	.000	.00	1 .0
.066	.0809					.0086	.00	1.10	1.10	.56	.013	.00	.00	PIPE

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 5-29-2024 Time: 8: 6:58

OCEAN BREEZE RANCH
Q100
LINE A10

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1057.240	233.500	1.154	234.654	8.90	6.10	.58	235.23	.00	1.15	1.26	1.500	.000	.00	1 .0
WALL ENTRANCE														
1057.240	233.500	2.154	235.654	8.90	1.38	.03	235.68	.00	.65	3.00	10.000	3.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.500														
CD	2	2	0	.000	4.000	4.000			.00										
CD	3	2	0	.000	3.000	2.500			.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -

OCEAN BREEZE RANCH

HEADING LINE NO 2 IS -

100 YR

HEADING LINE NO 3 IS -

LINE SD-A-11

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	943.980	288.780	1	288.780

ELEMENT NO 2 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	973.590	289.080	1	.013	.000	.000	.000	0

ELEMENT NO 3 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	973.590	289.080	2	.200

ELEMENT NO 4 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	977.590	289.410	2	.013	.000	.000	.000	0

ELEMENT NO 5 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	977.590	289.410	1

ELEMENT NO 6 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1025.610	289.890	1	.013	.000	.000	.000	0

ELEMENT NO 7 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1025.610	289.890	2	.200

ELEMENT NO 8 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1029.610	290.220	2	.013	.000	.000	.000	0

ELEMENT NO 9 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1029.610	290.220	1

ELEMENT NO 10 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1049.390	294.720	1	.013	.000	.000	.000	0

ELEMENT NO 11 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1049.390	294.720	3	.200

ELEMENT NO 12 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1049.390	294.720	3	294.720

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 6-2024 Time: 2:50:28

OCEAN BREEZE RANCH
100 YR
LINE SD-A-11

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
943.980	288.780	.778	289.558	5.50	5.94	.55	290.11	.00	.90	1.50	1.500	.000	.00	1 .0
18.212	.0101					.0092	.17	.78	1.33	.77	.013	.00	.00	PIPE
962.192	288.965	.803	289.768	5.50	5.71	.51	290.27	.00	.90	1.50	1.500	.000	.00	1 .0
7.780	.0101					.0082	.06	.80	1.25	.77	.013	.00	.00	PIPE
969.973	289.043	.834	289.877	5.50	5.44	.46	290.34	.00	.90	1.49	1.500	.000	.00	1 .0
3.051	.0101					.0072	.02	.83	1.17	.77	.013	.00	.00	PIPE
973.024	289.074	.867	289.941	5.50	5.19	.42	290.36	.00	.90	1.48	1.500	.000	.00	1 .0
.566	.0101					.0064	.00	.87	1.08	.77	.013	.00	.00	PIPE
973.590	289.080	.904	289.984	5.50	4.94	.38	290.36	.00	.90	1.47	1.500	.000	.00	1 .0
WALL	ENTRANCE													
973.590	289.080	1.904	290.984	5.50	.72	.01	290.99	.00	.39	4.00	4.000	4.000	.00	0 .0
1.065	.0825					.0000	.00	1.90	.09	.15	.013	.00	.00	RECTANG
974.655	289.168	1.815	290.983	5.50	.76	.01	290.99	.00	.39	4.00	4.000	4.000	.00	0 .0
1.014	.0825					.0001	.00	1.82	.10	.15	.013	.00	.00	RECTANG
975.669	289.251	1.731	290.982	5.50	.79	.01	290.99	.00	.39	4.00	4.000	4.000	.00	0 .0
.965	.0825					.0001	.00	1.73	.11	.15	.013	.00	.00	RECTANG
976.634	289.331	1.650	290.981	5.50	.83	.01	290.99	.00	.39	4.00	4.000	4.000	.00	0 .0
.919	.0825					.0001	.00	1.65	.11	.15	.013	.00	.00	RECTANG

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 6-2024 Time: 2:50:28

OCEAN BREEZE RANCH
100 YR
LINE SD-A-11

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
977.552	289.407	1.574	290.980	5.50	.87	.01	290.99	.00	.39	4.00	4.000	4.000	.00	0 .0
.038	.0825					.0001	.00	1.57	.12	.15	.013	.00	.00	RECTANG
977.590	289.410	1.570	290.980	5.50	.88	.01	290.99	.00	.39	4.00	4.000	4.000	.00	0 .0
WALL EXIT														
977.590	289.410	1.571	290.981	5.50	3.11	.15	291.13	.00	.90	.00	1.500	.000	.00	1 .0
9.788	.0100					.0027	.03	1.57	.00	.77	.013	.00	.00	PIPE
987.378	289.508	1.500	291.008	5.50	3.11	.15	291.16	.00	.90	.00	1.500	.000	.00	1 .0
16.610	.0100					.0025	.04	1.50	.00	.77	.013	.00	.00	PIPE
1003.988	289.674	1.360	291.034	5.50	3.26	.17	291.20	.00	.90	.87	1.500	.000	.00	1 .0
8.444	.0100					.0025	.02	1.36	.41	.77	.013	.00	.00	PIPE
1012.432	289.758	1.280	291.038	5.50	3.42	.18	291.22	.00	.90	1.06	1.500	.000	.00	1 .0
6.676	.0100					.0027	.02	1.28	.49	.77	.013	.00	.00	PIPE
1019.108	289.825	1.213	291.038	5.50	3.59	.20	291.24	.00	.90	1.18	1.500	.000	.00	1 .0
5.394	.0100					.0030	.02	1.21	.56	.77	.013	.00	.00	PIPE
1024.502	289.879	1.155	291.034	5.50	3.77	.22	291.25	.00	.90	1.26	1.500	.000	.00	1 .0
1.108	.0100					.0031	.00	1.16	.62	.77	.013	.00	.00	PIPE
1025.610	289.890	1.143	291.033	5.50	3.81	.23	291.26	.00	.90	1.28	1.500	.000	.00	1 .0
WALL ENTRANCE														

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 6-2024 Time: 2:50:28

OCEAN BREEZE RANCH
100 YR
LINE SD-A-11

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1025.610	289.890	2.143	292.033	5.50	.64	.01	292.04	.00	.39	4.00	4.000	4.000	.00	0 .0
1.202	.0825					.0000	.00	2.14	.08	.15	.013	.00	.00	RECTANG
1026.812	289.989	2.043	292.032	5.50	.67	.01	292.04	.00	.39	4.00	4.000	4.000	.00	0 .0
1.145	.0825					.0000	.00	2.04	.08	.15	.013	.00	.00	RECTANG
1027.956	290.084	1.948	292.032	5.50	.71	.01	292.04	.00	.39	4.00	4.000	4.000	.00	0 .0
1.090	.0825					.0000	.00	1.95	.09	.15	.013	.00	.00	RECTANG
1029.046	290.173	1.857	292.031	5.50	.74	.01	292.04	.00	.39	4.00	4.000	4.000	.00	0 .0
.564	.0825					.0000	.00	1.86	.10	.15	.013	.00	.00	RECTANG
1029.610	290.220	1.810	292.030	5.50	.76	.01	292.04	.00	.39	4.00	4.000	4.000	.00	0 .0
HYDRAULIC JUMP														
1029.610	290.220	.379	290.599	5.50	15.69	3.82	294.42	.00	.90	1.30	1.500	.000	.00	1 .0
.800	.2275					.1382	.11	.38	5.33	.34	.013	.00	.00	PIPE
1030.410	290.402	.381	290.783	5.50	15.53	3.75	294.53	.00	.90	1.31	1.500	.000	.00	1 .0
3.277	.2275					.1276	.42	.38	5.26	.34	.013	.00	.00	PIPE
1033.687	291.148	.394	291.542	5.50	14.81	3.40	294.95	.00	.90	1.32	1.500	.000	.00	1 .0
2.550	.2275					.1116	.28	.39	4.92	.34	.013	.00	.00	PIPE
1036.237	291.728	.408	292.136	5.50	14.12	3.10	295.23	.00	.90	1.34	1.500	.000	.00	1 .0
2.060	.2275					.0977	.20	.41	4.61	.34	.013	.00	.00	PIPE

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 6-2024 Time: 2:50:28

OCEAN BREEZE RANCH
100 YR
LINE SD-A-11

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1038.297	292.196	.422	292.618	5.50	13.46	2.81	295.43	.00	.90	1.35	1.500	.000	.00	1 .0
1.696	.2275					.0855	.14	.42	4.31	.34	.013	.00	.00	PIPE
1039.993	292.582	.437	293.019	5.50	12.83	2.56	295.58	.00	.90	1.36	1.500	.000	.00	1 .0
1.425	.2275					.0748	.11	.44	4.03	.34	.013	.00	.00	PIPE
1041.418	292.906	.452	293.358	5.50	12.24	2.33	295.68	.00	.90	1.38	1.500	.000	.00	1 .0
1.206	.2275					.0655	.08	.45	3.77	.34	.013	.00	.00	PIPE
1042.624	293.181	.468	293.649	5.50	11.67	2.11	295.76	.00	.90	1.39	1.500	.000	.00	1 .0
1.036	.2275					.0574	.06	.47	3.53	.34	.013	.00	.00	PIPE
1043.660	293.416	.484	293.900	5.50	11.12	1.92	295.82	.00	.90	1.40	1.500	.000	.00	1 .0
.884	.2275					.0503	.04	.48	3.30	.34	.013	.00	.00	PIPE
1044.544	293.617	.502	294.120	5.50	10.61	1.75	295.87	.00	.90	1.42	1.500	.000	.00	1 .0
.773	.2275					.0440	.03	.50	3.09	.34	.013	.00	.00	PIPE
1045.317	293.793	.519	294.312	5.50	10.11	1.59	295.90	.00	.90	1.43	1.500	.000	.00	1 .0
.664	.2275					.0386	.03	.52	2.89	.34	.013	.00	.00	PIPE
1045.980	293.944	.538	294.482	5.50	9.64	1.44	295.93	.00	.90	1.44	1.500	.000	.00	1 .0
.580	.2275					.0338	.02	.54	2.70	.34	.013	.00	.00	PIPE
1046.560	294.076	.557	294.633	5.50	9.19	1.31	295.95	.00	.90	1.45	1.500	.000	.00	1 .0
.502	.2275					.0297	.01	.56	2.52	.34	.013	.00	.00	PIPE

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 6-2024 Time: 2:50:28

OCEAN BREEZE RANCH
100 YR
LINE SD-A-11

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1047.062	294.190	.577	294.768	5.50	8.77	1.19	295.96	.00	.90	1.46	1.500	.000	.00	1 .0
.434	.2275					.0260	.01	.58	2.36	.34	.013	.00	.00	PIPE
1047.496	294.289	.598	294.887	5.50	8.36	1.08	295.97	.00	.90	1.47	1.500	.000	.00	1 .0
.374	.2275					.0228	.01	.60	2.20	.34	.013	.00	.00	PIPE
1047.871	294.374	.620	294.995	5.50	7.97	.99	295.98	.00	.90	1.48	1.500	.000	.00	1 .0
.321	.2275					.0201	.01	.62	2.05	.34	.013	.00	.00	PIPE
1048.192	294.448	.643	295.091	5.50	7.60	.90	295.99	.00	.90	1.48	1.500	.000	.00	1 .0
.279	.2275					.0176	.00	.64	1.92	.34	.013	.00	.00	PIPE
1048.471	294.511	.666	295.177	5.50	7.24	.82	295.99	.00	.90	1.49	1.500	.000	.00	1 .0
.232	.2275					.0155	.00	.67	1.79	.34	.013	.00	.00	PIPE
1048.702	294.564	.691	295.255	5.50	6.91	.74	296.00	.00	.90	1.50	1.500	.000	.00	1 .0
.193	.2275					.0136	.00	.69	1.67	.34	.013	.00	.00	PIPE
1048.896	294.608	.717	295.325	5.50	6.59	.67	296.00	.00	.90	1.50	1.500	.000	.00	1 .0
.159	.2275					.0120	.00	.72	1.55	.34	.013	.00	.00	PIPE
1049.055	294.644	.744	295.388	5.50	6.28	.61	296.00	.00	.90	1.50	1.500	.000	.00	1 .0
.123	.2275					.0106	.00	.74	1.45	.34	.013	.00	.00	PIPE
1049.177	294.672	.773	295.445	5.50	5.99	.56	296.00	.00	.90	1.50	1.500	.000	.00	1 .0
.094	.2275					.0093	.00	.77	1.35	.34	.013	.00	.00	PIPE

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 6-2024 Time: 2:50:28

OCEAN BREEZE RANCH
100 YR
LINE SD-A-11

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1049.272	294.693	.803	295.496	5.50	5.71	.51	296.00	.00	.90	1.50	1.500	.000	.00	1 .0
.068	.2275					.0082	.00	.80	1.25	.34	.013	.00	.00	PIPE
1049.340	294.709	.834	295.543	5.50	5.44	.46	296.00	.00	.90	1.49	1.500	.000	.00	1 .0
.040	.2275					.0072	.00	.83	1.17	.34	.013	.00	.00	PIPE
1049.380	294.718	.867	295.585	5.50	5.19	.42	296.00	.00	.90	1.48	1.500	.000	.00	1 .0
.010	.2275					.0064	.00	.87	1.08	.34	.013	.00	.00	PIPE
1049.390	294.720	.904	295.624	5.50	4.94	.38	296.00	.00	.90	1.47	1.500	.000	.00	1 .0
WALL	ENTRANCE													
1049.390	294.720	1.904	296.624	5.50	1.16	.02	296.64	.00	.53	2.50	3.000	2.500	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		3.500														

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
SD-C

HEADING LINE NO 2 IS -
Q100 05/29/2024

HEADING LINE NO 3 IS -
SD-C Q100 DOWNSTREAM

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	972.820	187.420	1	189.880

ELEMENT NO 2 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	972.820	187.420	1

ELEMENT NO 3 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	990.620	187.510	1	.013	.000	.000	.000	0

ELEMENT NO 4 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	990.620	187.510	1	187.510

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 3-2024 Time: 8: 1:37

SD-C
Q100 05/29/2024
SD-C Q100 DOWNSTREAM

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
972.820	187.420	2.460	189.880	42.20	5.84	.53	190.41	.00	2.02	3.20	3.500	.000	.00	0 .0
WALL	EXIT													
972.820	187.420	2.461	189.881	42.20	5.84	.53	190.41	.00	2.02	3.20	3.500	.000	.00	1 .0
17.800	.0051					.0026	.05	2.46	.68	1.93	.013	.00	.00	PIPE
990.620	187.510	2.373	189.883	42.20	6.08	.57	190.46	.00	2.02	3.27	3.500	.000	.00	1 .0

Oldcastle Infrastructure
A CRH COMPANY

Nutrient Separating Baffle Box® (NSBB™) Head Loss Calculator

V2020.01; *5/31/2024*

Project Information

Project Name:	**Ocean Breeze Ranch**
Location:	**Basin 2A-1**
Design Basis:	**80% of 150µm**
Screen Basket Capacity (% Full):	**0% (Empty)**
Treatment Flow Rate (cfs):	**1.30**
Peak Flow Rate (cfs):	**42.20**
NSBB Model:	**NSBB-816**

Inlet & Outlet Pipe Information

Inlet Pipe Diameter (in):	**42**
Inlet Invert Elevation (ft):	**186.95**
Outlet Pipe Diameter (in):	**42**
Outlet Invert Elevation (ft):	**186.94**
Outlet Slope %:	**0.50%**
Manning's Roughness Coefficient (n):	**0.012**
Tailwater Present?	**Yes**
Tailwater Elevation:	189.89

Outlet Pipe Flow Characteristics

	Treatment	*Peak*
Normal Depth During Design Flow (ft):	**0.316**	**1.84**
Flow Area (sq ft):	**0.43**	**5.14**
Velocity (ft/s):	**3.02**	**8.21**
Wetted Perimeter (ft):	**2.14**	**5.69**
Downstream Depth of Flow (ft):	**0.344**	**2.950**

NSBB Discharge Coefficients

Screen Orifice Coefficient, Co:	**0.60**
Outlet Pipe Entrance Coefficient, K:	**0.20**

System Design Summary

Rim Elevation (ft):	**194.50**
Rim to Invert Out Depth (ft):	**7.56**
Upstream WSE during Treatment (ft):	**187.282**
Upstream WSE during Peak Flow (ft):	**190.478**

Disclaimer: Calculations are best estimate based on information available and are intended only for use by the party to whom they were transmitted and for the project referenced.

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		3.000														
CD	2	4	1		2.500														
CD	3	4	1		2.000														
CD	4	4	1		1.500														
CD	5	3	0	.000	4.000	4.000	.000	.000	.00										
CD	6	4	1		3.500														
CD	7	4	1		4.000														

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
LINE_C
HEADING LINE NO 2 IS -
Q100
HEADING LINE NO 3 IS -
OBR

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1006.620	187.580	5	190.650

ELEMENT NO 2 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1006.620	187.580	5

WARNING - ADJACENT SECTIONS ARE NOT IDENTICAL - SEE SECTION NUMBERS AND CHANNEL DEFINITIONS

ELEMENT NO 3 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1027.470	187.680	6	.013	.000	.000	-328.540	0

ELEMENT NO 4 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1027.470	187.680	5	.200

ELEMENT NO 5 IS A JUNCTION * * * * * * *

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	1031.470	187.780	5	5	0	.013	3.800	.000	187.820	.000	.000	.000

RADIUS	ANGLE
.000	.000

ELEMENT NO 6 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1031.470	187.780	6

ELEMENT NO 7 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1071.970	187.980	6	.013	25.000	-92.819	.000	0

ELEMENT NO 8 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1071.970	187.980	5	.200

ELEMENT NO 9 IS A JUNCTION * * * * * * *

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	1075.970	188.080	5	5	0	.013	5.700	.000	188.120	.000	.000	.000

RADIUS	ANGLE
.000	.000

ELEMENT NO 10 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1075.970	188.080	6

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 11 IS A JUNCTION

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	1084.530	188.130	5	4	0	.013	1.400	.000	189.580	.000	.000	.000

RADIUS	ANGLE
.000	.000

WARNING - ADJACENT SECTIONS ARE NOT IDENTICAL - SEE SECTION NUMBERS AND CHANNEL DEFINITIONS

ELEMENT NO 12 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1098.540	188.130	6	.013	.000	.000	.000	0

ELEMENT NO 13 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1128.470	188.340	6	.013	25.000	68.594	.000	0

ELEMENT NO 14 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1147.860	188.440	6	.013	.000	.000	.000	0

ELEMENT NO 15 IS A WALL ENTRANCE

U/S DATA	STATION	INVERT	SECT	FP
	1147.860	188.440	5	.200

ELEMENT NO 16 IS A JUNCTION

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	1151.860	188.540	5	4	0	.013	7.100	.000	188.690	.000	.000	.000

RADIUS	ANGLE
.000	.000

ELEMENT NO 17 IS A WALL EXIT

U/S DATA	STATION	INVERT	SECT
	1151.860	188.540	1

ELEMENT NO 18 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1253.110	189.050	1	.013	.000	.000	-31.860	0

ELEMENT NO 19 IS A WALL ENTRANCE

U/S DATA	STATION	INVERT	SECT	FP
	1253.110	189.050	5	.200

ELEMENT NO 20 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1257.110	189.150	5	.013	.000	.000	.000	0

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 21 IS A WALL EXIT

U/S DATA	STATION	INVERT	SECT
	1257.110	189.150	1

ELEMENT NO 22 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1545.300	190.590	1	.013	.000	.000	.000	0

ELEMENT NO 23 IS A WALL ENTRANCE

U/S DATA	STATION	INVERT	SECT	FP
	1545.300	190.590	5	.200

ELEMENT NO 24 IS A JUNCTION

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	1549.300	191.090	5	4	4	.013	.900	.800	191.570	191.570	-90.000	90.000

RADIUS	ANGLE
.000	.000

ELEMENT NO 25 IS A WALL EXIT

U/S DATA	STATION	INVERT	SECT
	1549.300	191.090	2

ELEMENT NO 26 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1729.660	192.740	2	.013	.000	.000	-359.990	8

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 ELEMENT NO  27 IS A  WALL  ENTRANCE                  *
                  U/S DATA   STATION    INVERT  SECT              FP
                             1729.660  192.740    5               .200
 ELEMENT NO  28 IS A JUNCTION          *         *     *     *               *                  *               *
                  U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3        Q4     INVERT-3 INVERT-4  PHI 3  PHI 4
                             1733.660  192.840    5     4     4   .013     3.000     2.500   192.840   192.840 -90.000   90.000
                                                                                             RADIUS    ANGLE
                                                                                               .000    .000
 ELEMENT NO  29 IS A  WALL  EXIT                      *
                  U/S DATA   STATION    INVERT  SECT
                             1733.660  192.840    3
 ELEMENT NO  30 IS A REACH             *         *     *
                  U/S DATA   STATION    INVERT  SECT               N                          RADIUS    ANGLE     ANG PT  MAN H
                             1826.790  193.770    3               .013                          .000     .000     -.213     0
                                                                  W S P G W                                                PAGE NO   5
                        WATER SURFACE PROFILE - ELEMENT CARD LISTING
 ELEMENT NO  31 IS A  WALL  ENTRANCE                  *
                  U/S DATA   STATION    INVERT  SECT              FP
                             1826.790  193.770    5               .200
 ELEMENT NO  32 IS A REACH             *         *     *
                  U/S DATA   STATION    INVERT  SECT               N                          RADIUS    ANGLE     ANG PT  MAN H
                             1830.790  193.870    5               .013                          .000     .000      .000     0
 ELEMENT NO  33 IS A  WALL  EXIT                      *
                  U/S DATA   STATION    INVERT  SECT
                             1830.790  193.870    3
 ELEMENT NO  34 IS A REACH             *         *     *
                  U/S DATA   STATION    INVERT  SECT               N                          RADIUS    ANGLE     ANG PT  MAN H
                             2033.580  195.900    3               .013                          .000     .000     -.343     0
 ELEMENT NO  35 IS A  WALL  ENTRANCE                  *
                  U/S DATA   STATION    INVERT  SECT              FP
                             2033.580  195.900    5               .200
 ELEMENT NO  36 IS A JUNCTION          *         *     *     *               *                  *               *
                  U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3        Q4     INVERT-3 INVERT-4  PHI 3  PHI 4
                             2037.580  196.400    5     4     4   .013     3.500     3.300   196.400   196.400 -90.000   90.000
                                                                                             RADIUS    ANGLE
                                                                                               .000    .000
 ELEMENT NO  37 IS A  WALL  EXIT                      *
                  U/S DATA   STATION    INVERT  SECT
                             2037.580  196.400    3
WARNING - ADJACENT SECTIONS ARE NOT IDENTICAL - SEE SECTION NUMBERS AND CHANNEL DEFINITIONS
 ELEMENT NO  38 IS A REACH             *         *     *
                  U/S DATA   STATION    INVERT  SECT               N                          RADIUS    ANGLE     ANG PT  MAN H
                             2255.610  198.580    4               .013                          .000     .000  -359.450     0
 ELEMENT NO  39 IS A  WALL  ENTRANCE                  *
                  U/S DATA   STATION    INVERT  SECT              FP
                             2255.610  198.580    5               .500
 ELEMENT NO  40 IS A SYSTEM HEADWORKS                 *                     *
                  U/S DATA   STATION    INVERT  SECT                                  W S ELEV
                             2255.610  198.580    5                                  198.580
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Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 3-2024 Time: 7:33:11

LINE_C
Q100
OBR

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT) / SF Ave	Water Elev / HF	Q (CFS) / SE Dpth	Vel (FPS) / Froude N	Vel Head / Norm Dp	Energy Grd.El. / "N"	Super Elev / X-Fall	Critical Depth / ZR	Flow Top Width / Type Ch	Height/Dia.-FT / No Wth Prs/Pip
1006.620	187.580	3.070	190.650	42.20	3.44	.18	190.83	.00	1.51	4.00	4.000
WALL	EXIT										
1006.620	187.580	3.070	190.650	42.20	4.72	.35	191.00	.00	2.02	2.30	3.500
20.850	.0048					.0016	.03	3.07	.42	1.97	.013
1027.470	187.680	2.988	190.668	42.20	4.82	.36	191.03	.00	2.02	2.47	3.500
WALL	ENTRANCE										
1027.470	187.680	3.988	191.668	42.20	2.65	.11	191.78	.00	1.51	4.00	4.000
JUNCT STR	.0250					.0004	.00	3.99	.23		.013
				WARNING - Flow depth near top of box conduit							
1031.470	187.780	3.922	191.702	38.40	2.45	.09	191.80	.03	1.42	4.00	4.000
WALL	EXIT										
				WARNING - Flow depth near top of box conduit							
1031.470	187.780	3.922	191.702	38.40	3.99	.25	191.95	.00	1.93	.00	3.500
40.500	.0049					.0015	.06	.00	.00	1.84	.013
1071.970	187.980	3.832	191.812	38.40	3.99	.25	192.06	.00	1.93	.00	3.500
WALL	ENTRANCE										

Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
4.000	.00	0 .0
.000	.00	1 .0
.00	.00	PIPE
.000	.00	1 .0
4.000	.00	0 .0
.00	.00	BOX
4.000	.00	0 .0
.000	.00	1 .0
.00	.00	PIPE
.000	.00	1 .0

LINE_C
Q100
OBR

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT) / SF Ave	Water Elev / HF	Q (CFS) / SE Dpth	Vel (FPS) / Froude N	Vel Head / Norm Dp	Energy Grd.El. / "N"	Super Elev / X-Fall	Critical Depth / ZR	Flow Top Width / Type Ch	Height/ Dia.-FT /	Base Wt or I.D. /	ZL /	No Wth Prs/Pip /
1071.970	187.980	4.021	192.001	38.40	2.40	.09	192.09	.00	1.42	4.00	4.000	4.000	.00	0 .0
JUNCT STR	.0250					.0004	.00	.00	.21		.013	.00	.00	BOX
1075.970	188.080	3.966	192.046	32.70	2.06	.07	192.11	.00	1.28	4.00	4.000	4.000	.00	0 .0
WALL	EXIT													
		---------- WARNING - Flow depth near top of box conduit ----------												
1075.970	188.080	3.967	192.047	32.70	3.40	.18	192.23	.00	1.77	.00	3.500	.000	.00	1 .0
JUNCT STR	.0058					.0003	.00	3.97	.00		.013	.00	.00	PIPE
		---------- WARNING - Junction Analysis - Change in Channel Type ----------												
1084.530	188.130	4.041	192.171	31.30	3.25	.16	192.34	.00	1.73	.00	3.500	.000	.00	1 .0
14.010	.0000					.0010	.01	4.04	.00	.00	.013	.00	.00	PIPE
1098.540	188.130	4.054	192.184	31.30	3.25	.16	192.35	.00	1.73	.00	3.500	.000	.00	1 .0
29.930	.0070					.0010	.03	.00	.00	1.48	.013	.00	.00	PIPE
1128.470	188.340	3.902	192.242	31.30	3.25	.16	192.41	.00	1.73	.00	3.500	.000	.00	1 .0
19.390	.0052					.0010	.02	3.90	.00	1.61	.013	.00	.00	PIPE
1147.860	188.440	3.821	192.261	31.30	3.25	.16	192.43	.00	1.73	.00	3.500	.000	.00	1 .0
WALL	ENTRANCE													

LINE_C
Q100
OBR

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1147.860	188.440	3.945	192.385	31.30	1.98	.06	192.45	.00	1.24	4.00	4.000	4.000	.00	0 .0
JUNCT STR	.0250					.0002	.00	3.94	.18		.013	.00	.00	BOX
		---------- WARNING - Flow depth near top of box conduit ----------												
1151.860	188.540	3.836	192.376	24.20	1.58	.04	192.41	.00	1.04	4.00	4.000	4.000	.00	0 .0
WALL EXIT														
		---------- WARNING - Flow depth near top of box conduit ----------												
1151.860	188.540	3.837	192.377	24.20	3.42	.18	192.56	.00	1.59	.00	3.000	.000	.00	1 .0
101.250	.0050					.0013	.13	3.84	.00	1.52	.013	.00	.00	PIPE
1253.110	189.050	3.479	192.529	24.20	3.42	.18	192.71	.00	1.59	.00	3.000	.000	.00	1 .0
WALL ENTRANCE														
1253.110	189.050	3.646	192.696	24.20	1.66	.04	192.74	.00	1.04	4.00	4.000	4.000	.00	0 .0
4.000	.0250					.0001	.00	3.65	.15	.57	.013	.00	.00	BOX
		---------- WARNING - Flow depth near top of box conduit ----------												
1257.110	189.150	3.544	192.694	24.20	1.71	.05	192.74	.00	1.04	4.00	4.000	4.000	.00	0 .0
WALL EXIT														

LINE_C
Q100
OBR

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1257.110	189.150	3.545	192.695	24.20	3.42	.18	192.88	.00	1.59	.00	3.000	.000	.00	1 .0
147.953	.0050					.0013	.19	3.54	.00	1.52	.013	.00	.00	PIPE
1405.063	189.889	3.000	192.889	24.20	3.42	.18	193.07	.00	1.59	.00	3.000	.000	.00	1 .0
68.831	.0050					.0012	.08	3.00	.00	1.52	.013	.00	.00	PIPE
1473.894	190.233	2.721	192.954	24.20	3.59	.20	193.15	.00	1.59	1.74	3.000	.000	.00	1 .0
37.051	.0050					.0012	.04	2.72	.32	1.52	.013	.00	.00	PIPE
1510.945	190.418	2.560	192.978	24.20	3.77	.22	193.20	.00	1.59	2.12	3.000	.000	.00	1 .0
29.941	.0050					.0013	.04	2.56	.38	1.52	.013	.00	.00	PIPE
1540.886	190.568	2.427	192.995	24.20	3.95	.24	193.24	.00	1.59	2.36	3.000	.000	.00	1 .0
4.414	.0050					.0014	.01	2.43	.43	1.52	.013	.00	.00	PIPE
1545.300	190.590	2.408	192.998	24.20	3.98	.25	193.24	.00	1.59	2.39	3.000	.000	.00	1 .0
WALL ENTRANCE														
1545.300	190.590	3.408	193.998	24.20	1.78	.05	194.05	.00	1.04	4.00	4.000	4.000	.00	0 .0
JUNCT STR	.1250					.0002	.00	3.41	.17		.013	.00	.00	BOX
1549.300	191.090	2.907	193.997	22.50	1.93	.06	194.06	.00	.99	4.00	4.000	4.000	.00	0 .0
WALL EXIT														
1549.300	191.090	2.908	193.998	22.50	4.58	.33	194.32	.00	1.61	.00	2.500	.000	.00	1 .0
146.806	.0091					.0030	.44	2.91	.00	1.36	.013	.00	.00	PIPE

LINE_C
Q100
OBR

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT) / SF Ave	Water Elev / HF	Q (CFS) / SE Dpth	Vel (FPS) / Froude N	Vel Head / Norm Dp	Energy Grd.El. / "N"	Super Elev / X-Fall	Critical Depth / ZR	Flow Top Width / Type Ch	Height/ Dia.-FT /	Base Wt or I.D. /	ZL /	No Wth Prs/Pip /
1696.106	192.433	2.500	194.933	22.50	4.58	.33	195.26	.00	1.61	.00	2.500	.000	.00	1 .0
31.210	.0091					.0028	.09	2.50	.00	1.36	.013	.00	.00	PIPE
1727.316	192.719	2.268	194.987	22.50	4.81	.36	195.35	.00	1.61	1.45	2.500	.000	.00	1 .0
2.344	.0091					.0026	.01	2.27	.47	1.36	.013	.00	.00	PIPE
1729.660	192.740	2.248	194.988	22.50	4.84	.36	195.35	.00	1.61	1.50	2.500	.000	.00	1 .0
WALL	ENTRANCE													
1729.660	192.740	3.248	195.988	22.50	1.73	.05	196.04	.00	.99	4.00	4.000	4.000	.00	0 .0
JUNCT STR	.0250					.0002	.00	3.25	.17		.013	.00	.00	BOX
1733.660	192.840	3.188	196.028	17.00	1.33	.03	196.06	.00	.82	4.00	4.000	4.000	.00	0 .0
WALL	EXIT													
1733.660	192.840	3.189	196.029	17.00	5.41	.45	196.48	.00	1.49	.00	2.000	.000	.00	1 .0
93.130	.0100					.0056	.53	3.19	.00	1.29	.013	.00	.00	PIPE
1826.790	193.770	2.785	196.555	17.00	5.41	.45	197.01	.00	1.49	.00	2.000	.000	.00	1 .0
WALL	ENTRANCE													
1826.790	193.770	3.300	197.070	17.00	1.29	.03	197.10	.00	.82	4.00	4.000	4.000	.00	0 .0
4.000	.0250					.0001	.00	3.30	.12	.46	.013	.00	.00	BOX
1830.790	193.870	3.198	197.068	17.00	1.33	.03	197.10	.00	.82	4.00	4.000	4.000	.00	0 .0
WALL	EXIT													

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 3-2024 Time: 7:33:11

LINE_C
Q100
OBR

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1830.790	193.870	3.199	197.069	17.00	5.41	.45	197.52	.00	1.49	.00	2.000	.000	.00	1 .0
202.790	.0100					.0056	1.15	3.20	.00	1.29	.013	.00	.00	PIPE
2033.580	195.900	2.315	198.215	17.00	5.41	.45	198.67	.00	1.49	.00	2.000	.000	.00	1 .0
WALL	ENTRANCE													
2033.580	195.900	2.817	198.717	17.00	1.51	.04	198.75	.00	.82	4.00	4.000	4.000	.00	0 .0
JUNCT STR	.1250					.0001	.00	2.82	.16		.013	.00	.00	BOX
2037.580	196.400	2.362	198.762	10.20	1.08	.02	198.78	.00	.59	4.00	4.000	4.000	.00	0 .0
WALL	EXIT													
2037.580	196.400	2.362	198.762	10.20	5.77	.52	199.28	.00	1.23	.00	1.500	.000	.00	1 .0
218.030	.0100					.0094	2.06	2.36	.00	1.19	.013	.00	.00	PIPE
2255.610	198.580	2.851	201.431	10.20	5.77	.52	201.95	.00	1.23	.00	1.500	.000	.00	1 .0
WALL	ENTRANCE													
2255.610	198.580	3.615	202.195	10.20	.71	.01	202.20	.00	.59	4.00	4.000	4.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.500														
CD	2	3	0	.000	4.000	4.000	.000	.000	.00										

W S P G W

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -

SD-C-1

HEADING LINE NO 2 IS -

Q100 OBR

HEADING LINE NO 3 IS -

SD-C-1 Q100

W S P G W

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1000.000	191.570	1	194.000

ELEMENT NO 2 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1004.260	191.610	1	.013	.000	.000	.000	0

ELEMENT NO 3 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1004.260	191.610	2	.500

ELEMENT NO 4 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1004.260	191.610	2	191.610

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 6-2024 Time: 2:46:32

SD-C-1
Q100 OBR
SD-C-1 Q100

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1000.000	191.570	2.430	194.000	2.30	1.30	.03	194.03	.00	.57	.00	1.500	.000	.00	1 .0
4.260	.0094					.0005	.00	2.43	.00	.48	.013	.00	.00	PIPE
1004.260	191.610	2.392	194.002	2.30	1.30	.03	194.03	.00	.57	.00	1.500	.000	.00	1 .0
WALL	ENTRANCE													
1004.260	191.610	2.431	194.041	2.30	.24	.00	194.04	.00	.22	4.00	4.000	4.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.500														
CD	2	3	0	.000	4.000	4.000	.000	.000	.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
SD-C-2

HEADING LINE NO 2 IS -
Q100 OBR

HEADING LINE NO 3 IS -
SD-C-2 Q100

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1002.000	191.570	1	194.000

ELEMENT NO 2 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1026.250	191.810	1	.013	.000	.000	.000	0

ELEMENT NO 3 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1026.250	191.810	2	.500

ELEMENT NO 4 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1026.260	191.810	2	191.810

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 3-2024 Time: 4:38: 0

SD-C-2
Q100 OBR
SD-C-2 Q100

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1002.000	191.570	2.430	194.000	2.30	1.30	.03	194.03	.00	.57	.00	1.500	.000	.00	1 .0
24.250	.0099					.0005	.01	2.43	.00	.48	.013	.00	.00	PIPE
1026.250	191.810	2.202	194.012	2.30	1.30	.03	194.04	.00	.57	.00	1.500	.000	.00	1 .0
WALL ENTRANCE														
1026.250	191.810	2.240	194.050	2.30	.26	.00	194.05	.00	.22	4.00	4.000	4.000	.00	0 .0
WALL ENTRANCE														
1026.260	191.810	2.240	194.050	2.30	.26	.00	194.05	.00	.22	4.00	4.000	4.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.500														
CD	2	3	0	.000	4.000	4.000	.000	.000	.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -

SD-C-3

HEADING LINE NO 2 IS -

Q100 OBR

HEADING LINE NO 3 IS -

SD-C-3 Q100

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1000.000	196.400	1	198.730

ELEMENT NO 2 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1006.250	196.460	1	.013	.000	.000	.000	0

ELEMENT NO 3 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1006.250	196.460	2	.500

ELEMENT NO 4 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1006.250	196.460	2	196.460

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 3-2024 Time: 8:47:18

SD-C-3
Q100 OBR
SD-C-3 Q100

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1000.000	196.400	2.330	198.730	3.50	1.98	.06	198.79	.00	.71	.00	1.500	.000	.00	1 .0
6.250	.0096					.0011	.01	2.33	.00	.60	.013	.00	.00	PIPE
1006.250	196.460	2.277	198.737	3.50	1.98	.06	198.80	.00	.71	.00	1.500	.000	.00	1 .0
WALL	ENTRANCE													
1006.250	196.460	2.365	198.825	3.50	.37	.00	198.83	.00	.29	4.00	4.000	4.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.500														
CD	2	3	0	.000	4.000	4.000	.000	.000	.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -

SD-C-4

HEADING LINE NO 2 IS -

Q100 OBR

HEADING LINE NO 3 IS -

SD-C-4 Q100

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1002.760	196.400	1	198.730

ELEMENT NO 2 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1030.270	196.680	1	.013	.000	.000	.000	0

ELEMENT NO 3 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1030.270	196.680	2	.500

ELEMENT NO 4 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1030.270	196.680	2	196.680

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 3-2024 Time: 8:45:51

SD-C-4
Q100 OBR
SD-C-4 Q100

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1002.760	196.400	2.330	198.730	3.70	2.09	.07	198.80	.00	.73	.00	1.500	.000	.00	1 .0
27.510	.0102					.0012	.03	2.33	.00	.61	.013	.00	.00	PIPE
1030.270	196.680	2.084	198.764	3.70	2.09	.07	198.83	.00	.73	.00	1.500	.000	.00	1 .0
WALL	ENTRANCE													
1030.270	196.680	2.183	198.863	3.70	.42	.00	198.87	.00	.30	4.00	4.000	4.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.500														
CD	2	3	0	.000	4.000	4.000	.000	.000	.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
SD-C-5

HEADING LINE NO 2 IS -
Q100 OBR

HEADING LINE NO 3 IS -
SD-C-5 Q100

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1000.000	198.680	1	202.200

ELEMENT NO 2 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1006.250	198.780	1	.013	.000	.000	.000	0

ELEMENT NO 3 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1006.250	198.780	2	.500

ELEMENT NO 4 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1006.250	198.780	2	198.780

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 3-2024 Time: 8:45:59

SD-C-5
Q100 OBR
SD-C-5 Q100

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1000.000	198.680	3.520	202.200	5.60	3.17	.16	202.36	.00	.91	.00	1.500	.000	.00	1 .0
6.250	.0160					.0028	.02	3.52	.00	.68	.013	.00	.00	PIPE
1006.250	198.780	3.438	202.218	5.60	3.17	.16	202.37	.00	.91	.00	1.500	.000	.00	1 .0
WALL	ENTRANCE													
1006.250	198.780	3.669	202.449	5.60	.38	.00	202.45	.00	.39	4.00	4.000	4.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING PAGE 1

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.500														
CD	2	3	0	.000	4.000	4.000	.000	.000	.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
SD-C-6

HEADING LINE NO 2 IS -
Q100 OBR

HEADING LINE NO 3 IS -
SD-C-6 Q100

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1002.000	198.680	1	202.200

ELEMENT NO 2 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1031.880	198.980	1	.013	.000	.000	.000	0

ELEMENT NO 3 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1031.880	198.980	2	.500

ELEMENT NO 4 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1031.880	198.980	2	198.980

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 3-2024 Time: 5: 3: 1

SD-C-6
Q100 OBR
SD-C-6 Q100

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1002.000	198.680	3.520	202.200	4.70	2.66	.11	202.31	.00	.83	.00	1.500	.000	.00	1 .0
29.880	.0100					.0020	.06	3.52	.00	.70	.013	.00	.00	PIPE
1031.880	198.980	3.280	202.260	4.70	2.66	.11	202.37	.00	.83	.00	1.500	.000	.00	1 .0
WALL	ENTRANCE													
1031.880	198.980	3.443	202.423	4.70	.34	.00	202.42	.00	.35	4.00	4.000	4.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.500														
CD	2	3	0	.000	4.000	4.000	.000	.000	.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
SD-C-7

HEADING LINE NO 2 IS -
Q100 OBR

HEADING LINE NO 3 IS -
SD-C-7 Q100

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1000.000	193.340	1	196.030

ELEMENT NO 2 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1004.350	193.380	1	.013	.000	.000	.000	0

ELEMENT NO 3 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1004.350	193.380	2	.500

ELEMENT NO 4 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1004.350	193.380	2	193.380

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 3-2024 Time: 8:46:22

SD-C-7
Q100 OBR
SD-C-7 Q100

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1000.000	193.340	2.690	196.030	3.50	1.98	.06	196.09	.00	.71	.00	1.500	.000	.00	1 .0
4.350	.0092					.0011	.00	2.69	.00	.61	.013	.00	.00	PIPE
1004.350	193.380	2.655	196.035	3.50	1.98	.06	196.10	.00	.71	.00	1.500	.000	.00	1 .0
WALL	ENTRANCE													
1004.350	193.380	2.744	196.124	3.50	.32	.00	196.13	.00	.29	4.00	4.000	4.000	.00	0 .0

FILE: SD-C-8.WSW W S P G W - EDIT LISTING - Version 14.11 Date: 6- 4-2024 Time: 5:50:17

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING PAGE 1

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.500														
CD	2	3	0	.000	4.000	4.000	.000	.000	.00										

W S P G W PAGE NO 1

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -

SD-C-8

HEADING LINE NO 2 IS -

Q100 OBR

HEADING LINE NO 3 IS -

SD-C-8 Q100

W S P G W PAGE NO 2

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1002.000	193.340	1	196.030

ELEMENT NO 2 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1026.250	193.580	1	.013	.000	.000	.000	0

ELEMENT NO 3 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1026.250	193.580	2	.500

ELEMENT NO 4 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1026.260	193.580	2	193.580

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 4-2024 Time: 5:50:18

SD-C-8
Q100 OBR
SD-C-8 Q100

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1002.000	193.340	2.690	196.030	3.00	1.70	.04	196.07	.00	.66	.00	1.500	.000	.00	1 .0
24.250	.0099					.0008	.02	2.69	.00	.55	.013	.00	.00	PIPE
1026.250	193.580	2.470	196.050	3.00	1.70	.04	196.09	.00	.66	.00	1.500	.000	.00	1 .0
WALL	ENTRANCE													
1026.250	193.580	2.535	196.115	3.00	.30	.00	196.12	.00	.26	4.00	4.000	4.000	.00	0 .0
WALL	ENTRANCE													
1026.260	193.580	2.535	196.115	3.00	.30	.00	196.12	.00	.26	4.00	4.000	4.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.500														
CD	2	3	0	.000	4.000	4.000	.000	.000	.00										

W S P G W

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -

SD-C-9

HEADING LINE NO 2 IS -

Q100 OBR

HEADING LINE NO 3 IS -

SD-C-9 Q100

W S P G W

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1000.000	189.120	1	192.170

ELEMENT NO 2 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1002.000	189.140	1	.013	.000	.000	.000	0

ELEMENT NO 3 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1002.000	189.140	2	.500

ELEMENT NO 4 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1002.000	189.140	2	189.140

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 4-2024 Time: 5:52: 3

SD-C-9
Q100 OBR
SD-C-9 Q100

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1000.000	189.120	3.050	192.170	1.40	.79	.01	192.18	.00	.44	.00	1.500	.000	.00	1 .0
2.000	.0100					.0002	.00	3.05	.00	.37	.013	.00	.00	PIPE
1002.000	189.140	3.030	192.170	1.40	.79	.01	192.18	.00	.44	.00	1.500	.000	.00	1 .0
WALL	ENTRANCE													
1002.000	189.140	3.045	192.185	1.40	.11	.00	192.18	.00	.16	4.00	4.000	4.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		2.500														

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
SD-D

HEADING LINE NO 2 IS -
Q100 05/29/2024

HEADING LINE NO 3 IS -
SD-D Q100 DOWNSTREAM

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	972.820	190.620	1	194.220

ELEMENT NO 2 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	990.620	190.780	1	.013	.000	.000	.000	0

ELEMENT NO 3 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	990.620	190.780	1	190.780

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 3-2024 Time: 8:18:32

SD-D
Q100 05/29/2024
SD-D Q100 DOWNSTREAM

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
972.820	190.620	3.600	194.220	18.80	3.83	.23	194.45	.00	1.47	.00	2.500	.000	.00	1 .0
17.800	.0090					.0021	.04	3.60	.00	1.23	.013	.00	.00	PIPE
990.620	190.780	3.477	194.257	18.80	3.83	.23	194.49	.00	1.47	.00	2.500	.000	.00	1 .0

Oldcastle Infrastructure
A CRH COMPANY

Nutrient Separating Baffle Box® (NSBB™) Head Loss Calculator

V2020.01; *5/28/2024*

Project Information

Project Name:	**Ocean Breeze Ranch**
Location:	**Basin 2C-1**
Design Basis:	**80% of 150µm**
Screen Basket Capacity (% Full):	**0% (Empty)**
Treatment Flow Rate (cfs):	**0.67**
Peak Flow Rate (cfs):	**20.40**
NSBB Model:	**NSBB-612**

Inlet & Outlet Pipe Information

Inlet Pipe Diameter (in):	**30**
Inlet Invert Elevation (ft):	**190.88**
Outlet Pipe Diameter (in):	**30**
Outlet Invert Elevation (ft):	**190.78**
Outlet Slope %:	**0.85%**
Manning's Roughness Coefficient (n):	**0.012**
Tailwater Present?	**Yes**
Tailwater Elevation:	194.31

Outlet Pipe Flow Characteristics

	Treatment	*Peak*
Normal Depth During Design Flow (ft):	**0.222**	**1.24**
Flow Area (sq ft):	**0.21**	**2.44**
Velocity (ft/s):	**3.11**	**8.35**
Wetted Perimeter (ft):	**1.51**	**3.92**
Downstream Depth of Flow (ft):	**0.252**	**3.530**

NSBB Discharge Coefficients

Screen Orifice Coefficient, Co:	**0.60**
Outlet Pipe Entrance Coefficient, K:	**0.20**

System Design Summary

Rim Elevation (ft):	**197.19**
Rim to Invert Out Depth (ft):	**6.41**
Upstream WSE during Treatment (ft):	**191.030**
Upstream WSE during Peak Flow (ft):	**194.418**

Disclaimer: Calculations are best estimate based on information available and are intended only for use by the party to whom they were transmitted and for the project referenced.

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		2.500														
CD	2	4	1		2.000														
CD	3	4	1		1.500														
CD	4	3	0	.000	4.000	4.000	.000	.000	.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -

LINE SD_D

HEADING LINE NO 2 IS -

Q100

HEADING LINE NO 3 IS -

OBR

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1009.940	190.880	1	194.420

ELEMENT NO 2 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1018.770	190.920	1	.013	.000	.000	.000	0

ELEMENT NO 3 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1018.770	190.920	4	.200

ELEMENT NO 4 IS A JUNCTION * * * * * * *

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	1022.770	191.020	4	4	0	.013	5.800	.000	191.020	.000	.000	.000

RADIUS	ANGLE
.000	.000

ELEMENT NO 5 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1022.770	191.020	1

ELEMENT NO 6 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1060.920	191.210	1	.013	.000	.000	-334.480	6

ELEMENT NO 7 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1060.920	191.210	4	.200

ELEMENT NO 8 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1064.920	191.310	4	.013	.000	.000	.000	0

ELEMENT NO 9 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1064.920	191.310	1

ELEMENT NO 10 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1125.630	191.620	1	.013	44.999	77.300	.000	0

ELEMENT NO 11 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1157.060	191.770	1	.013	309.950	5.810	.000	0

ELEMENT NO 12 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1157.060	191.770	4	.200

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 13 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1161.060	191.870	4	.013	.000	.000	.000	0

ELEMENT NO 14 IS A WALL EXIT

U/S DATA	STATION	INVERT	SECT
	1161.060	191.870	2

ELEMENT NO 15 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1288.230	192.510	2	.013	.000	.000	.000	0

ELEMENT NO 16 IS A WALL ENTRANCE

U/S DATA	STATION	INVERT	SECT	FP
	1288.230	192.510	4	.200

ELEMENT NO 17 IS A JUNCTION

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	1292.230	192.610	4	3	0	.013	2.900	.000	193.030	.000	-90.000	.000

RADIUS	ANGLE
.000	.000

ELEMENT NO 18 IS A WALL EXIT

U/S DATA	STATION	INVERT	SECT
	1292.230	192.610	2

ELEMENT NO 19 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1584.230	194.070	2	.013	.000	.000	.000	0

ELEMENT NO 20 IS A WALL ENTRANCE

U/S DATA	STATION	INVERT	SECT	FP
	1584.230	194.070	4	.200

ELEMENT NO 21 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1588.230	194.170	4	.013	.000	.000	.000	0

ELEMENT NO 22 IS A WALL EXIT

U/S DATA	STATION	INVERT	SECT
	1588.230	194.170	2

ELEMENT NO 23 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1820.230	195.330	2	.013	7185.200	-1.850	.000	0

ELEMENT NO 24 IS A WALL ENTRANCE

U/S DATA	STATION	INVERT	SECT	FP
	1820.230	195.330	4	.200

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 25 IS A JUNCTION

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	1824.230	195.430	4	3	3	.013	3.000	.600	195.340	195.340	-90.000	90.000

RADIUS	ANGLE
.000	.000

ELEMENT NO 26 IS A WALL EXIT

U/S DATA	STATION	INVERT	SECT
	1824.230	195.430	3

ELEMENT NO 27 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	2048.240	196.550	3	.013	.000	.000	.000	0

ELEMENT NO 28 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	2079.220	196.700	3	.013	44.994	-39.450	.000	0

ELEMENT NO 29 IS A WALL ENTRANCE

U/S DATA	STATION	INVERT	SECT	FP
	2079.220	196.700	4	.200

ELEMENT NO 30 IS A SYSTEM HEADWORKS * *

	STATION	INVERT	SECT	W S ELEV
U/S DATA	2079.220	196.700	4	196.700

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 3-2024 Time: 7:50: 0

LINE SD_D
Q100
OBR

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT) / SF Ave	Water Elev / HF	Q (CFS) / SE Dpth	Vel (FPS) / Froude N	Vel Head / Norm Dp	Energy Grd.El. / "N"	Super Elev / X-Fall	Critical Depth / ZR	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip / Type Ch
1009.940	190.880	3.540	194.420	18.80	3.83	.23	194.65	.00	1.47	.00	2.500	.000	.00	1 .0
8.830	.0045					.0021	.02	3.54	.00	1.51	.013	.00	.00	PIPE
1018.770	190.920	3.519	194.439	18.80	3.83	.23	194.67	.00	1.47	.00	2.500	.000	.00	1 .0
WALL	ENTRANCE													
1018.770	190.920	3.763	194.683	18.80	1.25	.02	194.71	.00	.88	4.00	4.000	4.000	.00	0 .0
JUNCT STR	.0250					.0001	.00	3.76	.11		.013	.00	.00	BOX
		---------- WARNING - Flow depth near top of box conduit ----------												
1022.770	191.020	3.683	194.703	13.00	.88	.01	194.72	.00	.69	4.00	4.000	4.000	.00	0 .0
WALL	EXIT													
		---------- WARNING - Flow depth near top of box conduit ----------												
1022.770	191.020	3.683	194.703	13.00	2.65	.11	194.81	.00	1.21	.00	2.500	.000	.00	1 .0
38.150	.0050					.0010	.04	3.68	.00	1.17	.013	.00	.00	PIPE
1060.920	191.210	3.685	194.895	13.00	2.65	.11	195.00	.00	1.21	.00	2.500	.000	.00	1 .0
WALL	ENTRANCE													
1060.920	191.210	3.801	195.011	13.00	.85	.01	195.02	.00	.69	4.00	4.000	4.000	.00	0 .0
4.000	.0250					.0000	.00	3.80	.08	.38	.013	.00	.00	BOX
		---------- WARNING - Flow depth near top of box conduit ----------												

LINE SD_D
Q100
OBR

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1064.920	191.310	3.701	195.011	13.00	.88	.01	195.02	.00	.69	4.00	4.000	4.000	.00	0 .0
WALL	EXIT													
---------- WARNING - Flow depth near top of box conduit ----------														
1064.920	191.310	3.701	195.011	13.00	2.65	.11	195.12	.00	1.21	.00	2.500	.000	.00	1 .0
60.710	.0051					.0010	.06	.00	.00	1.17	.013	.00	.00	PIPE
1125.630	191.620	3.473	195.093	13.00	2.65	.11	195.20	.00	1.21	.00	2.500	.000	.00	1 .0
31.430	.0048					.0010	.03	.00	.00	1.19	.013	.00	.00	PIPE
1157.060	191.770	3.360	195.130	13.00	2.65	.11	195.24	.00	1.21	.00	2.500	.000	.00	1 .0
WALL	ENTRANCE													
1157.060	191.770	3.474	195.244	13.00	.94	.01	195.26	.00	.69	4.00	4.000	4.000	.00	0 .0
4.000	.0250					.0000	.00	3.47	.09	.38	.013	.00	.00	BOX
1161.060	191.870	3.374	195.244	13.00	.96	.01	195.26	.00	.69	4.00	4.000	4.000	.00	0 .0
WALL	EXIT													
1161.060	191.870	3.374	195.244	13.00	4.14	.27	195.51	.00	1.30	.00	2.000	.000	.00	1 .0
127.170	.0050					.0033	.42	3.37	.00	1.37	.013	.00	.00	PIPE

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 3-2024 Time: 7:50: 0

LINE SD_D
Q100
OBR

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1288.230	192.510	3.154	195.664	13.00	4.14	.27	195.93	.00	1.30	.00	2.000	.000	.00	1 .0
WALL ENTRANCE														
1288.230	192.510	3.457	195.967	13.00	.94	.01	195.98	.00	.69	4.00	4.000	4.000	.00	0 .0
JUNCT STR	.0250					.0000	.00	3.46	.09		.013	.00	.00	BOX
1292.230	192.610	3.367	195.977	10.10	.75	.01	195.99	.00	.58	4.00	4.000	4.000	.00	0 .0
WALL EXIT														
1292.230	192.610	3.368	195.978	10.10	3.21	.16	196.14	.00	1.14	.00	2.000	.000	.00	1 .0
292.000	.0050					.0020	.58	3.37	.00	1.15	.013	.00	.00	PIPE
1584.230	194.070	2.490	196.560	10.10	3.21	.16	196.72	.00	1.14	.00	2.000	.000	.00	1 .0
WALL ENTRANCE														
1584.230	194.070	2.666	196.736	10.10	.95	.01	196.75	.00	.58	4.00	4.000	4.000	.00	0 .0
4.000	.0250					.0001	.00	2.67	.10	.33	.013	.00	.00	BOX
1588.230	194.170	2.565	196.735	10.10	.98	.02	196.75	.00	.58	4.00	4.000	4.000	.00	0 .0
WALL EXIT														
1588.230	194.170	2.566	196.736	10.10	3.21	.16	196.90	.00	1.14	.00	2.000	.000	.00	1 .0
189.477	.0050					.0020	.37	.00	.00	1.15	.013	.00	.00	PIPE
1777.707	195.117	2.000	197.117	10.10	3.21	.16	197.28	2.00	1.14	.00	2.000	.000	.00	1 .0
42.523	.0050					.0018	.08	2.00	.00	1.15	.013	.00	.00	PIPE

LINE SD_D
Q100
OBR

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT) / SF Ave	Water Elev / HF	Q (CFS) / SE Dpth	Vel (FPS) / Froude N	Vel Head / Norm Dp	Energy Grd.El. / "N"	Super Elev / X-Fall	Critical Depth / ZR	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip / Type Ch
1820.230	195.330	1.854	197.184	10.10	3.32	.17	197.36	.00	1.14	1.04	2.000	.000	.00	1 .0
WALL	ENTRANCE													
1820.230	195.330	2.854	198.184	10.10	.88	.01	198.20	.00	.58	4.00	4.000	4.000	.00	0 .0
JUNCT STR	.0250					.0000	.00	2.85	.09		.013	.00	.00	BOX
1824.230	195.430	2.768	198.198	6.50	.59	.01	198.20	.00	.43	4.00	4.000	4.000	.00	0 .0
WALL	EXIT													
1824.230	195.430	2.769	198.199	6.50	3.68	.21	198.41	.00	.99	.00	1.500	.000	.00	1 .0
224.010	.0050					.0038	.86	2.77	.00	1.09	.013	.00	.00	PIPE
2048.240	196.550	2.507	199.057	6.50	3.68	.21	199.27	.00	.99	.00	1.500	.000	.00	1 .0
30.980	.0048					.0038	.12	.00	.00	1.10	.013	.00	.00	PIPE
2079.220	196.700	2.503	199.203	6.50	3.68	.21	199.41	.00	.99	.00	1.500	.000	.00	1 .0
WALL	ENTRANCE													
2079.220	196.700	2.749	199.449	6.50	.59	.01	199.45	.00	.43	4.00	4.000	4.000	.00	0 .0

FILE: SD-D-1.WSW W S P G W - EDIT LISTING - Version 14.11 Date: 6- 2-2024 Time: 8:30:52

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING PAGE 1

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.500														
CD	2	3	0	.000	4.000	4.000	.000	.000	.00										

W S P G W PAGE NO 1

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -

SD-D-1

HEADING LINE NO 2 IS -

Q100 OBR

HEADING LINE NO 3 IS -

SD-D-1 Q100

W S P G W PAGE NO 2

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1000.000	193.020	1	195.980

ELEMENT NO 2 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1004.250	193.060	1	.013	.000	.000	.000	0

ELEMENT NO 3 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1004.250	193.060	2	.500

ELEMENT NO 4 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1004.250	193.060	2	193.060

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 2-2024 Time: 8:30:53

SD-D-1
Q100 OBR
SD-D-1 Q100

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1000.000	193.020	2.960	195.980	3.90	2.21	.08	196.06	.00	.76	.00	1.500	.000	.00	1 .0
4.250	.0094					.0014	.01	2.96	.00	.64	.013	.00	.00	PIPE
1004.250	193.060	2.926	195.986	3.90	2.21	.08	196.06	.00	.76	.00	1.500	.000	.00	1 .0
WALL	ENTRANCE													
1004.250	193.060	3.037	196.097	3.90	.32	.00	196.10	.00	.31	4.00	4.000	4.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.500														
CD	2	3	0	.000	4.000	4.000	.000	.000	.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -

SD-D-2

HEADING LINE NO 2 IS -

Q100 OBR

HEADING LINE NO 3 IS -

SD-D-2 Q100

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1000.000	195.340	1	198.200

ELEMENT NO 2 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1006.250	195.400	1	.013	.000	.000	.000	0

ELEMENT NO 3 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1006.250	195.400	2	.500

ELEMENT NO 4 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1006.250	195.400	2	195.400

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 2-2024 Time: 8:31:12

SD-D-2
Q100 OBR
SD-D-2 Q100

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1000.000	195.340	2.860	198.200	3.50	1.98	.06	198.26	.00	.71	.00	1.500	.000	.00	1 .0
6.250	.0096					.0011	.01	2.86	.00	.60	.013	.00	.00	PIPE
1006.250	195.400	2.807	198.207	3.50	1.98	.06	198.27	.00	.71	.00	1.500	.000	.00	1 .0
WALL	ENTRANCE													
1006.250	195.400	2.896	198.296	3.50	.30	.00	198.30	.00	.29	4.00	4.000	4.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.500														
CD	2	3	0	.000	4.000	4.000	.000	.000	.00										

W S P G W

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -

SD-D-3

HEADING LINE NO 2 IS -

Q100 OBR

HEADING LINE NO 3 IS -

SD-D-3 Q100

W S P G W

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1002.000	195.340	1	198.200

ELEMENT NO 2 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1028.250	195.600	1	.013	.000	.000	.000	0

ELEMENT NO 3 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1028.250	195.600	2	.500

ELEMENT NO 4 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1028.250	195.600	2	195.600

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 2-2024 Time: 8:31:20

SD-D-3
Q100 OBR
SD-D-3 Q100

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1002.000	195.340	2.860	198.200	.70	.40	.00	198.20	.00	.31	.00	1.500	.000	.00	1 .0
26.250	.0099					.0000	.00	2.86	.00	.26	.013	.00	.00	PIPE
WALL	ENTRANCE													
1028.250	195.600	2.605	198.205	.70	.07	.00	198.20	.00	.10	4.00	4.000	4.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	2		1.500														
CD	2	2	0	.000	4.000	6.000			.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
OCEAN BREEZE RANCH
HEADING LINE NO 2 IS -
100 YR
HEADING LINE NO 3 IS -
LINE SD-Z1

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1002.000	193.240	2	194.440

ELEMENT NO 2 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1002.000	193.240	1

ELEMENT NO 3 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1016.290	193.380	1	.013	.000	.000	.000	0

ELEMENT NO 4 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1016.290	193.380	2	.200

ELEMENT NO 5 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1016.290	193.380	2	193.380

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 6-2024 Time: 2:42:58

OCEAN BREEZE RANCH
100 YR
LINE SD-Z1

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1002.000	193.240	1.200	194.440	12.20	1.69	.04	194.48	.00	.50	6.00	4.000	6.000	.00	0 .0
HYDRAULIC JUMP														
1002.000	193.240	.852	194.092	12.20	5.88	.54	194.63	.00	.95	1.49	1.500	.000	.00	2 .0
9.109	.0098					.0084	.08	.85	.88	.83	.013	.00	.00	PIPE
1011.109	193.329	.879	194.208	12.20	5.66	.50	194.71	.00	.95	1.48	1.500	.000	.00	2 .0
4.158	.0098					.0076	.03	.88	.83	.83	.013	.00	.00	PIPE
1015.266	193.370	.915	194.285	12.20	5.40	.45	194.74	.00	.95	1.46	1.500	.000	.00	2 .0
1.023	.0098					.0067	.01	.92	.77	.83	.013	.00	.00	PIPE
1016.290	193.380	.954	194.334	12.20	5.14	.41	194.74	.00	.95	1.44	1.500	.000	.00	2 .0
1016.290	193.380	1.016	194.396	12.20	4.79	.36	194.75	.00	.95	1.40	1.500	.000	.00	2 .0
WALL ENTRANCE														
1016.290	193.380	2.016	195.396	12.20	1.01	.02	195.41	.00	.50	6.00	4.000	6.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	2		1.500														
CD	2	2	0	.000	4.000	6.000			.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
OCEAN BREEZE RANCH
HEADING LINE NO 2 IS -
100 YR
HEADING LINE NO 3 IS -
LINE SD-Z2

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1002.000	194.140	2	195.420

ELEMENT NO 2 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1002.000	194.140	1

ELEMENT NO 3 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1016.800	194.290	1	.013	.000	.000	.000	0

ELEMENT NO 4 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1016.800	194.290	2	.200

ELEMENT NO 5 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1016.800	194.290	2	194.290

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 6-2024 Time: 2:40: 2

OCEAN BREEZE RANCH
100 YR
LINE SD-Z2

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1002.000	194.140	1.280	195.420	11.00	1.43	.03	195.45	.00	.47	6.00	4.000	6.000	.00	0 .0
HYDRAULIC JUMP														
1002.000	194.140	.796	194.936	11.00	5.77	.52	195.45	.00	.90	1.50	1.500	.000	.00	2 .0
3.420	.0101					.0089	.03	.80	.90	.77	.013	.00	.00	PIPE
1005.420	194.175	.803	194.978	11.00	5.71	.51	195.48	.00	.90	1.50	1.500	.000	.00	2 .0
7.766	.0101					.0082	.06	.80	.89	.77	.013	.00	.00	PIPE
1013.187	194.253	.834	195.087	11.00	5.44	.46	195.55	.00	.90	1.49	1.500	.000	.00	2 .0
3.048	.0101					.0072	.02	.83	.82	.77	.013	.00	.00	PIPE
1016.234	194.284	.867	195.151	11.00	5.19	.42	195.57	.00	.90	1.48	1.500	.000	.00	2 .0
.566	.0101					.0064	.00	.87	.76	.77	.013	.00	.00	PIPE
1016.800	194.290	.904	195.194	11.00	4.94	.38	195.57	.00	.90	1.47	1.500	.000	.00	2 .0
1016.800	194.290	1.121	195.411	11.00	3.88	.23	195.64	.00	.90	1.30	1.500	.000	.00	2 .0
WALL ENTRANCE														
1016.800	194.290	2.121	196.411	11.00	.86	.01	196.42	.00	.47	6.00	4.000	6.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	2		1.500														
CD	2	2	0	.000	4.000	6.000			.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -

OCEAN BREEZE RANCH

HEADING LINE NO 2 IS -

100 YR

HEADING LINE NO 3 IS -

LINE SD-Z3

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1002.000	195.640	2	196.710

ELEMENT NO 2 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1002.000	195.640	1

ELEMENT NO 3 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1027.300	195.890	1	.013	.000	.000	.000	0

ELEMENT NO 4 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1027.300	195.890	2	.200

ELEMENT NO 5 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1027.300	195.890	2	195.890

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 6-2024 Time: 2:35:54

OCEAN BREEZE RANCH
100 YR
LINE SD-Z3

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1002.000	195.640	1.070	196.710	9.70	1.51	.04	196.75	.00	.43	6.00	4.000	6.000	.00	0 .0
HYDRAULIC JUMP														
1002.000	195.640	.730	196.370	9.70	5.68	.50	196.87	.00	.85	1.50	1.500	.000	.00	2 .0
15.595	.0099					.0089	.14	.73	.94	.72	.013	.00	.00	PIPE
1017.594	195.794	.754	196.548	9.70	5.45	.46	197.01	.00	.85	1.50	1.500	.000	.00	2 .0
6.413	.0099					.0079	.05	.75	.88	.72	.013	.00	.00	PIPE
1024.008	195.857	.783	196.641	9.70	5.20	.42	197.06	.00	.85	1.50	1.500	.000	.00	2 .0
2.751	.0099					.0069	.02	.78	.82	.72	.013	.00	.00	PIPE
1026.759	195.885	.813	196.698	9.70	4.95	.38	197.08	.00	.85	1.49	1.500	.000	.00	2 .0
.541	.0099					.0061	.00	.81	.76	.72	.013	.00	.00	PIPE
1027.300	195.890	.847	196.737	9.70	4.72	.35	197.08	.00	.85	1.49	1.500	.000	.00	2 .0
WALL ENTRANCE														
1027.300	195.890	1.847	197.737	9.70	.88	.01	197.75	.00	.43	6.00	4.000	6.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	2		1.500														
CD	2	2	0	.000	4.000	6.000			.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
OCEAN BREEZE RANCH
HEADING LINE NO 2 IS -
100 YR
HEADING LINE NO 3 IS -
LINE SD-Z4

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1002.000	196.540	2	197.650

ELEMENT NO 2 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1002.000	196.540	1

ELEMENT NO 3 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1023.000	196.750	1	.013	.000	.000	.000	0

ELEMENT NO 4 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1023.000	196.750	2	.200

ELEMENT NO 5 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1023.000	196.750	2	196.750

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 6-2024 Time: 2:27:39

OCEAN BREEZE RANCH
100 YR
LINE SD-Z4

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1002.000	196.540	1.110	197.650	11.60	1.74	.05	197.70	.00	.49	6.00	4.000	6.000	.00	0 .0
HYDRAULIC JUMP														
1002.000	196.540	.814	197.354	11.60	5.93	.55	197.90	.00	.93	1.49	1.500	.000	.00	2 .0
7.556	.0100					.0091	.07	.81	.91	.80	.013	.00	.00	PIPE
1009.556	196.616	.824	197.440	11.60	5.83	.53	197.97	.00	.93	1.49	1.500	.000	.00	2 .0
9.128	.0100					.0084	.08	.82	.89	.80	.013	.00	.00	PIPE
1018.684	196.707	.857	197.564	11.60	5.55	.48	198.04	.00	.93	1.48	1.500	.000	.00	2 .0
3.663	.0100					.0074	.03	.86	.83	.80	.013	.00	.00	PIPE
1022.347	196.743	.891	197.635	11.60	5.30	.44	198.07	.00	.93	1.47	1.500	.000	.00	2 .0
.653	.0100					.0065	.00	.89	.77	.80	.013	.00	.00	PIPE
1023.000	196.750	.929	197.679	11.60	5.04	.39	198.07	.00	.93	1.46	1.500	.000	.00	2 .0
WALL ENTRANCE														
1023.000	196.750	1.929	198.679	11.60	1.00	.02	198.70	.00	.49	6.00	4.000	6.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	2		1.500														
CD	2	2	0	.000	4.000	6.000			.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
OCEAN BREEZE RANCH
HEADING LINE NO 2 IS -
100 YR
HEADING LINE NO 3 IS -
LINE SD-Z5

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1002.000	199.540	2	200.770

ELEMENT NO 2 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1002.000	199.540	1

ELEMENT NO 3 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1018.250	199.700	1	.013	.000	.000	.000	0

ELEMENT NO 4 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1018.250	199.700	2	.200

ELEMENT NO 5 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1018.250	199.700	2	199.700

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 6-2024 Time: 2:31:57

OCEAN BREEZE RANCH
100 YR
LINE SD-Z5

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1002.000	199.540	1.230	200.770	16.30	2.21	.08	200.85	.00	.61	6.00	4.000	6.000	.00	0 .0
HYDRAULIC JUMP														
1002.000	199.540	1.014	200.554	16.30	6.41	.64	201.19	.00	1.11	1.40	1.500	.000	.00	2 .0
14.058	.0098					.0089	.13	1.01	.84	1.00	.013	.00	.00	PIPE
1016.058	199.678	1.056	200.735	16.30	6.13	.58	201.32	.00	1.11	1.37	1.500	.000	.00	2 .0
2.192	.0098					.0080	.02	1.06	.77	1.00	.013	.00	.00	PIPE
1018.250	199.700	1.106	200.806	16.30	5.83	.53	201.33	.00	1.11	1.32	1.500	.000	.00	2 .0
WALL ENTRANCE														
1018.250	199.700	2.106	201.806	16.30	1.29	.03	201.83	.00	.61	6.00	4.000	6.000	.00	0 .0

WSPG OUTPUT

PLANNING AREA 3

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.500														
CD	2	2	0	.000	8.000	3.000			.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -

OCEAN BREEZE RANCH

HEADING LINE NO 2 IS -

Q100 10/15/2024

HEADING LINE NO 3 IS -

SD-E

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	916.590	307.300	1	307.300

ELEMENT NO 2 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1018.220	318.500	1	.013	.000	.000	.000	0

ELEMENT NO 3 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1018.220	318.500	2	.200

ELEMENT NO 4 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1018.220	318.500	2	318.500

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:10-15-2024 Time:11:32:50

OCEAN BREEZE RANCH
Q100 10/15/2024
SD-E

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
916.590	307.300	.628	307.928	12.50	17.81	4.93	312.85	.00	1.33	1.48	1.500	.000	.00	1 .0
6.306	.1102					.1051	.66	.63	4.56	.62	.013	.00	.00	PIPE
922.896	307.995	.629	308.624	12.50	17.76	4.90	313.52	.00	1.33	1.48	1.500	.000	.00	1 .0
35.432	.1102					.0983	3.48	.63	4.54	.62	.013	.00	.00	PIPE
958.328	311.900	.652	312.552	12.50	16.94	4.45	317.01	.00	1.33	1.49	1.500	.000	.00	1 .0
15.960	.1102					.0863	1.38	.65	4.24	.62	.013	.00	.00	PIPE
974.288	313.658	.676	314.335	12.50	16.15	4.05	318.38	.00	1.33	1.49	1.500	.000	.00	1 .0
9.979	.1102					.0759	.76	.68	3.95	.62	.013	.00	.00	PIPE
984.267	314.758	.702	315.460	12.50	15.40	3.68	319.14	.00	1.33	1.50	1.500	.000	.00	1 .0
7.110	.1102					.0668	.47	.70	3.68	.62	.013	.00	.00	PIPE
991.377	315.542	.728	316.270	12.50	14.68	3.35	319.62	.00	1.33	1.50	1.500	.000	.00	1 .0
5.372	.1102					.0588	.32	.73	3.43	.62	.013	.00	.00	PIPE
996.749	316.134	.756	316.890	12.50	14.00	3.04	319.93	.00	1.33	1.50	1.500	.000	.00	1 .0
4.238	.1102					.0518	.22	.76	3.20	.62	.013	.00	.00	PIPE
1000.987	316.601	.785	317.386	12.50	13.35	2.77	320.15	.00	1.33	1.50	1.500	.000	.00	1 .0
3.430	.1102					.0456	.16	.79	2.97	.62	.013	.00	.00	PIPE
1004.417	316.979	.815	317.794	12.50	12.73	2.51	320.31	.00	1.33	1.49	1.500	.000	.00	1 .0
2.797	.1102					.0403	.11	.82	2.77	.62	.013	.00	.00	PIPE

OCEAN BREEZE RANCH
Q100 10/15/2024
SD-E

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width / "N"	Height/Dia.-FT / X-Fall	Base Wt or I.D. / ZR	ZL	No Wth Prs/Pip / Type Ch
1007.214	317.287	.848	318.135	12.50	12.13	2.29	320.42	.00	1.33	1.49	1.500	.000	.00	1 .0
2.342	.1102					.0356	.08	.85	2.57	.62	.013	.00	.00	PIPE
1009.556	317.545	.881	318.426	12.50	11.57	2.08	320.50	.00	1.33	1.48	1.500	.000	.00	1 .0
1.942	.1102					.0314	.06	.88	2.38	.62	.013	.00	.00	PIPE
1011.498	317.759	.917	318.676	12.50	11.03	1.89	320.57	.00	1.33	1.46	1.500	.000	.00	1 .0
1.624	.1102					.0279	.05	.92	2.21	.62	.013	.00	.00	PIPE
1013.122	317.938	.955	318.893	12.50	10.52	1.72	320.61	.00	1.33	1.44	1.500	.000	.00	1 .0
1.347	.1102					.0247	.03	.96	2.04	.62	.013	.00	.00	PIPE
1014.469	318.087	.996	319.083	12.50	10.03	1.56	320.64	.00	1.33	1.42	1.500	.000	.00	1 .0
1.121	.1102					.0220	.02	1.00	1.88	.62	.013	.00	.00	PIPE
1015.590	318.210	1.039	319.249	12.50	9.56	1.42	320.67	.00	1.33	1.38	1.500	.000	.00	1 .0
.905	.1102					.0196	.02	1.04	1.73	.62	.013	.00	.00	PIPE
1016.496	318.310	1.086	319.396	12.50	9.12	1.29	320.69	.00	1.33	1.34	1.500	.000	.00	1 .0
.716	.1102					.0175	.01	1.09	1.59	.62	.013	.00	.00	PIPE
1017.211	318.389	1.137	319.526	12.50	8.69	1.17	320.70	.00	1.33	1.28	1.500	.000	.00	1 .0
.526	.1102					.0158	.01	1.14	1.45	.62	.013	.00	.00	PIPE
1017.737	318.447	1.194	319.641	12.50	8.29	1.07	320.71	.00	1.33	1.21	1.500	.000	.00	1 .0
.354	.1102					.0143	.01	1.19	1.31	.62	.013	.00	.00	PIPE

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:10-15-2024 Time:11:32:50

OCEAN BREEZE RANCH
Q100 10/15/2024
SD-E

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT or "N"	Base Wt or I.D.	ZL	ZR	No Wth Prs/Pip	Type Ch
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp		X-Fall				
1018.091	318.486	1.257	319.743	12.50	7.90	.97	320.71	.00	1.33	1.11	1.500	.000	.00	1	.0	
.129	.1102					.0131	.00	1.26	1.16	.62	.013	.00	.00	PIPE		
1018.220	318.500	1.334	319.834	12.50	7.53	.88	320.71	.00	1.33	.94	1.500	.000	.00	1	.0	
WALL	ENTRANCE															
1018.220	318.500	3.334	321.834	12.50	1.25	.02	321.86	.00	.81	3.00	8.000	3.000	.00	0	.0	

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		2.500														
CD	2	2	0	.000	10.000	4.500			.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -

OCEAN BREEZE RANCH

HEADING LINE NO 2 IS -

Q100 10/18/2024

HEADING LINE NO 3 IS -

SD-F

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	894.360	233.290	2	233.290

ELEMENT NO 2 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	894.360	233.290	1

ELEMENT NO 3 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1062.720	242.230	1	.013	.000	.000	.000	0

ELEMENT NO 4 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1062.720	242.230	2	.200

ELEMENT NO 5 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1062.720	242.230	2	242.230

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:10-18-2024 Time: 9:52:54

OCEAN BREEZE RANCH
Q100 10/18/2024
SD-F

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
894.360	233.290	.582	233.872	51.20	19.55	5.94	239.81	.00	1.59	4.50	10.000	4.500	.00	0 .0
WALL	EXIT													
894.360	233.290	1.349	234.639	51.20	18.94	5.57	240.21	.00	2.31	2.49	2.500	.000	.00	1 .0
52.182	.0531					.0460	2.40	1.35	3.21	1.31	.013	.00	.00	PIPE
946.542	236.061	1.391	237.452	51.20	18.24	5.16	242.62	.00	2.31	2.48	2.500	.000	.00	1 .0
34.646	.0531					.0411	1.43	1.39	3.02	1.31	.013	.00	.00	PIPE
981.188	237.901	1.446	239.347	51.20	17.39	4.69	244.04	.00	2.31	2.47	2.500	.000	.00	1 .0
21.978	.0531					.0364	.80	1.45	2.81	1.31	.013	.00	.00	PIPE
1003.166	239.068	1.505	240.573	51.20	16.58	4.27	244.84	.00	2.31	2.45	2.500	.000	.00	1 .0
15.595	.0531					.0322	.50	1.51	2.60	1.31	.013	.00	.00	PIPE
1018.761	239.896	1.567	241.463	51.20	15.81	3.88	245.34	.00	2.31	2.42	2.500	.000	.00	1 .0
11.678	.0531					.0285	.33	1.57	2.41	1.31	.013	.00	.00	PIPE
1030.440	240.516	1.633	242.149	51.20	15.07	3.53	245.68	.00	2.31	2.38	2.500	.000	.00	1 .0
9.036	.0531					.0254	.23	1.63	2.22	1.31	.013	.00	.00	PIPE
1039.476	240.996	1.703	242.699	51.20	14.37	3.21	245.91	.00	2.31	2.33	2.500	.000	.00	1 .0
7.063	.0531					.0226	.16	1.70	2.05	1.31	.013	.00	.00	PIPE
1046.538	241.371	1.779	243.150	51.20	13.70	2.92	246.07	.00	2.31	2.26	2.500	.000	.00	1 .0
5.559	.0531					.0202	.11	1.78	1.88	1.31	.013	.00	.00	PIPE

OCEAN BREEZE RANCH
Q100 10/18/2024
SD-F

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width / "N"	Height/Dia.-FT / X-Fall	Base Wt or I.D. / ZR	ZL	No Wth Prs/Pip / Type Ch
1052.098	241.666	1.861	243.527	51.20	13.06	2.65	246.18	.00	2.31	2.18	2.500	.000	.00	1 .0
4.313	.0531					.0181	.08	1.86	1.72	1.31	.013	.00	.00	PIPE
1056.411	241.895	1.951	243.846	51.20	12.46	2.41	246.26	.00	2.31	2.07	2.500	.000	.00	1 .0
3.238	.0531					.0163	.05	1.95	1.56	1.31	.013	.00	.00	PIPE
1059.649	242.067	2.051	244.118	51.20	11.88	2.19	246.31	.00	2.31	1.92	2.500	.000	.00	1 .0
2.176	.0531					.0149	.03	2.05	1.40	1.31	.013	.00	.00	PIPE
1061.825	242.182	2.167	244.350	51.20	11.32	1.99	246.34	.00	2.31	1.70	2.500	.000	.00	1 .0
.895	.0531					.0139	.01	2.17	1.22	1.31	.013	.00	.00	PIPE
1062.720	242.230	2.314	244.544	51.20	10.79	1.81	246.35	.00	2.31	1.31	2.500	.000	.00	1 .0
WALL	ENTRANCE													
1062.720	242.230	6.314	248.544	51.20	1.80	.05	248.59	.00	1.59	4.50	10.000	4.500	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		2.000														
CD	2	4	1		1.500														
CD	3	4	1		1.000														
CD	4	3	0	.000	4.000	4.000	.000	.000	.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -

OCEAN BREEZE RANCH

HEADING LINE NO 2 IS -

Q100 10/15/2024

HEADING LINE NO 3 IS -

SD-G1.WSW

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	992.950	248.030	4	252.200

ELEMENT NO 2 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	992.950	248.030	1

ELEMENT NO 3 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1016.400	248.190	1	.013	.000	.000	.000	0

ELEMENT NO 4 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1016.400	248.190	4	.200

ELEMENT NO 5 IS A JUNCTION * * * * * * *

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	1020.400	248.520	4	2	0	.013	2.400	.000	248.520	.000	.000	.000

RADIUS	ANGLE
.000	.000

ELEMENT NO 6 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1020.400	248.520	1

ELEMENT NO 7 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1024.650	248.570	1	.013	.000	.000	.000	0

ELEMENT NO 8 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1024.650	248.570	4	.200

ELEMENT NO 9 IS A JUNCTION * * * * * * *

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	1028.650	249.320	4	3	0	.013	3.100	.000	249.570	.000	.000	-.800

RADIUS	ANGLE
254.648	.900

ELEMENT NO 10 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1028.650	249.320	2

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 11 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1118.200	250.220	2	.013	294.368	17.430	.000	0

```
ELEMENT NO  12 IS A REACH            *         *     *
                U/S DATA   STATION    INVERT  SECT              N                        RADIUS    ANGLE     ANG PT  MAN H
                           1251.080  251.550    2              .013                      436.802   17.430      .000     0
ELEMENT NO  13 IS A  WALL  ENTRANCE                 *
                U/S DATA   STATION    INVERT  SECT             FP
                           1251.080  251.550    4              .200
ELEMENT NO  14 IS A JUNCTION         *         *     *     *               *                 *              *
                U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3        Q4     INVERT-3 INVERT-4  PHI 3  PHI 4
                           1255.080  251.880    4     2     0   .013     1.000      .000   251.880      .000    .000     .900
                                                                                            RADIUS    ANGLE
                                                                                              .000    .000
ELEMENT NO  15 IS A  WALL  EXIT                     *
                U/S DATA   STATION    INVERT  SECT
                           1255.080  251.880    2
ELEMENT NO  16 IS A REACH            *         *     *
                U/S DATA   STATION    INVERT  SECT              N                        RADIUS    ANGLE     ANG PT  MAN H
                           1360.300  257.440    2              .013                        .000     .000      .000     0
ELEMENT NO  17 IS A  WALL  ENTRANCE                 *
                U/S DATA   STATION    INVERT  SECT             FP
                           1360.300  257.440    4              .200
ELEMENT NO  18 IS A REACH            *         *     *
                U/S DATA   STATION    INVERT  SECT              N                        RADIUS    ANGLE     ANG PT  MAN H
                           1364.300  257.770    4              .013                        .000     .000      .000     0
ELEMENT NO  19 IS A  WALL  EXIT                     *
                U/S DATA   STATION    INVERT  SECT
                           1364.300  257.770    2
ELEMENT NO  20 IS A REACH            *         *     *
                U/S DATA   STATION    INVERT  SECT              N                        RADIUS    ANGLE     ANG PT  MAN H
                           1590.790  283.310    2              .013                      455.971  -28.460      .000     0
ELEMENT NO  21 IS A  WALL  ENTRANCE                 *
                U/S DATA   STATION    INVERT  SECT             FP
                           1590.790  283.310    4              .200
ELEMENT NO  22 IS A SYSTEM HEADWORKS                *                     *
                U/S DATA   STATION    INVERT  SECT                              W S ELEV
                           1590.790  283.310    4                              283.300
                                          W S P G W                                                    PAGE NO   4
                      WATER SURFACE PROFILE - ELEMENT CARD LISTING
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Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:10-17-2024 Time: 7:28:26

OCEAN BREEZE RANCH
Q100 10/15/2024
SD-G1.WSW

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width	Height/Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
992.950	248.030	4.170	252.200	12.80	.80	.01	252.21	.00	.68	4.00	4.000	4.000	.00	0 .0
WALL	EXIT													
992.950	248.030	4.171	252.201	12.80	4.07	.26	252.46	.00	1.29	.00	2.000	.000	.00	1 .0
23.450	.0068				.0032	.08	4.17	.00	1.22	.013	.00	.00	PIPE	
1016.400	248.190	4.086	252.276	12.80	4.07	.26	252.53	.00	1.29	.00	2.000	.000	.00	1 .0
WALL	ENTRANCE													
1016.400	248.190	4.383	252.573	12.80	.80	.01	252.58	.00	.68	4.00	4.000	4.000	.00	0 .0
JUNCT STR	.0825				.0000	.00	4.38	.07			.013	.00	.00	BOX
1020.400	248.520	4.054	252.574	10.40	.65	.01	252.58	.00	.59	4.00	4.000	4.000	.00	0 .0
WALL	EXIT													
1020.400	248.520	4.055	252.575	10.40	3.31	.17	252.75	.00	1.15	.00	2.000	.000	.00	1 .0
4.250	.0118				.0021	.01	4.05	.00	.91	.013	.00	.00	PIPE	
1024.650	248.570	4.014	252.584	10.40	3.31	.17	252.75	.00	1.15	.00	2.000	.000	.00	1 .0
WALL	ENTRANCE													
1024.650	248.570	4.210	252.780	10.40	.65	.01	252.79	.00	.59	4.00	4.000	4.000	.00	0 .0
JUNCT STR	.1875				.0000	.00	.00	.06			.013	.00	.00	BOX
1028.650	249.320	3.441	252.761	7.30	.53	.00	252.77	.00	.47	4.00	4.000	4.000	.00	0 .0
WALL	EXIT													

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:10-17-2024 Time: 7:28:26

OCEAN BREEZE RANCH
Q100 10/15/2024
SD-G1.WSW

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width	Height/Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1028.650	249.320	3.441	252.761	7.30	4.13	.26	253.03	.00	1.05	.00	1.500	.000	.00	1 .0
89.550	.0101					.0048	.43	.00	.00	.92	.013	.00	.00	PIPE
1118.200	250.220	2.997	253.217	7.30	4.13	.26	253.48	.00	1.05	.00	1.500	.000	.00	1 .0
132.880	.0100					.0048	.64	.00	.00	.92	.013	.00	.00	PIPE
1251.080	251.550	2.332	253.882	7.30	4.13	.26	254.15	.00	1.05	.00	1.500	.000	.00	1 .0
WALL ENTRANCE														
1251.080	251.550	2.642	254.192	7.30	.69	.01	254.20	.00	.47	4.00	4.000	4.000	.00	0 .0
JUNCT STR	.0825					.0000	.00	2.64	.07		.013	.00	.00	BOX
1255.080	251.880	2.312	254.192	6.30	.68	.01	254.20	.00	.43	4.00	4.000	4.000	.00	0 .0
WALL EXIT														
1255.080	251.880	2.313	254.193	6.30	3.57	.20	254.39	.00	.97	.00	1.500	.000	.00	1 .0
12.779	.0528					.0036	.05	2.31	.00	.52	.013	.00	.00	PIPE
1267.859	252.555	1.680	254.235	6.30	3.57	.20	254.43	.00	.97	.00	1.500	.000	.00	1 .0
HYDRAULIC JUMP														
1267.859	252.555	.524	253.079	6.30	11.46	2.04	255.12	.00	.97	1.43	1.500	.000	.00	1 .0
29.592	.0528					.0507	1.50	.52	3.26	.52	.013	.00	.00	PIPE
1297.451	254.119	.533	254.652	6.30	11.18	1.94	256.59	.00	.97	1.44	1.500	.000	.00	1 .0
22.762	.0528					.0459	1.05	.53	3.15	.52	.013	.00	.00	PIPE

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:10-17-2024 Time: 7:28:26

OCEAN BREEZE RANCH
Q100 10/15/2024
SD-G1.WSW

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width / "N"	Height/Dia.-FT / X-Fall	Base Wt or I.D. / ZR	ZL	No Wth Prs/Pip / Type Ch
1320.213	255.322	.552	255.874	6.30	10.66	1.77	257.64	.00	.97	1.45	1.500	.000	.00	1 .0
11.173	.0528					.0403	.45	.55	2.94	.52	.013	.00	.00	PIPE
1331.386	255.912	.572	256.484	6.30	10.17	1.60	258.09	.00	.97	1.46	1.500	.000	.00	1 .0
7.133	.0528					.0353	.25	.57	2.75	.52	.013	.00	.00	PIPE
1338.519	256.289	.593	256.882	6.30	9.69	1.46	258.34	.00	.97	1.47	1.500	.000	.00	1 .0
5.111	.0528					.0310	.16	.59	2.57	.52	.013	.00	.00	PIPE
1343.631	256.559	.614	257.173	6.30	9.24	1.33	258.50	.00	.97	1.48	1.500	.000	.00	1 .0
3.807	.0528					.0272	.10	.61	2.40	.52	.013	.00	.00	PIPE
1347.438	256.760	.637	257.397	6.30	8.81	1.21	258.60	.00	.97	1.48	1.500	.000	.00	1 .0
2.993	.0528					.0239	.07	.64	2.24	.52	.013	.00	.00	PIPE
1350.431	256.919	.660	257.579	6.30	8.40	1.10	258.67	.00	.97	1.49	1.500	.000	.00	1 .0
2.344	.0528					.0210	.05	.66	2.09	.52	.013	.00	.00	PIPE
1352.775	257.042	.685	257.727	6.30	8.01	1.00	258.72	.00	.97	1.49	1.500	.000	.00	1 .0
1.908	.0528					.0185	.04	.69	1.95	.52	.013	.00	.00	PIPE
1354.683	257.143	.710	257.853	6.30	7.64	.91	258.76	.00	.97	1.50	1.500	.000	.00	1 .0
1.512	.0528					.0162	.02	.71	1.81	.52	.013	.00	.00	PIPE
1356.195	257.223	.737	257.960	6.30	7.28	.82	258.78	.00	.97	1.50	1.500	.000	.00	1 .0
1.216	.0528					.0143	.02	.74	1.69	.52	.013	.00	.00	PIPE

OCEAN BREEZE RANCH
Q100 10/15/2024
SD-G1.WSW

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width / "N"	Height/ Dia.-FT / X-Fall	Base Wt or I.D. / ZR	ZL	No Wth Prs/Pip / Type Ch
1357.410	257.287	.765	258.052	6.30	6.94	.75	258.80	.00	.97	1.50	1.500	.000	.00	1 .0
.946	.0528				.0126	.01	.77	1.57	.52	.013	.00	.00		PIPE
1358.356	257.337	.795	258.132	6.30	6.62	.68	258.81	.00	.97	1.50	1.500	.000	.00	1 .0
.740	.0528				.0111	.01	.80	1.46	.52	.013	.00	.00		PIPE
1359.096	257.376	.826	258.202	6.30	6.31	.62	258.82	.00	.97	1.49	1.500	.000	.00	1 .0
.540	.0528				.0098	.01	.83	1.36	.52	.013	.00	.00		PIPE
1359.636	257.405	.859	258.264	6.30	6.02	.56	258.83	.00	.97	1.48	1.500	.000	.00	1 .0
.388	.0528				.0087	.00	.86	1.26	.52	.013	.00	.00		PIPE
1360.023	257.425	.893	258.318	6.30	5.74	.51	258.83	.00	.97	1.47	1.500	.000	.00	1 .0
.210	.0528				.0077	.00	.89	1.17	.52	.013	.00	.00		PIPE
1360.233	257.436	.930	258.367	6.30	5.47	.46	258.83	.00	.97	1.46	1.500	.000	.00	1 .0
.067	.0528				.0068	.00	.93	1.08	.52	.013	.00	.00		PIPE
1360.300	257.440	.970	258.410	6.30	5.21	.42	258.83	.00	.97	1.43	1.500	.000	.00	1 .0
WALL	ENTRANCE													
1360.300	257.440	1.970	259.410	6.30	.80	.01	259.42	.00	.43	4.00	4.000	4.000	.00	0 .0
1.100	.0825				.0001	.00	1.97	.10	.17	.013	.00	.00		BOX
1361.400	257.531	1.879	259.409	6.30	.84	.01	259.42	.00	.43	4.00	4.000	4.000	.00	0 .0
1.047	.0825				.0001	.00	1.88	.11	.17	.013	.00	.00		BOX

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:10-17-2024 Time: 7:28:26

OCEAN BREEZE RANCH
Q100 10/15/2024
SD-G1.WSW

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width / "N"	Height/Dia.-FT / X-Fall	Base Wt or I.D. / ZR	ZL	No Wth Prs/Pip / Type Ch
1362.447	257.617	1.791	259.408	6.30	.88	.01	259.42	.00	.43	4.00	4.000	4.000	.00	0 .0
.997	.0825					.0001	.00	1.79	.12	.17	.013	.00	.00	BOX
1363.444	257.699	1.708	259.407	6.30	.92	.01	259.42	.00	.43	4.00	4.000	4.000	.00	0 .0
.856	.0825					.0001	.00	1.71	.12	.17	.013	.00	.00	BOX
1364.300	257.770	1.636	259.406	6.30	.96	.01	259.42	.00	.43	4.00	4.000	4.000	.00	0 .0
HYDRAULIC JUMP														
1364.300	257.770	.429	258.199	6.30	15.09	3.54	261.74	.02	.97	1.36	1.500	.000	.00	1 .0
113.634	.1128					.1128	12.82	.45	4.79	.43	.013	.00	.00	PIPE
1477.934	270.584	.429	271.013	6.30	15.09	3.54	274.55	.02	.97	1.36	1.500	.000	.00	1 .0
43.300	.1128					.1106	4.79	.45	4.79	.43	.013	.00	.00	PIPE
1521.234	275.466	.433	275.900	6.30	14.88	3.44	279.34	.02	.97	1.36	1.500	.000	.00	1 .0
26.688	.1128					.1016	2.71	.45	4.70	.43	.013	.00	.00	PIPE
1547.922	278.476	.448	278.924	6.30	14.19	3.13	282.05	.02	.97	1.37	1.500	.000	.00	1 .0
11.273	.1128					.0890	1.00	.47	4.40	.43	.013	.00	.00	PIPE
1559.195	279.747	.464	280.211	6.30	13.53	2.84	283.05	.02	.97	1.39	1.500	.000	.00	1 .0
6.955	.1128					.0779	.54	.48	4.11	.43	.013	.00	.00	PIPE
1566.150	280.531	.480	281.012	6.30	12.90	2.58	283.60	.02	.97	1.40	1.500	.000	.00	1 .0
4.893	.1128					.0682	.33	.50	3.85	.43	.013	.00	.00	PIPE

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:10-17-2024 Time: 7:28:26

OCEAN BREEZE RANCH
Q100 10/15/2024
SD-G1.WSW

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width / "N"	Height/ Dia.-FT / X-Fall	Base Wt or I.D. / ZR	ZL	No Wth Prs/Pip / Type Ch
1571.043	281.083	.497	281.580	6.30	12.30	2.35	283.93	.01	.97	1.41	1.500	.000	.00	1 .0
3.692	.1128					.0598	.22	.51	3.60	.43	.013	.00	.00	PIPE
1574.734	281.499	.515	282.015	6.30	11.73	2.14	284.15	.01	.97	1.42	1.500	.000	.00	1 .0
2.918	.1128					.0524	.15	.53	3.37	.43	.013	.00	.00	PIPE
1577.653	281.829	.533	282.362	6.30	11.18	1.94	284.30	.01	.97	1.44	1.500	.000	.00	1 .0
2.356	.1128					.0459	.11	.55	3.15	.43	.013	.00	.00	PIPE
1580.009	282.094	.552	282.646	6.30	10.66	1.77	284.41	.01	.97	1.45	1.500	.000	.00	1 .0
1.938	.1128					.0403	.08	.56	2.94	.43	.013	.00	.00	PIPE
1581.946	282.313	.572	282.885	6.30	10.17	1.60	284.49	.01	.97	1.46	1.500	.000	.00	1 .0
1.613	.1128					.0353	.06	.58	2.75	.43	.013	.00	.00	PIPE
1583.559	282.495	.593	283.088	6.30	9.69	1.46	284.55	.01	.97	1.47	1.500	.000	.00	1 .0
1.365	.1128					.0310	.04	.60	2.57	.43	.013	.00	.00	PIPE
1584.924	282.649	.614	283.263	6.30	9.24	1.33	284.59	.01	.97	1.48	1.500	.000	.00	1 .0
1.140	.1128					.0272	.03	.62	2.40	.43	.013	.00	.00	PIPE
1586.065	282.777	.637	283.414	6.30	8.81	1.21	284.62	.01	.97	1.48	1.500	.000	.00	1 .0
.974	.1128					.0239	.02	.64	2.24	.43	.013	.00	.00	PIPE
1587.039	282.887	.660	283.547	6.30	8.40	1.10	284.64	.01	.97	1.49	1.500	.000	.00	1 .0
.813	.1128					.0210	.02	.67	2.09	.43	.013	.00	.00	PIPE

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:10-17-2024 Time: 7:28:26

OCEAN BREEZE RANCH
Q100 10/15/2024
SD-G1.WSW

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width / "N"	Height/Dia.-FT / X-Fall	Base Wt or I.D. / ZR	ZL	No Wth Prs/Pip / Type Ch
1587.852	282.979	.685	283.664	6.30	8.01	1.00	284.66	.01	.97	1.49	1.500	.000	.00	1 .0
.695	.1128					.0185	.01	.69	1.95	.43	.013	.00	.00	PIPE
1588.548	283.057	.710	283.767	6.30	7.64	.91	284.67	.01	.97	1.50	1.500	.000	.00	1 .0
.573	.1128					.0162	.01	.72	1.81	.43	.013	.00	.00	PIPE
1589.121	283.122	.737	283.859	6.30	7.28	.82	284.68	.01	.97	1.50	1.500	.000	.00	1 .0
.476	.1128					.0143	.01	.74	1.69	.43	.013	.00	.00	PIPE
1589.597	283.175	.765	283.941	6.30	6.94	.75	284.69	.00	.97	1.50	1.500	.000	.00	1 .0
.380	.1128					.0126	.00	.77	1.57	.43	.013	.00	.00	PIPE
1589.977	283.218	.795	284.013	6.30	6.62	.68	284.69	.00	.97	1.50	1.500	.000	.00	1 .0
.304	.1128					.0111	.00	.80	1.46	.43	.013	.00	.00	PIPE
1590.281	283.253	.826	284.079	6.30	6.31	.62	284.70	.00	.97	1.49	1.500	.000	.00	1 .0
.226	.1128					.0098	.00	.83	1.36	.43	.013	.00	.00	PIPE
1590.506	283.278	.859	284.137	6.30	6.02	.56	284.70	.00	.97	1.48	1.500	.000	.00	1 .0
.165	.1128					.0087	.00	.86	1.26	.43	.013	.00	.00	PIPE
1590.671	283.297	.893	284.190	6.30	5.74	.51	284.70	.00	.97	1.47	1.500	.000	.00	1 .0
.090	.1128					.0077	.00	.90	1.17	.43	.013	.00	.00	PIPE
1590.761	283.307	.930	284.237	6.30	5.47	.46	284.70	.00	.97	1.46	1.500	.000	.00	1 .0
.029	.1128					.0068	.00	.93	1.08	.43	.013	.00	.00	PIPE

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:10-17-2024 Time: 7:28:26

OCEAN BREEZE RANCH
Q100 10/15/2024
SD-G1.WSW

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT or "N"	Base Wt or I.D.	ZL	X-Fall	ZR	No Wth Prs/Pip	Ch
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp						Type	
1590.790	283.310	.970	284.280	6.30	5.21	.42	284.70	.00	.97	1.43	1.500	.000	.00	1	.0		
WALL	ENTRANCE																
1590.790	283.310	1.970	285.280	6.30	.80	.01	285.29	.00	.43	4.00	4.000	4.000	.00	0	.0		

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.000														
CD	2	2	0	.000	6.000	4.000			.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -

OCEAN BREEZE RANCH

HEADING LINE NO 2 IS -

Q100 10/15/2024

HEADING LINE NO 3 IS -

SD-G1-1

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1002.000	249.570	1	252.570

ELEMENT NO 2 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1002.000	249.570	1

ELEMENT NO 3 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1018.250	249.730	1	.013	.000	.000	.000	0

ELEMENT NO 4 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1018.250	249.730	2	.200

ELEMENT NO 5 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1018.250	249.730	2	249.730

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:10-17-2024 Time: 8:41:51

OCEAN BREEZE RANCH
Q100 10/15/2024
SD-G1-1

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1002.000	249.570	3.000	252.570	3.20	4.07	.26	252.83	.00	.77	.00	1.000	.000	.00	0 .0
WALL	EXIT													
1002.000	249.570	3.000	252.570	3.20	4.07	.26	252.83	.00	.77	.00	1.000	.000	.00	1 .0
16.250	.0098					.0081	.13	3.00	.00	.75	.013	.00	.00	PIPE
1018.250	249.730	2.971	252.701	3.20	4.07	.26	252.96	.00	.77	.00	1.000	.000	.00	1 .0
WALL	ENTRANCE													
1018.250	249.730	3.280	253.010	3.20	.24	.00	253.01	.00	.27	4.00	6.000	4.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.500														
CD	2	2	0	.000	6.000	4.000			.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -

OCEAN BREEZE RANCH

HEADING LINE NO 2 IS -

Q100 10/15/2024

HEADING LINE NO 3 IS -

SD-G1-2

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	993.750	283.640	1	285.280

ELEMENT NO 2 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	993.750	283.640	1

ELEMENT NO 3 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	998.000	283.680	1	.013	.000	.000	.000	0

ELEMENT NO 4 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	998.000	283.680	2	.200

ELEMENT NO 5 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	998.000	283.680	2	283.680

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:10-17-2024 Time: 8:42: 5

OCEAN BREEZE RANCH
Q100 10/15/2024
SD-G1-2

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
993.750	283.640	1.640	285.280	2.90	1.64	.04	285.32	.00	.65	.00	1.500	.000	.00	0 .0
WALL	EXIT													
993.750	283.640	1.641	285.281	2.90	1.64	.04	285.32	.00	.65	.00	1.500	.000	.00	1 .0
4.250	.0094					.0008	.00	1.64	.00	.55	.013	.00	.00	PIPE
998.000	283.680	1.604	285.284	2.90	1.64	.04	285.33	.00	.65	.00	1.500	.000	.00	1 .0
WALL	ENTRANCE													
998.000	283.680	1.652	285.332	2.90	.44	.00	285.33	.00	.25	4.00	6.000	4.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.500														
CD	2	2	0	.000	6.000	4.000			.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -

OCEAN BREEZE RANCH

HEADING LINE NO 2 IS -

Q100 10/15/2024

HEADING LINE NO 3 IS -

SD-G1-3

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1002.000	283.640	1	285.280

ELEMENT NO 2 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1002.000	283.640	1

ELEMENT NO 3 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1018.250	283.800	1	.013	.000	.000	8.960	0

ELEMENT NO 4 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1018.250	283.800	2	.200

ELEMENT NO 5 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1018.250	283.800	2	283.800

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:10-17-2024 Time: 8:42:19

OCEAN BREEZE RANCH
Q100 10/15/2024
SD-G1-3

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1002.000	283.640	1.640	285.280	3.40	1.92	.06	285.34	.00	.70	.00	1.500	.000	.00	0 .0
WALL	EXIT													
1002.000	283.640	1.640	285.280	3.40	1.92	.06	285.34	.00	.70	.00	1.500	.000	.00	1 .0
16.109	.0098					.0010	.02	1.64	.00	.59	.013	.00	.00	PIPE
1018.109	283.799	1.500	285.299	3.40	1.92	.06	285.36	.00	.70	.00	1.500	.000	.00	1 .0
.141	.0098					.0010	.00	1.50	.00	.59	.013	.00	.00	PIPE
1018.250	283.800	1.498	285.298	3.40	1.92	.06	285.36	.00	.70	.10	1.500	.000	.00	1 .0
WALL	ENTRANCE													
1018.250	283.800	2.498	286.298	3.40	.34	.00	286.30	.00	.28	4.00	6.000	4.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.500														
CD	2	2	0	.000	6.000	4.000			.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -

OCEAN BREEZE RANCH

HEADING LINE NO 2 IS -

Q100 10/15/2024

HEADING LINE NO 3 IS -

SD-G1-3

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1002.000	251.880	1	254.190

ELEMENT NO 2 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1002.000	251.880	1

ELEMENT NO 3 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1012.500	255.000	1	.013	.000	.000	.000	0

ELEMENT NO 4 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1012.500	255.000	2	.200

ELEMENT NO 5 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1012.500	255.000	2	255.000

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:10-21-2024 Time: 8:54:30

OCEAN BREEZE RANCH
Q100 10/15/2024
SD-G1-3

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1002.000	251.880	2.310	254.190	1.40	.79	.01	254.20	.00	.44	.00	1.500	.000	.00	0 .0
WALL EXIT														
1002.000	251.880	2.310	254.190	1.40	.79	.01	254.20	.00	.44	.00	1.500	.000	.00	1 .0
2.729	.2971					.0002	.00	2.31	.00	.16	.013	.00	.00	PIPE
1004.729	252.691	1.500	254.191	1.40	.79	.01	254.20	.00	.44	.00	1.500	.000	.00	1 .0
.464	.2971					.0002	.00	1.50	.00	.16	.013	.00	.00	PIPE
1005.193	252.829	1.360	254.189	1.40	.83	.01	254.20	.00	.44	.87	1.500	.000	.00	1 .0
.266	.2971					.0002	.00	1.36	.11	.16	.013	.00	.00	PIPE
1005.459	252.908	1.280	254.188	1.40	.87	.01	254.20	.00	.44	1.06	1.500	.000	.00	1 .0
.222	.2971					.0002	.00	1.28	.12	.16	.013	.00	.00	PIPE
1005.680	252.974	1.213	254.187	1.40	.91	.01	254.20	.00	.44	1.18	1.500	.000	.00	1 .0
.191	.2971					.0002	.00	1.21	.14	.16	.013	.00	.00	PIPE
1005.871	253.030	1.155	254.185	1.40	.96	.01	254.20	.00	.44	1.26	1.500	.000	.00	1 .0
.174	.2971					.0002	.00	1.16	.16	.16	.013	.00	.00	PIPE
1006.045	253.082	1.102	254.184	1.40	1.01	.02	254.20	.00	.44	1.32	1.500	.000	.00	1 .0
.156	.2971					.0002	.00	1.10	.17	.16	.013	.00	.00	PIPE
1006.201	253.128	1.054	254.183	1.40	1.05	.02	254.20	.00	.44	1.37	1.500	.000	.00	1 .0
.142	.2971					.0003	.00	1.05	.19	.16	.013	.00	.00	PIPE

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:10-21-2024 Time: 8:54:30

OCEAN BREEZE RANCH
Q100 10/15/2024
SD-G1-3

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width / "N"	Height/Dia.-FT / X-Fall	Base Wt or I.D. / ZR	ZL	No Wth Prs/Pip / Type Ch
1006.344	253.171	1.010	254.181	1.40	1.11	.02	254.20	.00	.44	1.41	1.500	.000	.00	1 .0
.135	.2971					.0003	.00	1.01	.21	.16	.013	.00	.00	PIPE
1006.479	253.211	.968	254.179	1.40	1.16	.02	254.20	.00	.44	1.44	1.500	.000	.00	1 .0
.124	.2971					.0003	.00	.97	.22	.16	.013	.00	.00	PIPE
1006.603	253.248	.929	254.177	1.40	1.22	.02	254.20	.00	.44	1.46	1.500	.000	.00	1 .0
.114	.2971					.0004	.00	.93	.24	.16	.013	.00	.00	PIPE
1006.717	253.282	.893	254.175	1.40	1.28	.03	254.20	.00	.44	1.47	1.500	.000	.00	1 .0
.046	.2971					.0004	.00	.89	.26	.16	.013	.00	.00	PIPE
1006.763	253.295	.858	254.153	1.40	1.34	.03	254.18	.00	.44	1.48	1.500	.000	.00	1 .0
HYDRAULIC JUMP														
1006.763	253.295	.192	253.487	1.40	10.60	1.74	255.23	.00	.44	1.00	1.500	.000	.00	1 .0
.594	.2971					.1352	.08	.19	5.15	.16	.013	.00	.00	PIPE
1007.357	253.472	.198	253.670	1.40	10.09	1.58	255.25	.00	.44	1.02	1.500	.000	.00	1 .0
.763	.2971					.1177	.09	.20	4.81	.16	.013	.00	.00	PIPE
1008.119	253.698	.205	253.903	1.40	9.62	1.44	255.34	.00	.44	1.03	1.500	.000	.00	1 .0
.637	.2971					.1029	.07	.21	4.51	.16	.013	.00	.00	PIPE
1008.756	253.887	.212	254.100	1.40	9.18	1.31	255.41	.00	.44	1.05	1.500	.000	.00	1 .0
.539	.2971					.0898	.05	.21	4.23	.16	.013	.00	.00	PIPE

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:10-21-2024 Time: 8:54:30

OCEAN BREEZE RANCH
Q100 10/15/2024
SD-G1-3

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1009.295	254.048	.219	254.267	1.40	8.75	1.19	255.46	.00	.44	1.06	1.500	.000	.00	1 .0
.462	.2971					.0784	.04	.22	3.97	.16	.013	.00	.00	PIPE
1009.757	254.185	.226	254.411	1.40	8.34	1.08	255.49	.00	.44	1.07	1.500	.000	.00	1 .0
.394	.2971					.0684	.03	.23	3.72	.16	.013	.00	.00	PIPE
1010.152	254.302	.234	254.536	1.40	7.95	.98	255.52	.00	.44	1.09	1.500	.000	.00	1 .0
.347	.2971					.0597	.02	.23	3.49	.16	.013	.00	.00	PIPE
1010.498	254.405	.241	254.646	1.40	7.58	.89	255.54	.00	.44	1.10	1.500	.000	.00	1 .0
.295	.2971					.0522	.02	.24	3.26	.16	.013	.00	.00	PIPE
1010.793	254.493	.250	254.743	1.40	7.23	.81	255.55	.00	.44	1.12	1.500	.000	.00	1 .0
.262	.2971					.0456	.01	.25	3.06	.16	.013	.00	.00	PIPE
1011.055	254.571	.258	254.829	1.40	6.89	.74	255.57	.00	.44	1.13	1.500	.000	.00	1 .0
.226	.2971					.0398	.01	.26	2.87	.16	.013	.00	.00	PIPE
1011.280	254.638	.267	254.905	1.40	6.57	.67	255.58	.00	.44	1.15	1.500	.000	.00	1 .0
.198	.2971					.0348	.01	.27	2.69	.16	.013	.00	.00	PIPE
1011.478	254.696	.276	254.973	1.40	6.27	.61	255.58	.00	.44	1.16	1.500	.000	.00	1 .0
.174	.2971					.0304	.01	.28	2.52	.16	.013	.00	.00	PIPE
1011.653	254.748	.285	255.033	1.40	5.98	.55	255.59	.00	.44	1.18	1.500	.000	.00	1 .0
.149	.2971					.0265	.00	.29	2.36	.16	.013	.00	.00	PIPE

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:10-21-2024 Time: 8:54:30

OCEAN BREEZE RANCH
Q100 10/15/2024
SD-G1-3

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width / "N"	Height/ Dia.-FT / X-Fall	Base Wt or I.D. / ZR	ZL	No Wth Prs/Pip / Type Ch
1011.802	254.793	.295	255.088	1.40	5.70	.50	255.59	.00	.44	1.19	1.500	.000	.00	1 .0
.131	.2971					.0232	.00	.30	2.21	.16	.013	.00	.00	PIPE
1011.933	254.831	.305	255.137	1.40	5.43	.46	255.59	.00	.44	1.21	1.500	.000	.00	1 .0
.114	.2971					.0203	.00	.31	2.07	.16	.013	.00	.00	PIPE
1012.047	254.865	.315	255.180	1.40	5.18	.42	255.60	.00	.44	1.22	1.500	.000	.00	1 .0
.096	.2971					.0177	.00	.32	1.94	.16	.013	.00	.00	PIPE
1012.143	254.894	.326	255.220	1.40	4.94	.38	255.60	.00	.44	1.24	1.500	.000	.00	1 .0
.083	.2971					.0155	.00	.33	1.82	.16	.013	.00	.00	PIPE
1012.226	254.919	.337	255.256	1.40	4.71	.34	255.60	.00	.44	1.25	1.500	.000	.00	1 .0
.072	.2971					.0135	.00	.34	1.70	.16	.013	.00	.00	PIPE
1012.298	254.940	.348	255.288	1.40	4.49	.31	255.60	.00	.44	1.27	1.500	.000	.00	1 .0
.058	.2971					.0118	.00	.35	1.59	.16	.013	.00	.00	PIPE
1012.355	254.957	.360	255.317	1.40	4.28	.28	255.60	.00	.44	1.28	1.500	.000	.00	1 .0
.045	.2971					.0103	.00	.36	1.49	.16	.013	.00	.00	PIPE
1012.400	254.970	.373	255.343	1.40	4.08	.26	255.60	.00	.44	1.30	1.500	.000	.00	1 .0
.040	.2971					.0090	.00	.37	1.40	.16	.013	.00	.00	PIPE
1012.440	254.982	.385	255.367	1.40	3.89	.24	255.60	.00	.44	1.31	1.500	.000	.00	1 .0
.026	.2971					.0079	.00	.39	1.31	.16	.013	.00	.00	PIPE

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:10-21-2024 Time: 8:54:30

OCEAN BREEZE RANCH
Q100 10/15/2024
SD-G1-3

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1012.466	254.990	.399	255.389	1.40	3.71	.21	255.60	.00	.44	1.33	1.500	.000	.00	1 .0
.019	.2971					.0069	.00	.40	1.23	.16	.013	.00	.00	PIPE
1012.484	254.995	.413	255.408	1.40	3.54	.19	255.60	.00	.44	1.34	1.500	.000	.00	1 .0
.013	.2971					.0061	.00	.41	1.15	.16	.013	.00	.00	PIPE
1012.497	254.999	.427	255.426	1.40	3.37	.18	255.60	.00	.44	1.35	1.500	.000	.00	1 .0
.003	.2971					.0053	.00	.43	1.07	.16	.013	.00	.00	PIPE
1012.500	255.000	.443	255.443	1.40	3.21	.16	255.60	.00	.44	1.37	1.500	.000	.00	1 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.500														
CD	2	2	0	.000	6.000	4.000			.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -

OCEAN BREEZE RANCH

HEADING LINE NO 2 IS -

Q100 10/15/2024

HEADING LINE NO 3 IS -

SD-G2

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	990.970	232.730	1	232.730

ELEMENT NO 2 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	990.970	232.730	1

ELEMENT NO 3 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1148.400	241.500	1	.013	.000	.000	.000	0

ELEMENT NO 4 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1148.400	241.500	2	.200

ELEMENT NO 5 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1148.400	241.500	2	241.500

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:10-15-2024 Time: 5:11:15

OCEAN BREEZE RANCH
Q100 10/15/2024
SD-G2

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width / "N"	Height/ Dia.-FT / X-Fall	Base Wt or I.D. / ZR	ZL	No Wth Prs/Pip / Type Ch
990.970	232.730	.785	233.515	13.30	14.21	3.13	236.65	.00	1.36	1.50	1.500	.000	.00	0 .0
WALL	EXIT													
990.970	232.730	.784	233.514	13.30	14.24	3.15	236.66	.00	1.36	1.50	1.500	.000	.00	1 .0
57.207	.0557				.0540	3.09	.78	3.18	.78	.013	.00	.00	PIPE	
1048.176	235.917	.794	236.711	13.30	13.99	3.04	239.75	.00	1.36	1.50	1.500	.000	.00	1 .0
40.669	.0557				.0497	2.02	.79	3.09	.78	.013	.00	.00	PIPE	
1088.845	238.182	.825	239.007	13.30	13.34	2.76	241.77	.00	1.36	1.49	1.500	.000	.00	1 .0
18.406	.0557				.0439	.81	.83	2.88	.78	.013	.00	.00	PIPE	
1107.251	239.208	.858	240.066	13.30	12.72	2.51	242.58	.00	1.36	1.48	1.500	.000	.00	1 .0
11.461	.0557				.0387	.44	.86	2.67	.78	.013	.00	.00	PIPE	
1118.712	239.846	.892	240.738	13.30	12.13	2.28	243.02	.00	1.36	1.47	1.500	.000	.00	1 .0
7.963	.0557				.0343	.27	.89	2.48	.78	.013	.00	.00	PIPE	
1126.675	240.290	.929	241.219	13.30	11.56	2.08	243.30	.00	1.36	1.46	1.500	.000	.00	1 .0
5.915	.0557				.0304	.18	.93	2.29	.78	.013	.00	.00	PIPE	
1132.590	240.619	.968	241.587	13.30	11.03	1.89	243.47	.00	1.36	1.44	1.500	.000	.00	1 .0
4.546	.0557				.0270	.12	.97	2.12	.78	.013	.00	.00	PIPE	
1137.136	240.873	1.009	241.882	13.30	10.51	1.72	243.60	.00	1.36	1.41	1.500	.000	.00	1 .0
3.502	.0557				.0240	.08	1.01	1.95	.78	.013	.00	.00	PIPE	

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:10-15-2024 Time: 5:11:15

OCEAN BREEZE RANCH
Q100 10/15/2024
SD-G2

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT or "N"	Base Wt or I.D.	ZL	ZR	No Wth Prs/Pip	Type Ch
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp		X-Fall				
1140.637	241.068	1.054	242.122	13.30	10.02	1.56	243.68	.00	1.36	1.37	1.500	.000	.00	1	.0	
2.737	.0557					.0214	.06	1.05	1.80	.78	.013	.00	.00			PIPE
1143.375	241.220	1.102	242.322	13.30	9.56	1.42	243.74	.00	1.36	1.32	1.500	.000	.00	1	.0	
2.107	.0557					.0192	.04	1.10	1.64	.78	.013	.00	.00			PIPE
1145.482	241.337	1.154	242.492	13.30	9.11	1.29	243.78	.00	1.36	1.26	1.500	.000	.00	1	.0	
1.541	.0557					.0173	.03	1.15	1.49	.78	.013	.00	.00			PIPE
1147.023	241.423	1.212	242.635	13.30	8.69	1.17	243.81	.00	1.36	1.18	1.500	.000	.00	1	.0	
.989	.0557					.0157	.02	1.21	1.34	.78	.013	.00	.00			PIPE
1148.012	241.478	1.279	242.757	13.30	8.28	1.07	243.82	.00	1.36	1.06	1.500	.000	.00	1	.0	
.388	.0557					.0145	.01	1.28	1.19	.78	.013	.00	.00			PIPE
1148.400	241.500	1.361	242.861	13.30	7.89	.97	243.83	.00	1.36	.87	1.500	.000	.00	1	.0	
WALL	ENTRANCE															
1148.400	241.500	3.361	244.861	13.30	.99	.02	244.88	.00	.70	4.00	6.000	4.000	.00	0	.0	

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		3.000														
CD	2	4	1		2.500														
CD	3	4	1		1.500														
CD	4	2	0	.000	10.000	4.000			.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -

OCEAN BREEZE RANCH

HEADING LINE NO 2 IS -

Q100 10/16/2024

HEADING LINE NO 3 IS -

SD-H1.WSW_100.WSW

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	894.100	230.040	1	230.040

ELEMENT NO 2 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	894.100	230.040	1

ELEMENT NO 3 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1037.240	231.420	1	.013	.000	.000	7.241	0

ELEMENT NO 4 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1037.240	231.420	4	.200

ELEMENT NO 5 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1041.240	231.520	4	.013	.000	.000	.000	0

ELEMENT NO 6 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1041.240	231.520	1

ELEMENT NO 7 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1162.750	232.610	1	.013	.000	.000	.000	0

ELEMENT NO 8 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1162.750	232.610	4	.200

ELEMENT NO 9 IS A JUNCTION * * * * * * *

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	1166.750	232.710	4	2	3	.013	65.500	2.900	232.710	232.710	-90.000	9.000

RADIUS	ANGLE
.000	.000

ELEMENT NO 10 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1166.750	232.710	1

WARNING - ADJACENT SECTIONS ARE NOT IDENTICAL - SEE SECTION NUMBERS AND CHANNEL DEFINITIONS

ELEMENT NO 11 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1264.660	233.700	3	.013	.000	.000	.000	0

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 12 IS A REACH * * *

```
                  U/S DATA   STATION    INVERT  SECT              N                        RADIUS    ANGLE     ANG PT  MAN H
                             1395.050  235.030    3              .013                     1494.160    5.000      .000     0
ELEMENT NO  13 IS A  WALL  ENTRANCE                 *
                  U/S DATA   STATION    INVERT  SECT              FP
                             1395.050  235.030    4              .200
ELEMENT NO  14 IS A REACH             *         *     *
                  U/S DATA   STATION    INVERT  SECT              N                        RADIUS    ANGLE     ANG PT  MAN H
                             1399.050  235.360    4              .013                        .000     .000      .000     0
ELEMENT NO  15 IS A  WALL  EXIT                     *
                  U/S DATA   STATION    INVERT  SECT
                             1399.050  235.360    3
ELEMENT NO  16 IS A REACH             *         *     *
                  U/S DATA   STATION    INVERT  SECT              N                        RADIUS    ANGLE     ANG PT  MAN H
                             1597.120  237.370    3              .013                     1495.201    7.590      .000     0
ELEMENT NO  17 IS A  WALL  ENTRANCE                 *
                  U/S DATA   STATION    INVERT  SECT              FP
                             1597.120  237.370    4              .200
ELEMENT NO  18 IS A JUNCTION          *         *     *     *               *                  *                *
                  U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3        Q4     INVERT-3 INVERT-4  PHI 3  PHI 4
                             1601.120  237.700    4     3     0   .013     2.100      .000   237.700      .000    .000    9.000
                                                                                             RADIUS    ANGLE
                                                                                               .000     .000
ELEMENT NO  19 IS A  WALL  EXIT                     *
                  U/S DATA   STATION    INVERT  SECT
                             1601.120  237.700    3
ELEMENT NO  20 IS A REACH             *         *     *
                  U/S DATA   STATION    INVERT  SECT              N                        RADIUS    ANGLE     ANG PT  MAN H
                             1692.970  250.180    3              .013                        .000     .000      .000     0
ELEMENT NO  21 IS A  WALL  ENTRANCE                 *
                  U/S DATA   STATION    INVERT  SECT              FP
                             1692.970  250.180    3              .200
ELEMENT NO  22 IS A REACH             *         *     *
                  U/S DATA   STATION    INVERT  SECT              N                        RADIUS    ANGLE     ANG PT  MAN H
                             1696.970  250.280    3              .013                       2.901   79.000      .000     0
ELEMENT NO  23 IS A  WALL  EXIT                     *
                  U/S DATA   STATION    INVERT  SECT
                             1696.970  250.280    3
                                                 W S P G W                                                      PAGE NO   4
                          WATER SURFACE PROFILE - ELEMENT CARD LISTING
ELEMENT NO  24 IS A REACH             *         *     *
                  U/S DATA   STATION    INVERT  SECT              N                        RADIUS    ANGLE     ANG PT  MAN H
                             1727.460  253.630    3              .013                        .000     .000      .000     0
ELEMENT NO  25 IS A  WALL  ENTRANCE                 *
                  U/S DATA   STATION    INVERT  SECT              FP
                             1727.460  253.630    4              .200
ELEMENT NO  26 IS A SYSTEM HEADWORKS                *                    *
                  U/S DATA   STATION    INVERT  SECT                            W S ELEV
                             1727.460  253.630    4                            253.630
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Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:10-17-2024 Time: 4:59:21

OCEAN BREEZE RANCH
Q100 10/16/2024
SD-H1.WSW_100.WSW

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
894.100	230.040	2.746	232.786	77.50	11.43	2.03	234.81	.00	2.75	1.67	3.000	.000	.00	0 .0
WALL	EXIT													
894.100	230.040	2.746	232.786	77.50	11.43	2.03	234.81	.00	2.75	1.67	3.000	.000	.00	1 .0
34.666	.0096				.0123	.43	2.75	1.00	3.00	.013	.00	.00	PIPE	
928.766	230.374	3.000	233.374	77.50	10.96	1.87	235.24	.00	2.75	.00	3.000	.000	.00	1 .0
108.474	.0096				.0132	1.43	3.00	.00	3.00	.013	.00	.00	PIPE	
1037.240	231.420	3.419	234.839	77.50	10.96	1.87	236.71	.00	2.75	.00	3.000	.000	.00	1 .0
WALL	ENTRANCE													
1037.240	231.420	5.420	236.840	77.50	3.57	.20	237.04	.00	2.27	4.00	10.000	4.000	.00	0 .0
4.000	.0250				.0006	.00	5.42	.27	1.27	.013	.00	.00	RECTANG	
1041.240	231.520	5.314	236.834	77.50	3.65	.21	237.04	.00	2.27	4.00	10.000	4.000	.00	0 .0
WALL	EXIT													
1041.240	231.520	5.315	236.835	77.50	10.96	1.87	238.70	.00	2.75	.00	3.000	.000	.00	1 .0
121.510	.0090				.0135	1.64	5.31	.00	3.00	.013	.00	.00	PIPE	
1162.750	232.610	5.865	238.475	77.50	10.96	1.87	240.34	.00	2.75	.00	3.000	.000	.00	1 .0
WALL	ENTRANCE													
1162.750	232.610	7.996	240.606	77.50	2.42	.09	240.70	.00	2.27	4.00	10.000	4.000	.00	0 .0
JUNCT STR	.0250				.0001	.00	8.00	.15		.013	.00	.00	RECTANG	

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:10-17-2024 Time: 4:59:21

OCEAN BREEZE RANCH
Q100 10/16/2024
SD-H1.WSW_100.WSW

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1166.750	232.710	8.071	240.781	9.10	.28	.00	240.78	.00	.54	4.00	10.000	4.000	.00	0 .0
WALL	EXIT													
1166.750	232.710	8.071	240.781	9.10	5.15	.41	241.19	.00	1.17	.00	1.500	.000	.00	1 .0
97.910	.0101				.0075	.73	8.07	.00	1.07	.013	.00	.00	PIPE	
1264.660	233.700	7.816	241.516	9.10	5.15	.41	241.93	.00	1.17	.00	1.500	.000	.00	1 .0
130.390	.0102				.0075	.98	.00	.00	1.07	.013	.00	.00	PIPE	
1395.050	235.030	7.484	242.514	9.10	5.15	.41	242.93	.00	1.17	.00	1.500	.000	.00	1 .0
WALL	ENTRANCE													
1395.050	235.030	7.978	243.008	9.10	.29	.00	243.01	.00	.54	4.00	10.000	4.000	.00	0 .0
4.000	.0825				.0000	.00	7.98	.02	.21	.013	.00	.00	RECTANG	
1399.050	235.360	7.648	243.008	9.10	.30	.00	243.01	.00	.54	4.00	10.000	4.000	.00	0 .0
WALL	EXIT													
1399.050	235.360	7.649	243.009	9.10	5.15	.41	243.42	.00	1.17	.00	1.500	.000	.00	1 .0
198.070	.0101				.0075	1.49	.00	.00	1.07	.013	.00	.00	PIPE	
1597.120	237.370	7.149	244.519	9.10	5.15	.41	244.93	.00	1.17	.00	1.500	.000	.00	1 .0
WALL	ENTRANCE													
1597.120	237.370	7.642	245.012	9.10	.30	.00	245.01	.00	.54	4.00	10.000	4.000	.00	0 .0
JUNCT STR	.0825				.0000	.00	7.64	.02			.013	.00	.00	RECTANG

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:10-17-2024 Time: 4:59:21

OCEAN BREEZE RANCH
Q100 10/16/2024
SD-H1.WSW_100.WSW

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1601.120	237.700	7.311	245.011	7.00	.24	.00	245.01	.00	.46	4.00	10.000	4.000	.00	0 .0
WALL EXIT														
1601.120	237.700	7.311	245.011	7.00	3.96	.24	245.25	.00	1.02	.00	1.500	.000	.00	1 .0
38.044	.1359				.0044	.17	7.31	.00	.43	.013	.00	.00	PIPE	
1639.164	242.869	2.308	245.177	7.00	3.96	.24	245.42	.00	1.02	.00	1.500	.000	.00	1 .0
HYDRAULIC JUMP														
1639.164	242.869	.438	243.307	7.00	16.29	4.12	247.43	.00	1.02	1.36	1.500	.000	.00	1 .0
23.177	.1359				.1232	2.85	.44	5.11	.43	.013	.00	.00	PIPE	
1662.341	246.018	.447	246.465	7.00	15.81	3.88	250.35	.00	1.02	1.37	1.500	.000	.00	1 .0
13.387	.1359				.1107	1.48	.45	4.91	.43	.013	.00	.00	PIPE	
1675.728	247.837	.463	248.300	7.00	15.08	3.53	251.83	.00	1.02	1.39	1.500	.000	.00	1 .0
7.832	.1359				.0969	.76	.46	4.59	.43	.013	.00	.00	PIPE	
1683.560	248.901	.479	249.381	7.00	14.37	3.21	252.59	.00	1.02	1.40	1.500	.000	.00	1 .0
5.389	.1359				.0849	.46	.48	4.29	.43	.013	.00	.00	PIPE	
1688.949	249.634	.496	250.130	7.00	13.71	2.92	253.05	.00	1.02	1.41	1.500	.000	.00	1 .0
4.021	.1359				.0744	.30	.50	4.02	.43	.013	.00	.00	PIPE	
1692.970	250.180	.515	250.695	7.00	13.04	2.64	253.33	1.50	1.02	1.42	1.500	.000	.00	1 .0
4.000	.0250				.0728	.29	1.50	3.74	.68	.013	.00	.00	PIPE	

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:10-17-2024 Time: 4:59:21

OCEAN BREEZE RANCH
Q100 10/16/2024
SD-H1.WSW_100.WSW

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width / "N"	Height/ Dia.-FT / X-Fall	Base Wt or I.D. / ZR	ZL	No Wth Prs/Pip / Type Ch
1696.970	250.280	.501	250.781	7.00	13.53	2.84	253.63	.00	1.02	1.41	1.500	.000	.00	0 .0
WALL EXIT														
1696.970	250.280	.500	250.780	7.00	13.58	2.86	253.64	.00	1.02	1.41	1.500	.000	.00	1 .0
1.043	.1099					.0766	.08	.50	3.97	.46	.013	.00	.00	PIPE
1698.013	250.395	.502	250.897	7.00	13.48	2.82	253.72	.00	1.02	1.42	1.500	.000	.00	1 .0
6.151	.1099					.0711	.44	.50	3.92	.46	.013	.00	.00	PIPE
1704.164	251.070	.520	251.591	7.00	12.85	2.57	254.16	.00	1.02	1.43	1.500	.000	.00	1 .0
4.524	.1099					.0623	.28	.52	3.67	.46	.013	.00	.00	PIPE
1708.688	251.568	.538	252.106	7.00	12.26	2.33	254.44	.00	1.02	1.44	1.500	.000	.00	1 .0
3.475	.1099					.0546	.19	.54	3.43	.46	.013	.00	.00	PIPE
1712.164	251.949	.558	252.507	7.00	11.69	2.12	254.63	.00	1.02	1.45	1.500	.000	.00	1 .0
2.789	.1099					.0479	.13	.56	3.20	.46	.013	.00	.00	PIPE
1714.953	252.256	.578	252.834	7.00	11.14	1.93	254.76	.00	1.02	1.46	1.500	.000	.00	1 .0
2.274	.1099					.0420	.10	.58	2.99	.46	.013	.00	.00	PIPE
1717.226	252.506	.599	253.105	7.00	10.62	1.75	254.86	.00	1.02	1.47	1.500	.000	.00	1 .0
1.882	.1099					.0369	.07	.60	2.80	.46	.013	.00	.00	PIPE
1719.108	252.712	.621	253.333	7.00	10.13	1.59	254.93	.00	1.02	1.48	1.500	.000	.00	1 .0
1.585	.1099					.0324	.05	.62	2.61	.46	.013	.00	.00	PIPE

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:10-17-2024 Time: 4:59:21

OCEAN BREEZE RANCH
Q100 10/16/2024
SD-H1.WSW_100.WSW

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width / "N"	Height/Dia.-FT / X-Fall	Base Wt or I.D. / ZR	ZL	No Wth Prs/Pip / Type Ch
1720.694	252.887	.643	253.530	7.00	9.66	1.45	254.98	.00	1.02	1.48	1.500	.000	.00	1 .0
1.322	.1099					.0284	.04	.64	2.44	.46	.013	.00	.00	PIPE
1722.016	253.032	.667	253.699	7.00	9.21	1.32	255.02	.00	1.02	1.49	1.500	.000	.00	1 .0
1.116	.1099					.0250	.03	.67	2.27	.46	.013	.00	.00	PIPE
1723.132	253.154	.692	253.847	7.00	8.78	1.20	255.04	.00	1.02	1.50	1.500	.000	.00	1 .0
.942	.1099					.0220	.02	.69	2.12	.46	.013	.00	.00	PIPE
1724.074	253.258	.718	253.976	7.00	8.37	1.09	255.06	.00	1.02	1.50	1.500	.000	.00	1 .0
.795	.1099					.0193	.02	.72	1.98	.46	.013	.00	.00	PIPE
1724.869	253.345	.745	254.090	7.00	7.98	.99	255.08	.00	1.02	1.50	1.500	.000	.00	1 .0
.656	.1099					.0170	.01	.75	1.84	.46	.013	.00	.00	PIPE
1725.525	253.417	.774	254.192	7.00	7.61	.90	255.09	.00	1.02	1.50	1.500	.000	.00	1 .0
.546	.1099					.0150	.01	.77	1.71	.46	.013	.00	.00	PIPE
1726.071	253.477	.804	254.281	7.00	7.26	.82	255.10	.00	1.02	1.50	1.500	.000	.00	1 .0
.448	.1099					.0132	.01	.80	1.59	.46	.013	.00	.00	PIPE
1726.519	253.527	.835	254.362	7.00	6.92	.74	255.11	.00	1.02	1.49	1.500	.000	.00	1 .0
.352	.1099					.0117	.00	.84	1.48	.46	.013	.00	.00	PIPE
1726.871	253.565	.868	254.433	7.00	6.60	.68	255.11	.00	1.02	1.48	1.500	.000	.00	1 .0
.255	.1099					.0103	.00	.87	1.37	.46	.013	.00	.00	PIPE

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:10-17-2024 Time: 4:59:21

OCEAN BREEZE RANCH
Q100 10/16/2024
SD-H1.WSW_100.WSW

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1727.127	253.593	.904	254.497	7.00	6.29	.61	255.11	.00	1.02	1.47	1.500	.000	.00	1 .0
.187	.1099					.0092	.00	.90	1.27	.46	.013	.00	.00	PIPE
1727.314	253.614	.941	254.555	7.00	6.00	.56	255.11	.00	1.02	1.45	1.500	.000	.00	1 .0
.116	.1099					.0081	.00	.94	1.18	.46	.013	.00	.00	PIPE
1727.429	253.627	.980	254.607	7.00	5.72	.51	255.11	.00	1.02	1.43	1.500	.000	.00	1 .0
.031	.1099					.0072	.00	.98	1.09	.46	.013	.00	.00	PIPE
1727.460	253.630	1.024	254.654	7.00	5.45	.46	255.11	.00	1.02	1.40	1.500	.000	.00	1 .0
WALL	ENTRANCE													
1727.460	253.630	2.024	255.654	7.00	.86	.01	255.67	.00	.46	4.00	10.000	4.000	.00	0 .0

FILE: SD-H1-1.WSW W S P G W - EDIT LISTING - Version 14.11 Date:10-17-2024 Time:10:21:44

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING PAGE 1

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		2.500														
CD	3	2	0	.000	4.000	4.000			.00										

W S P G W PAGE NO 1

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -

OCEAN BREEZE RANCH

HEADING LINE NO 2 IS -

100 YR

HEADING LINE NO 3 IS -

LINE SD-H1-1

W S P G W PAGE NO 2

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1002.000	232.710	3	240.780

ELEMENT NO 2 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1002.000	232.710	1

ELEMENT NO 3 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1040.130	242.080	1	.013	.000	.000	.000	0

ELEMENT NO 4 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1040.130	242.080	1	242.080

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:10-17-2024 Time:10:21:48

OCEAN BREEZE RANCH
100 YR
LINE SD-H1-1

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width	Height/Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1002.000	232.710	8.070	240.780	66.90	2.07	.07	240.85	.00	2.06	4.00	4.000	4.000	.00	0 .0
WALL EXIT														
1002.000	232.710	8.070	240.780	66.90	13.63	2.88	243.66	.00	2.43	.00	2.500	.000	.00	1 .0
7.258	.2457					.0266	.19	8.07	.00	.99	.013	.00	.00	PIPE
1009.258	234.494	6.478	240.971	66.90	13.63	2.88	243.86	.00	2.43	.00	2.500	.000	.00	1 .0
HYDRAULIC JUMP														
1009.258	234.494	1.327	235.820	66.90	25.28	9.92	245.74	.00	2.43	2.50	2.500	.000	.00	1 .0
4.118	.2457					.0830	.34	1.33	4.33	.99	.013	.00	.00	PIPE
1013.376	235.505	1.367	236.873	66.90	24.34	9.20	246.08	.00	2.43	2.49	2.500	.000	.00	1 .0
4.564	.2457					.0743	.34	1.37	4.08	.99	.013	.00	.00	PIPE
1017.940	236.627	1.421	238.048	66.90	23.21	8.37	246.41	.00	2.43	2.48	2.500	.000	.00	1 .0
3.906	.2457					.0656	.26	1.42	3.79	.99	.013	.00	.00	PIPE
1021.845	237.587	1.478	239.065	66.90	22.13	7.61	246.67	.00	2.43	2.46	2.500	.000	.00	1 .0
3.359	.2457					.0580	.19	1.48	3.52	.99	.013	.00	.00	PIPE
1025.204	238.412	1.539	239.951	66.90	21.10	6.91	246.87	.00	2.43	2.43	2.500	.000	.00	1 .0
2.906	.2457					.0514	.15	1.54	3.26	.99	.013	.00	.00	PIPE
1028.110	239.126	1.603	240.729	66.90	20.12	6.29	247.01	.00	2.43	2.40	2.500	.000	.00	1 .0
2.516	.2457					.0456	.11	1.60	3.01	.99	.013	.00	.00	PIPE

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:10-17-2024 Time:10:21:48

OCEAN BREEZE RANCH
100 YR
LINE SD-H1-1

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT or "N"	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp		X-Fall	ZR	Type Ch
1030.626	239.744	1.671	241.415	66.90	19.18	5.71	247.13	.00	2.43	2.35	2.500	.000	.00	1 .0
2.176	.2457					.0406	.09	1.67	2.78	.99	.013	.00	.00	PIPE
1032.802	240.279	1.744	242.023	66.90	18.29	5.19	247.22	.00	2.43	2.30	2.500	.000	.00	1 .0
1.877	.2457					.0362	.07	1.74	2.55	.99	.013	.00	.00	PIPE
1034.679	240.740	1.823	242.564	66.90	17.44	4.72	247.29	.00	2.43	2.22	2.500	.000	.00	1 .0
1.609	.2457					.0324	.05	1.82	2.34	.99	.013	.00	.00	PIPE
1036.288	241.136	1.909	243.045	66.90	16.63	4.29	247.34	.00	2.43	2.12	2.500	.000	.00	1 .0
1.359	.2457					.0292	.04	1.91	2.13	.99	.013	.00	.00	PIPE
1037.647	241.470	2.005	243.475	66.90	15.85	3.90	247.38	.00	2.43	1.99	2.500	.000	.00	1 .0
1.126	.2457					.0265	.03	2.01	1.92	.99	.013	.00	.00	PIPE
1038.773	241.746	2.113	243.860	66.90	15.12	3.55	247.41	.00	2.43	1.81	2.500	.000	.00	1 .0
.874	.2457					.0244	.02	2.11	1.70	.99	.013	.00	.00	PIPE
1039.647	241.961	2.242	244.203	66.90	14.41	3.23	247.43	.00	2.43	1.52	2.500	.000	.00	1 .0
.483	.2457					.0235	.01	2.24	1.45	.99	.013	.00	.00	PIPE
1040.130	242.080	2.429	244.509	66.90	13.74	2.93	247.44	.00	2.43	.83	2.500	.000	.00	1 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.500														
CD	3	2	0	.000	4.000	4.000			.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -

OCEAN BREEZE RANCH

HEADING LINE NO 2 IS -

100 YR

HEADING LINE NO 3 IS -

LINE SD-H1-2

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	998.000	232.710	3	240.780

ELEMENT NO 2 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	998.000	232.710	1

ELEMENT NO 3 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1046.960	233.000	1	.013	.000	.000	.000	0

ELEMENT NO 4 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1046.960	233.000	1	233.080

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:10-18-2024 Time: 7:35:44

OCEAN BREEZE RANCH
100 YR
LINE SD-H1-2

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
998.000	232.710	8.070	240.780	3.00	.09	.00	240.78	.00	.26	4.00	4.000	4.000	.00	0 .0
WALL	EXIT													
998.000	232.710	8.070	240.780	3.00	1.70	.04	240.83	.00	.66	.00	1.500	.000	.00	1 .0
48.960	.0059					.0008	.04	8.07	.00	.63	.013	.00	.00	PIPE
1046.960	233.000	7.820	240.820	3.00	1.70	.04	240.87	.00	.66	.00	1.500	.000	.00	1 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.500														
CD	3	2	0	.000	4.000	4.000			.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
OCEAN BREEZE RANCH
HEADING LINE NO 2 IS -
100 YR
HEADING LINE NO 3 IS -
LINE SD-H1-3

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1002.000	237.700	3	245.010

ELEMENT NO 2 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1002.000	237.700	1

ELEMENT NO 3 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1052.820	238.000	1	.013	.000	.000	.000	0

ELEMENT NO 4 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1052.820	238.000	1	238.080

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:10-18-2024 Time: 7:36: 3

OCEAN BREEZE RANCH
100 YR
LINE SD-H1-3

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1002.000	237.700	7.310	245.010	3.50	.12	.00	245.01	.00	.29	4.00	4.000	4.000	.00	0 .0
WALL	EXIT													
1002.000	237.700	7.311	245.011	3.50	1.98	.06	245.07	.00	.71	.00	1.500	.000	.00	1 .0
50.820	.0059					.0011	.06	7.31	.00	.69	.013	.00	.00	PIPE
1052.820	238.000	7.067	245.067	3.50	1.98	.06	245.13	.00	.71	.00	1.500	.000	.00	1 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.500														
CD	2	2	0	.000	4.000	4.000			.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
OCEAN BREEZE RANCH
HEADING LINE NO 2 IS -
100 YR
HEADING LINE NO 3 IS -
LINE SD-H3

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	998.290	242.000	1	242.000

ELEMENT NO 2 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1034.880	242.370	1	.013	.000	.000	72.000	0

ELEMENT NO 3 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1034.880	242.370	2	.200

ELEMENT NO 4 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1038.880	242.470	2	.013	.000	.000	.000	0

ELEMENT NO 5 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1038.880	242.470	1

ELEMENT NO 6 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1106.550	243.140	1	.013	.000	.000	.000	0

ELEMENT NO 7 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1106.550	243.140	2	.200

ELEMENT NO 8 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1106.550	243.140	2	243.140

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 5-30-2024 Time: 9:29:28

OCEAN BREEZE RANCH
100 YR
LINE SD-H3

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
998.290	242.000	.715	242.715	4.80	5.77	.52	243.23	.00	.84	1.50	1.500	.000	.00	1 .0
13.060	.0101					.0097	.13	.72	1.37	.71	.013	.00	.00	PIPE
1011.350	242.132	.722	242.854	4.80	5.70	.50	243.36	.00	.84	1.50	1.500	.000	.00	1 .0
14.761	.0101					.0089	.13	.72	1.34	.71	.013	.00	.00	PIPE
1026.111	242.281	.750	243.031	4.80	5.43	.46	243.49	.00	.84	1.50	1.500	.000	.00	1 .0
6.008	.0101					.0078	.05	.75	1.25	.71	.013	.00	.00	PIPE
1032.119	242.342	.778	243.120	4.80	5.18	.42	243.54	.00	.84	1.50	1.500	.000	.00	1 .0
2.139	.0101					.0069	.01	.78	1.16	.71	.013	.00	.00	PIPE
1034.258	242.364	.809	243.173	4.80	4.94	.38	243.55	.00	.84	1.50	1.500	.000	.00	1 .0
.622	.0101					.0061	.00	.81	1.08	.71	.013	.00	.00	PIPE
1034.880	242.370	.842	243.212	4.80	4.70	.34	243.56	.00	.84	1.49	1.500	.000	.00	1 .0
WALL ENTRANCE														
1034.880	242.370	1.842	244.212	4.80	.65	.01	244.22	.00	.36	4.00	4.000	4.000	.00	0 .0
3.407	.0250					.0000	.00	1.84	.08	.20	.013	.00	.00	RECTANG
1038.287	242.455	1.756	244.211	4.80	.68	.01	244.22	.00	.36	4.00	4.000	4.000	.00	0 .0
.593	.0250					.0000	.00	1.76	.09	.20	.013	.00	.00	RECTANG
1038.880	242.470	1.741	244.211	4.80	.69	.01	244.22	.00	.36	4.00	4.000	4.000	.00	0 .0
WALL EXIT														

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 5-30-2024 Time: 9:29:28

OCEAN BREEZE RANCH
100 YR
LINE SD-H3

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1038.880	242.470	1.742	244.212	4.80	2.72	.11	244.33	.00	.84	.00	1.500	.000	.00	1 .0
30.976	.0099					.0021	.06	1.74	.00	.71	.013	.00	.00	PIPE
1069.856	242.777	1.500	244.277	4.80	2.72	.11	244.39	.00	.84	.00	1.500	.000	.00	1 .0
15.996	.0099					.0019	.03	1.50	.00	.71	.013	.00	.00	PIPE
1085.852	242.935	1.360	244.295	4.80	2.85	.13	244.42	.00	.84	.87	1.500	.000	.00	1 .0
8.413	.0099					.0019	.02	1.36	.36	.71	.013	.00	.00	PIPE
1094.265	243.018	1.280	244.298	4.80	2.99	.14	244.44	.00	.84	1.06	1.500	.000	.00	1 .0
6.765	.0099					.0020	.01	1.28	.43	.71	.013	.00	.00	PIPE
1101.030	243.085	1.213	244.298	4.80	3.13	.15	244.45	.00	.84	1.18	1.500	.000	.00	1 .0
5.520	.0099					.0022	.01	1.21	.48	.71	.013	.00	.00	PIPE
1106.550	243.140	1.156	244.296	4.80	3.28	.17	244.46	.00	.84	1.26	1.500	.000	.00	1 .0
WALL	ENTRANCE													
1106.550	243.140	2.156	245.296	4.80	.56	.00	245.30	.00	.36	4.00	4.000	4.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.000														
CD	2	2	0	.000	4.000	4.000			.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
OCEAN BREEZE RANCH
HEADING LINE NO 2 IS -
100 YR
HEADING LINE NO 3 IS -
LINE SD-H3-1

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	998.000	243.640	1	245.920

ELEMENT NO 2 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	998.000	243.640	1

ELEMENT NO 3 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1002.250	243.680	1	.013	.000	.000	.000	0

ELEMENT NO 4 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1002.250	243.680	2	.200

ELEMENT NO 5 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1002.250	243.680	2	243.680

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 5-30-2024 Time:11:28:16

OCEAN BREEZE RANCH
100 YR
LINE SD-H3-1

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
998.000	243.640	2.280	245.920	1.90	2.42	.09	246.01	.00	.59	.00	1.000	.000	.00	0 .0
WALL EXIT														
998.000	243.640	2.280	245.920	1.90	2.42	.09	246.01	.00	.59	.00	1.000	.000	.00	1 .0
4.250	.0094					.0028	.01	2.28	.00	.53	.013	.00	.00	PIPE
1002.250	243.680	2.253	245.933	1.90	2.42	.09	246.02	.00	.59	.00	1.000	.000	.00	1 .0
WALL ENTRANCE														
1002.250	243.680	2.362	246.042	1.90	.20	.00	246.04	.00	.19	4.00	4.000	4.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.000														
CD	2	2	0	.000	4.000	4.000			.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
OCEAN BREEZE RANCH
HEADING LINE NO 2 IS -
100 YR
HEADING LINE NO 3 IS -
LINE SD-H3-2

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1002.000	243.640	1	245.920

ELEMENT NO 2 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1002.000	243.640	1

ELEMENT NO 3 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1018.250	243.800	1	.013	.000	.000	.000	0

ELEMENT NO 4 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1018.250	243.800	2	.200

ELEMENT NO 5 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1018.250	243.800	2	243.680

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 5-30-2024 Time:11:24:48

OCEAN BREEZE RANCH
100 YR
LINE SD-H3-2

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1002.000	243.640	2.280	245.920	1.90	2.42	.09	246.01	.00	.59	.00	1.000	.000	.00	0 .0
WALL EXIT														
1002.000	243.640	2.280	245.920	1.90	2.42	.09	246.01	.00	.59	.00	1.000	.000	.00	1 .0
16.250	.0098					.0028	.05	2.28	.00	.52	.013	.00	.00	PIPE
1018.250	243.800	2.167	245.967	1.90	2.42	.09	246.06	.00	.59	.00	1.000	.000	.00	1 .0
WALL ENTRANCE														
1018.250	243.800	2.276	246.076	1.90	.21	.00	246.08	.00	.19	4.00	4.000	4.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		2.500														
CD	2	2	0	.000	10.000	3.000			.00										
CD	3	4	1		1.500														
CD	4	4	1		1.000														

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
OCEAN BREEZE RANCH
HEADING LINE NO 2 IS -
Q100
HEADING LINE NO 3 IS -
LINE H4

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA STATION	INVERT	SECT	W S ELEV
1000.000	230.510	2	228.150

ELEMENT NO 2 IS A WALL EXIT *

U/S DATA STATION	INVERT	SECT
1000.000	230.510	1

ELEMENT NO 3 IS A REACH * * *

U/S DATA STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
1086.780	232.240	1	.013	.000	.000	.000	0

ELEMENT NO 4 IS A WALL ENTRANCE *

U/S DATA STATION	INVERT	SECT	FP
1086.780	232.240	2	.200

ELEMENT NO 5 IS A REACH * * *

U/S DATA STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
1090.780	232.340	2	.013	.000	.000	61.000	0

ELEMENT NO 6 IS A WALL EXIT *

U/S DATA STATION	INVERT	SECT
1090.780	232.340	1

ELEMENT NO 7 IS A REACH * * *

U/S DATA STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
1160.780	233.740	1	.013	.000	.000	.000	0

ELEMENT NO 8 IS A WALL ENTRANCE *

U/S DATA STATION	INVERT	SECT	FP
1160.780	233.740	2	.200

ELEMENT NO 9 IS A JUNCTION * * * * * * *

U/S DATA STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
1164.780	234.070	2	3	0	.013	4.700	.000	235.070	.000	90.000	.000

RADIUS	ANGLE
.000	.000

ELEMENT NO 10 IS A WALL EXIT *

U/S DATA STATION	INVERT	SECT

```
                          1164.780  234.070    1
ELEMENT NO  11 IS A REACH            *         *     *
                  U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                             1197.840  235.140    1              .013                           .000     .000      .000     0
ELEMENT NO  12 IS A REACH            *         *     *
                  U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                             1231.020  236.210    1              .013                        45.264  -42.000      .000     0
                                                 W S P G W                                                       PAGE NO   3
                        WATER SURFACE PROFILE - ELEMENT CARD LISTING
ELEMENT NO  13 IS A  WALL  ENTRANCE                  *
                  U/S DATA   STATION    INVERT  SECT             FP
                             1231.020  236.210    2              .200
ELEMENT NO  14 IS A JUNCTION         *         *     *     *                 *                  *               *
                  U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3        Q4     INVERT-3 INVERT-4  PHI 3  PHI 4
                             1235.020  237.210    1     3     0   .013    38.000      .000   234.660      .000 -44.000     .000
                                                                                             RADIUS    ANGLE
                                                                                              3.884 -59.000
ELEMENT NO  15 IS A  WALL  EXIT                      *
                  U/S DATA   STATION    INVERT  SECT
                             1235.020  237.210    4
ELEMENT NO  16 IS A REACH            *         *     *
                  U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                             1456.710  240.370    4              .013                           .000     .000      .000     0
ELEMENT NO  17 IS A  WALL  ENTRANCE                  *
                  U/S DATA   STATION    INVERT  SECT             FP
                             1456.710  240.370    2              .200
ELEMENT NO  18 IS A SYSTEM HEADWORKS                 *                    *
                  U/S DATA   STATION    INVERT  SECT                                  W S ELEV
                             1456.710  240.370    2                                  257.000
```

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 5-30-2024 Time: 8:53:41

OCEAN BREEZE RANCH
Q100
LINE H4

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1000.000	230.510	1.138	231.647	44.70	13.10	2.66	234.31	.00	1.90	3.00	10.000	3.000	.00	0 .0
WALL EXIT														
1000.000	230.510	1.727	232.237	44.70	12.36	2.37	234.61	.00	2.22	2.31	2.500	.000	.00	1 .0
4.387	.0199					.0175	.08	1.73	1.74	1.65	.013	.00	.00	PIPE
1004.387	230.597	1.732	232.330	44.70	12.32	2.36	234.69	.00	2.22	2.31	2.500	.000	.00	1 .0
39.359	.0199					.0165	.65	1.73	1.73	1.65	.013	.00	.00	PIPE
1043.746	231.382	1.810	233.192	44.70	11.74	2.14	235.33	.00	2.22	2.23	2.500	.000	.00	1 .0
21.302	.0199					.0147	.31	1.81	1.59	1.65	.013	.00	.00	PIPE
1065.047	231.807	1.894	233.701	44.70	11.20	1.95	235.65	.00	2.22	2.14	2.500	.000	.00	1 .0
12.415	.0199					.0133	.16	1.89	1.45	1.65	.013	.00	.00	PIPE
1077.462	232.054	1.988	234.042	44.70	10.68	1.77	235.81	.00	2.22	2.02	2.500	.000	.00	1 .0
6.923	.0199					.0120	.08	1.99	1.31	1.65	.013	.00	.00	PIPE
1084.385	232.192	2.094	234.286	44.70	10.18	1.61	235.90	.00	2.22	1.84	2.500	.000	.00	1 .0
2.395	.0199					.0110	.03	2.09	1.16	1.65	.013	.00	.00	PIPE
1086.780	232.240	2.220	234.460	44.70	9.70	1.46	235.92	.00	2.22	1.58	2.500	.000	.00	1 .0
WALL ENTRANCE														
1086.780	232.240	5.220	237.460	44.70	2.85	.13	237.59	.00	1.90	3.00	10.000	3.000	.00	0 .0
4.000	.0250					.0005	.00	5.22	.22	1.11	.013	.00	.00	RECTANG

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 5-30-2024 Time: 8:53:41

OCEAN BREEZE RANCH
Q100
LINE H4

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1090.780	232.340	5.117	237.457	44.70	2.91	.13	237.59	.00	1.90	3.00	10.000	3.000	.00	0 .0
WALL	EXIT													
1090.780	232.340	5.118	237.458	44.70	9.11	1.29	238.75	.00	2.22	.00	2.500	.000	.00	1 .0
70.000	.0200					.0119	.83	5.12	.00	1.65	.013	.00	.00	PIPE
1160.780	233.740	4.549	238.289	44.70	9.11	1.29	239.58	.00	2.22	.00	2.500	.000	.00	1 .0
WALL	ENTRANCE													
1160.780	233.740	5.979	239.719	44.70	2.49	.10	239.82	.00	1.90	3.00	10.000	3.000	.00	0 .0
JUNCT STR	.0825					.0004	.00	5.98	.18		.013	.00	.00	RECTANG
1164.780	234.070	5.681	239.751	40.00	2.35	.09	239.84	.00	1.77	3.00	10.000	3.000	.00	0 .0
WALL	EXIT													
1164.780	234.070	5.682	239.752	40.00	8.15	1.03	240.78	.00	2.13	.00	2.500	.000	.00	1 .0
33.060	.0324					.0095	.31	5.68	.00	1.31	.013	.00	.00	PIPE
1197.840	235.140	4.926	240.066	40.00	8.15	1.03	241.10	.00	2.13	.00	2.500	.000	.00	1 .0
33.180	.0322					.0095	.32	.00	.00	1.31	.013	.00	.00	PIPE
1231.020	236.210	4.312	240.522	40.00	8.15	1.03	241.55	.00	2.13	.00	2.500	.000	.00	1 .0
WALL	ENTRANCE													
1231.020	236.210	5.438	241.648	40.00	2.45	.09	241.74	.14	1.77	3.00	10.000	3.000	.00	0 .0
JUNCT STR	.2500					.0002	.00	5.58	.19		.013	.00	.00	RECTANG

---------- WARNING - Junction Analysis - Change in Channel Type ----------

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 5-30-2024 Time: 8:53:41

OCEAN BREEZE RANCH
Q100
LINE H4

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1235.020	237.210	4.529	241.739	2.00	.41	.00	241.74	.00	.46	.00	2.500	.000	.00	0 .0
WALL	EXIT													
1235.020	237.210	4.530	241.740	2.00	2.55	.10	241.84	.00	.60	.00	1.000	.000	.00	1 .0
221.690	.0143					.0032	.70	4.53	.00	.48	.013	.00	.00	PIPE
1456.710	240.370	2.069	242.439	2.00	2.55	.10	242.54	.00	.60	.00	1.000	.000	.00	1 .0
WALL	ENTRANCE													
1456.710	240.370	2.189	242.559	2.00	.30	.00	242.56	.00	.24	3.00	10.000	3.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.500														
CD	2	2	0	.000	10.000	3.000			.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
OCEAN BREEZE RANCH
HEADING LINE NO 2 IS -
Q100
HEADING LINE NO 3 IS -
LINE H4-1

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1002.000	235.070	2	239.840

ELEMENT NO 2 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1002.000	235.070	1

ELEMENT NO 3 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1040.000	235.500	1	.013	.000	.000	.000	0

ELEMENT NO 4 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1040.000	235.500	2	.200

ELEMENT NO 5 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1040.000	235.500	2	245.920

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 5-30-2024 Time: 3:12: 9

OCEAN BREEZE RANCH
Q100
LINE H4-1

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1002.000	235.070	4.770	239.840	5.10	.36	.00	239.84	.00	.45	3.00	10.000	3.000	.00	0 .0
WALL	EXIT													
1002.000	235.070	4.770	239.840	5.10	2.89	.13	239.97	.00	.87	.00	1.500	.000	.00	1 .0
38.000	.0113					.0024	.09	4.77	.00	.71	.013	.00	.00	PIPE
1040.000	235.500	4.430	239.930	5.10	2.89	.13	240.06	.00	.87	.00	1.500	.000	.00	1 .0
WALL	ENTRANCE													

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.500														
CD	2	2	0	.000	10.000	3.000			.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
OCEAN BREEZE RANCH
HEADING LINE NO 2 IS -
Q100
HEADING LINE NO 3 IS -
LINE H4-2

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1002.000	237.210	2	241.740

ELEMENT NO 2 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1002.000	237.210	1

ELEMENT NO 3 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1041.220	247.000	1	.013	.000	.000	.000	0

ELEMENT NO 4 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1041.220	247.000	2	.200

ELEMENT NO 5 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1041.220	247.000	2	235.500

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 5-30-2024 Time: 8:58:35

OCEAN BREEZE RANCH
Q100
LINE H4-2

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1002.000	237.210	4.530	241.740	38.00	2.80	.12	241.86	.00	1.71	3.00	10.000	3.000	.00	0 .0
HYDRAULIC JUMP														
1002.000	237.210	1.088	238.298	38.00	27.67	11.89	250.19	.00	1.50	1.34	1.500	.000	.00	1 .0
3.682	.2496					.1677	.62	1.09	4.82	.95	.013	.00	.00	PIPE
1005.682	238.129	1.102	239.231	38.00	27.29	11.57	250.80	.00	1.50	1.32	1.500	.000	.00	1 .0
10.743	.2496					.1567	1.68	1.10	4.69	.95	.013	.00	.00	PIPE
1016.425	240.811	1.155	241.966	38.00	26.02	10.52	252.48	.00	1.50	1.26	1.500	.000	.00	1 .0
8.281	.2496					.1412	1.17	1.16	4.26	.95	.013	.00	.00	PIPE
1024.706	242.878	1.213	244.091	38.00	24.81	9.56	253.65	.00	1.50	1.18	1.500	.000	.00	1 .0
6.617	.2496					.1282	.85	1.21	3.84	.95	.013	.00	.00	PIPE
1031.323	244.530	1.279	245.809	38.00	23.66	8.69	254.50	.00	1.50	1.06	1.500	.000	.00	1 .0
5.406	.2496					.1185	.64	1.28	3.39	.95	.013	.00	.00	PIPE
1036.730	245.879	1.360	247.239	38.00	22.56	7.90	255.14	.00	1.50	.87	1.500	.000	.00	1 .0
4.490	.2496					.1204	.54	1.36	2.86	.95	.013	.00	.00	PIPE
1041.220	247.000	1.497	248.497	38.00	21.51	7.18	255.68	.00	1.50	.12	1.500	.000	.00	1 .0
WALL ENTRANCE														
1041.220	247.000	16.497	263.497	38.00	.77	.01	263.51	.00	1.71	3.00	10.000	3.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING PAGE 1

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.000														
CD	2	2	0	.000	10.000	3.000			.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
OCEAN BREEZE RANCH
HEADING LINE NO 2 IS -
Q100
HEADING LINE NO 3 IS -
LINE H4-3

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1002.000	240.700	2	242.560

ELEMENT NO 2 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1002.000	240.700	1

ELEMENT NO 3 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1035.060	243.500	1	.013	.000	.000	.000	0

ELEMENT NO 4 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1035.060	243.500	2	.200

ELEMENT NO 5 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1035.060	243.500	2	243.500

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 5-30-2024 Time: 9: 0:26

OCEAN BREEZE RANCH
Q100
LINE H4-3

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1002.000	240.700	1.860	242.560	2.00	.36	.00	242.56	.00	.24	3.00	10.000	3.000	.00	0 .0
WALL EXIT														
1002.000	240.700	1.860	242.560	2.00	2.55	.10	242.66	.00	.60	.00	1.000	.000	.00	1 .0
9.446	.0847					.0032	.03	1.86	.00	.30	.013	.00	.00	PIPE
1011.446	241.500	1.087	242.587	2.00	2.55	.10	242.69	.00	.60	.00	1.000	.000	.00	1 .0
HYDRAULIC JUMP														
1011.446	241.500	.304	241.804	2.00	9.92	1.53	243.33	.00	.60	.92	1.000	.000	.00	1 .0
.585	.0847					.0743	.04	.30	3.73	.30	.013	.00	.00	PIPE
1012.031	241.550	.312	241.862	2.00	9.54	1.41	243.27	.00	.60	.93	1.000	.000	.00	1 .0
6.212	.0847					.0658	.41	.31	3.53	.30	.013	.00	.00	PIPE
1018.243	242.076	.323	242.399	2.00	9.09	1.28	243.68	.00	.60	.94	1.000	.000	.00	1 .0
3.904	.0847					.0576	.22	.32	3.31	.30	.013	.00	.00	PIPE
1022.147	242.406	.334	242.740	2.00	8.67	1.17	243.91	.00	.60	.94	1.000	.000	.00	1 .0
2.750	.0847					.0505	.14	.33	3.09	.30	.013	.00	.00	PIPE
1024.897	242.639	.346	242.985	2.00	8.27	1.06	244.05	.00	.60	.95	1.000	.000	.00	1 .0
2.065	.0847					.0443	.09	.35	2.89	.30	.013	.00	.00	PIPE
1026.962	242.814	.359	243.173	2.00	7.88	.96	244.14	.00	.60	.96	1.000	.000	.00	1 .0
1.650	.0847					.0388	.06	.36	2.70	.30	.013	.00	.00	PIPE

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 5-30-2024 Time: 9: 0:26

OCEAN BREEZE RANCH
Q100
LINE H4-3

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1028.611	242.954	.371	243.325	2.00	7.52	.88	244.20	.00	.60	.97	1.000	.000	.00	1 .0
1.297	.0847					.0340	.04	.37	2.52	.30	.013	.00	.00	PIPE
1029.909	243.064	.385	243.449	2.00	7.17	.80	244.25	.00	.60	.97	1.000	.000	.00	1 .0
1.067	.0847					.0299	.03	.39	2.36	.30	.013	.00	.00	PIPE
1030.975	243.154	.399	243.553	2.00	6.83	.73	244.28	.00	.60	.98	1.000	.000	.00	1 .0
.887	.0847					.0262	.02	.40	2.20	.30	.013	.00	.00	PIPE
1031.863	243.229	.413	243.642	2.00	6.52	.66	244.30	.00	.60	.98	1.000	.000	.00	1 .0
.712	.0847					.0230	.02	.41	2.06	.30	.013	.00	.00	PIPE
1032.575	243.290	.429	243.719	2.00	6.21	.60	244.32	.00	.60	.99	1.000	.000	.00	1 .0
.612	.0847					.0202	.01	.43	1.92	.30	.013	.00	.00	PIPE
1033.187	243.341	.444	243.785	2.00	5.92	.54	244.33	.00	.60	.99	1.000	.000	.00	1 .0
.486	.0847					.0178	.01	.44	1.79	.30	.013	.00	.00	PIPE
1033.673	243.382	.461	243.844	2.00	5.65	.50	244.34	.00	.60	1.00	1.000	.000	.00	1 .0
.406	.0847					.0156	.01	.46	1.67	.30	.013	.00	.00	PIPE
1034.078	243.417	.478	243.895	2.00	5.38	.45	244.35	.00	.60	1.00	1.000	.000	.00	1 .0
.323	.0847					.0137	.00	.48	1.56	.30	.013	.00	.00	PIPE
1034.401	243.444	.496	243.940	2.00	5.13	.41	244.35	.00	.60	1.00	1.000	.000	.00	1 .0
.251	.0847					.0121	.00	.50	1.45	.30	.013	.00	.00	PIPE

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 5-30-2024 Time: 9: 0:26

OCEAN BREEZE RANCH
Q100
LINE H4-3

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1034.652	243.465	.515	243.981	2.00	4.89	.37	244.35	.00	.60	1.00	1.000	.000	.00	1 .0
.187	.0847					.0107	.00	.52	1.35	.30	.013	.00	.00	PIPE
1034.839	243.481	.535	244.016	2.00	4.67	.34	244.35	.00	.60	1.00	1.000	.000	.00	1 .0
.130	.0847					.0094	.00	.54	1.25	.30	.013	.00	.00	PIPE
1034.968	243.492	.556	244.048	2.00	4.45	.31	244.36	.00	.60	.99	1.000	.000	.00	1 .0
.065	.0847					.0083	.00	.56	1.17	.30	.013	.00	.00	PIPE
1035.033	243.498	.579	244.077	2.00	4.24	.28	244.36	.00	.60	.99	1.000	.000	.00	1 .0
.027	.0847					.0073	.00	.58	1.08	.30	.013	.00	.00	PIPE
1035.060	243.500	.603	244.103	2.00	4.04	.25	244.36	.00	.60	.98	1.000	.000	.00	1 .0
WALL	ENTRANCE													
1035.060	243.500	1.603	245.103	2.00	.42	.00	245.11	.00	.24	3.00	10.000	3.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	2	0	.000	10.000	4.000			.00										
CD	2	4	1		2.500														

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
OCEAN BREEZE RANCH
HEADING LINE NO 2 IS -
Q100
HEADING LINE NO 3 IS -
LINE H5

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	576.990	247.300	1	248.500

ELEMENT NO 2 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	576.990	247.300	2

ELEMENT NO 3 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	741.680	266.440	2	.013	.000	.000	.000	0

ELEMENT NO 4 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	842.430	278.130	2	.013	120.011	-48.100	.000	0

ELEMENT NO 5 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	842.430	278.130	1

WARNING - ADJACENT SECTIONS ARE NOT IDENTICAL - SEE SECTION NUMBERS AND CHANNEL DEFINITIONS

ELEMENT NO 6 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	846.430	278.460	2	.013	.000	.000	.000	0

ELEMENT NO 7 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	846.430	278.460	2	.500

ELEMENT NO 8 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	872.910	278.720	2	.013	120.031	-12.640	.000	0

ELEMENT NO 9 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1000.640	280.000	2	.013	.000	.000	.000	0

ELEMENT NO 10 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1000.640	280.000	1

ELEMENT NO 11 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV

		1000.640	280.000	1		6607.742

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 4-2024 Time: 8:38:24

OCEAN BREEZE RANCH
Q100
LINE H5

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
576.990	247.300	.362	247.662	34.70	23.94	8.90	256.56	.00	1.33	4.00	10.000	4.000	.00	0 .0
WALL	EXIT													
576.990	247.300	.849	248.149	34.70	23.63	8.67	256.82	.00	2.00	2.37	2.500	.000	.00	1 .0
5.065	.1162					.1162	.59	.85	5.29	.85	.013	.00	.00	PIPE
582.055	247.889	.849	248.737	34.70	23.63	8.67	257.41	.00	2.00	2.37	2.500	.000	.00	1 .0
104.288	.1162					.1130	11.79	.85	5.29	.85	.013	.00	.00	PIPE
686.343	260.009	.861	260.870	34.70	23.16	8.33	269.20	.00	2.00	2.38	2.500	.000	.00	1 .0
55.337	.1162					.1031	5.71	.86	5.14	.85	.013	.00	.00	PIPE
741.680	266.440	.892	267.332	34.70	22.08	7.57	274.90	.30	2.00	2.40	2.500	.000	.00	1 .0
18.802	.1160					.0922	1.73	1.19	4.80	.85	.013	.00	.00	PIPE
760.482	268.622	.913	269.535	34.70	21.38	7.10	276.63	.28	2.00	2.41	2.500	.000	.00	1 .0
18.340	.1160					.0827	1.52	1.20	4.59	.85	.013	.00	.00	PIPE
778.822	270.750	.946	271.696	34.70	20.38	6.45	278.15	.26	2.00	2.42	2.500	.000	.00	1 .0
12.692	.1160					.0725	.92	1.21	4.29	.85	.013	.00	.00	PIPE
791.514	272.222	.980	273.202	34.70	19.43	5.86	279.07	.24	2.00	2.44	2.500	.000	.00	1 .0
9.501	.1160					.0636	.60	1.22	4.00	.85	.013	.00	.00	PIPE
801.015	273.325	1.015	274.340	34.70	18.53	5.33	279.67	.22	2.00	2.46	2.500	.000	.00	1 .0
7.420	.1160					.0558	.41	1.23	3.74	.85	.013	.00	.00	PIPE

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 4-2024 Time: 8:38:24

OCEAN BREEZE RANCH
Q100
LINE H5

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
808.435	274.186	1.053	275.239	34.70	17.67	4.85	280.09	.20	2.00	2.47	2.500	.000	.00	1 .0
6.010	.1160					.0490	.29	1.25	3.49	.85	.013	.00	.00	PIPE
814.445	274.883	1.091	275.974	34.70	16.84	4.41	280.38	.18	2.00	2.48	2.500	.000	.00	1 .0
4.929	.1160					.0431	.21	1.27	3.26	.85	.013	.00	.00	PIPE
819.374	275.455	1.132	276.587	34.70	16.06	4.01	280.59	.17	2.00	2.49	2.500	.000	.00	1 .0
4.122	.1160					.0379	.16	1.30	3.04	.85	.013	.00	.00	PIPE
823.496	275.933	1.174	277.107	34.70	15.31	3.64	280.75	.15	2.00	2.50	2.500	.000	.00	1 .0
3.470	.1160					.0333	.12	1.33	2.83	.85	.013	.00	.00	PIPE
826.966	276.336	1.218	277.554	34.70	14.60	3.31	280.86	.14	2.00	2.50	2.500	.000	.00	1 .0
2.929	.1160					.0293	.09	1.36	2.64	.85	.013	.00	.00	PIPE
829.895	276.676	1.265	277.941	34.70	13.92	3.01	280.95	.13	2.00	2.50	2.500	.000	.00	1 .0
2.501	.1160					.0258	.06	1.39	2.46	.85	.013	.00	.00	PIPE
832.396	276.966	1.313	278.279	34.70	13.27	2.74	281.01	.11	2.00	2.50	2.500	.000	.00	1 .0
2.109	.1160					.0228	.05	1.43	2.29	.85	.013	.00	.00	PIPE
834.505	277.210	1.365	278.576	34.70	12.66	2.49	281.06	.10	2.00	2.49	2.500	.000	.00	1 .0
1.794	.1160					.0201	.04	1.47	2.13	.85	.013	.00	.00	PIPE
836.299	277.419	1.419	278.838	34.70	12.07	2.26	281.10	.09	2.00	2.48	2.500	.000	.00	1 .0
1.522	.1160					.0178	.03	1.51	1.97	.85	.013	.00	.00	PIPE

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 4-2024 Time: 8:38:24

OCEAN BREEZE RANCH
Q100
LINE H5

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
837.821	277.595	1.475	279.070	34.70	11.51	2.06	281.13	.08	2.00	2.46	2.500	.000	.00	1 .0
1.255	.1160					.0157	.02	1.56	1.83	.85	.013	.00	.00	PIPE
839.075	277.741	1.536	279.277	34.70	10.97	1.87	281.15	.08	2.00	2.43	2.500	.000	.00	1 .0
1.047	.1160					.0139	.01	1.61	1.70	.85	.013	.00	.00	PIPE
840.122	277.862	1.599	279.461	34.70	10.46	1.70	281.16	.07	2.00	2.40	2.500	.000	.00	1 .0
.824	.1160					.0123	.01	1.67	1.57	.85	.013	.00	.00	PIPE
840.946	277.958	1.668	279.626	34.70	9.97	1.54	281.17	.06	2.00	2.36	2.500	.000	.00	1 .0
.651	.1160					.0110	.01	1.73	1.45	.85	.013	.00	.00	PIPE
841.597	278.033	1.740	279.773	34.70	9.51	1.40	281.18	.05	2.00	2.30	2.500	.000	.00	1 .0
.458	.1160					.0098	.00	1.79	1.33	.85	.013	.00	.00	PIPE
842.054	278.086	1.819	279.906	34.70	9.07	1.28	281.18	.05	2.00	2.23	2.500	.000	.00	1 .0
.280	.1160					.0088	.00	1.87	1.22	.85	.013	.00	.00	PIPE
842.334	278.119	1.905	280.024	34.70	8.64	1.16	281.18	.04	2.00	2.13	2.500	.000	.00	1 .0
.096	.1160					.0079	.00	1.95	1.11	.85	.013	.00	.00	PIPE
842.430	278.130	2.001	280.131	34.70	8.24	1.05	281.18	.00	2.00	2.00	2.500	.000	.00	0 .0
WALL EXIT														
842.430	278.130	2.001	280.131	34.70	4.33	.29	280.42	.00	1.33	4.00	10.000	4.000	.00	0 .0
842.430	278.130	1.535	279.665	34.70	10.97	1.87	281.54	.00	2.00	2.43	2.500	.000	.00	1 .0

.602	.0825		.0145	.01	1.54	1.70	.93	.013	.00	.00	PIPE

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 4-2024 Time: 8:38:24

OCEAN BREEZE RANCH
Q100
LINE H5

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
843.031	278.180	1.558	279.738	34.70	10.79	1.81	281.54	.00	2.00	2.42	2.500	.000	.00	1 .0
1.434	.0825					.0133	.02	1.56	1.65	.93	.013	.00	.00	PIPE
844.466	278.298	1.623	279.921	34.70	10.28	1.64	281.56	.00	2.00	2.39	2.500	.000	.00	1 .0
1.122	.0825					.0118	.01	1.62	1.52	.93	.013	.00	.00	PIPE
845.588	278.391	1.693	280.084	34.70	9.80	1.49	281.58	.00	2.00	2.34	2.500	.000	.00	1 .0
.842	.0825					.0105	.01	1.69	1.40	.93	.013	.00	.00	PIPE
846.430	278.460	1.769	280.229	34.70	9.34	1.36	281.58	.05	2.00	2.27	2.500	.000	.00	1 .0
26.480	.0098					.0100	.26	1.82	1.29	1.78	.013	.00	.00	PIPE
872.910	278.720	1.763	280.483	34.70	9.38	1.37	281.85	.00	2.00	2.28	2.500	.000	.00	1 .0
12.080	.0100					.0100	.12	1.76	1.30	1.76	.013	.00	.00	PIPE
884.990	278.841	1.763	280.604	34.70	9.38	1.37	281.97	.00	2.00	2.28	2.500	.000	.00	1 .0
86.796	.0100					.0096	.84	1.76	1.30	1.76	.013	.00	.00	PIPE
971.786	279.711	1.819	281.530	34.70	9.07	1.28	282.81	.00	2.00	2.23	2.500	.000	.00	1 .0
23.989	.0100					.0088	.21	1.82	1.22	1.76	.013	.00	.00	PIPE
995.776	279.951	1.905	281.856	34.70	8.64	1.16	283.02	.00	2.00	2.13	2.500	.000	.00	1 .0
4.864	.0100					.0079	.04	1.91	1.11	1.76	.013	.00	.00	PIPE
1000.640	280.000	2.001	282.001	34.70	8.24	1.05	283.05	.00	2.00	2.00	2.500	.000	.00	0 .0
WALL EXIT														

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 4-2024 Time: 8:38:24

OCEAN BREEZE RANCH
Q100
LINE H5

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1000.640	280.000	2.001	282.001	34.70	4.33	.29	282.29	.00	1.33	4.00	10.000	4.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.500														
CD	2	2	0	.000	10.000	3.000			.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
OCEAN BREEZE RANCH
HEADING LINE NO 2 IS -
Q100
HEADING LINE NO 3 IS -
LINE Q1

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1000.000	226.800	2	226.800

ELEMENT NO 2 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1000.000	226.800	1

ELEMENT NO 3 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1045.710	227.200	1	.013	.000	.000	.000	0

ELEMENT NO 4 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1045.710	227.200	2	.200

ELEMENT NO 5 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1045.710	227.200	2	233.030

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		3.000														

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
SD-I1

HEADING LINE NO 2 IS -
Q100 10/17/2024

HEADING LINE NO 3 IS -
SD-I1 Q100 DOWNSTREAM

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	971.380	239.000	1	242.300

ELEMENT NO 2 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	971.380	239.000	1

ELEMENT NO 3 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	984.000	239.080	1	.013	.000	.000	.000	0

ELEMENT NO 4 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	984.000	239.080	1	239.080

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:10-23-2024 Time: 9:31:39

SD-I1
Q100 10/17/2024
SD-I1 Q100 DOWNSTREAM

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
971.380	239.000	3.300	242.300	20.70	2.93	.13	242.43	.00	1.46	.00	3.000	.000	.00	0 .0
WALL	EXIT													
971.380	239.000	3.301	242.301	20.70	2.93	.13	242.43	.00	1.46	.00	3.000	.000	.00	1 .0
12.620	.0063					.0010	.01	3.30	.00	1.30	.013	.00	.00	PIPE
984.000	239.080	3.233	242.313	20.70	2.93	.13	242.45	.00	1.46	.00	3.000	.000	.00	1 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.000														
CD	2	4	1		2.000														
CD	3	4	1		2.500														
CD	4	4	1		1.500														
CD	5	3	0	.000	6.000	4.000	.000	.000	.00										
CD	6	4	1		3.000														

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
SD-I1

HEADING LINE NO 2 IS -
Q100 10/15/2024

HEADING LINE NO 3 IS -
SD-I1-Upstream

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1000.000	239.250	5	242.430

ELEMENT NO 2 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1000.000	239.250	6

ELEMENT NO 3 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1009.640	239.300	6	.013	.000	.000	.000	0

ELEMENT NO 4 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1009.640	239.300	5	.200

ELEMENT NO 5 IS A JUNCTION * * * * * * *

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	1013.640	239.400	5	5	0	.013	4.000	.000	239.250	.000	.000	9.000

RADIUS	ANGLE
.000	.000

ELEMENT NO 6 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1013.640	239.400	6

ELEMENT NO 7 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1017.890	239.420	6	.013	.000	.000	.000	0

ELEMENT NO 8 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1017.890	239.420	5	.200

ELEMENT NO 9 IS A JUNCTION * * * * * * *

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	1021.890	239.520	5	4	0	.013	1.400	.000	237.700	.000	.000	9.000

RADIUS	ANGLE
.000	.000

ELEMENT NO 10 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1021.890	239.520	3

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 11 IS A REACH * * *

```
                  U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                             1176.120  240.290    3              .013                       489.027  -18.070      .000     0
ELEMENT NO  12 IS A  WALL  ENTRANCE                *
                  U/S DATA   STATION    INVERT  SECT              FP
                             1176.120  240.290    5              .200
ELEMENT NO  13 IS A JUNCTION          *         *     *     *              *                  *               *
                  U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3        Q4     INVERT-3 INVERT-4  PHI 3  PHI 4
                             1180.120  240.390    5     1     0   .013     4.600      .000   237.700      .000    .000    9.000
                                                                                             RADIUS    ANGLE
                                                                                               .000    .000
ELEMENT NO  14 IS A  WALL  EXIT                    *
                  U/S DATA   STATION    INVERT  SECT
                             1180.120  240.390    2
ELEMENT NO  15 IS A REACH             *         *     *
                  U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                             1280.530  240.890    2              .013                          .000     .000      .000     0
ELEMENT NO  16 IS A  WALL  ENTRANCE                *
                  U/S DATA   STATION    INVERT  SECT              FP
                             1280.530  240.890    5              .200
ELEMENT NO  17 IS A JUNCTION          *         *     *     *              *                  *               *
                  U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3        Q4     INVERT-3 INVERT-4  PHI 3  PHI 4
                             1284.530  240.990    5     1     0   .013     3.400      .000   237.700      .000    .000    9.000
                                                                                             RADIUS    ANGLE
                                                                                               .000    .000
ELEMENT NO  18 IS A  WALL  EXIT                    *
                  U/S DATA   STATION    INVERT  SECT
                             1284.530  240.990    2
ELEMENT NO  19 IS A REACH             *         *     *
                  U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                             1381.130  241.470    2              .013                       306.296  -18.070      .000     0
ELEMENT NO  20 IS A  WALL  ENTRANCE                *
                  U/S DATA   STATION    INVERT  SECT              FP
                             1381.130  241.470    5              .200
                                                  W S P G W                                                        PAGE NO   4
                        WATER SURFACE PROFILE - ELEMENT CARD LISTING
ELEMENT NO  21 IS A SYSTEM HEADWORKS               *                    *
                  U/S DATA   STATION    INVERT  SECT                            W S ELEV
                             1381.130  241.470    5                            270.920
```

Oldcastle Infrastructure
A CRH COMPANY

Nutrient Separating Baffle Box® (NSBB™) Head Loss Calculator

V2020.01; *5/28/2024*

Project Information

Project Name:	**Ocean Breeze Ranch**
Location:	**Basin 3C-1**
Design Basis:	**80% of 150µm**
Screen Basket Capacity (% Full):	**0% (Empty)**
Treatment Flow Rate (cfs):	**0.75**
Peak Flow Rate (cfs):	**19.00**
NSBB Model:	**NSBB-612**

Inlet & Outlet Pipe Information

Inlet Pipe Diameter (in):	**30**
Inlet Invert Elevation (ft):	**239.15**
Outlet Pipe Diameter (in):	**30**
Outlet Invert Elevation (ft):	**239.10**
Outlet Slope %:	**0.50%**
Manning's Roughness Coefficient (n):	**0.012**
Tailwater Present?	**Yes**
Tailwater Elevation:	242.35

Outlet Pipe Flow Characteristics

	Treatment	*Peak*
Normal Depth During Design Flow (ft):	**0.266**	**1.40**
Flow Area (sq ft):	**0.28**	**2.83**
Velocity (ft/s):	**2.68**	**6.72**
Wetted Perimeter (ft):	**1.66**	**4.23**
Downstream Depth of Flow (ft):	**0.288**	**3.250**

NSBB Discharge Coefficients

Screen Orifice Coefficient, Co:	**0.60**
Outlet Pipe Entrance Coefficient, K:	**0.20**

System Design Summary

Rim Elevation (ft):	**244.06**
Rim to Invert Out Depth (ft):	**4.96**
Upstream WSE during Treatment (ft):	**239.388**
Upstream WSE during Peak Flow (ft):	**242.479**

Disclaimer: Calculations are best estimate based on information available and are intended only for use by the party to whom they were transmitted and for the project referenced.

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:10-23-2024 Time: 9:51:58

SD-I1
Q100 10/15/2024
SD-I1-Upstream

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width / "N"	Height/ Dia.-FT / X-Fall	Base Wt or I.D. / ZR	ZL	No Wth Prs/Pip / Type Ch
1000.000	239.250	3.180	242.430	20.70	1.63	.04	242.47	.00	.94	4.00	6.000	4.000	.00	0 .0
WALL	EXIT													
1000.000	239.250	3.181	242.431	20.70	2.93	.13	242.56	.00	1.46	.00	3.000	.000	.00	1 .0
9.640	.0052				.0010	.01	3.18	.00	1.38	.013	.00	.00	PIPE	
1009.640	239.300	3.140	242.440	20.70	2.93	.13	242.57	.00	1.46	.00	3.000	.000	.00	1 .0
WALL	ENTRANCE													
1009.640	239.300	3.253	242.553	20.70	1.59	.04	242.59	.00	.94	4.00	6.000	4.000	.00	0 .0
JUNCT STR	.0250				.0001	.00	3.25	.16			.013	.00	.00	BOX
1013.640	239.400	3.177	242.577	16.70	1.31	.03	242.60	.00	.82	4.00	6.000	4.000	.00	0 .0
WALL	EXIT													
1013.640	239.400	3.177	242.577	16.70	2.36	.09	242.66	.00	1.31	.00	3.000	.000	.00	1 .0
4.250	.0047				.0006	.00	3.18	.00	1.25	.013	.00	.00	PIPE	
1017.890	239.420	3.160	242.580	16.70	2.36	.09	242.67	.00	1.31	.00	3.000	.000	.00	1 .0
WALL	ENTRANCE													
1017.890	239.420	3.233	242.653	16.70	1.29	.03	242.68	.00	.82	4.00	6.000	4.000	.00	0 .0
JUNCT STR	.0250				.0001	.00	3.23	.13			.013	.00	.00	BOX
1021.890	239.520	3.137	242.657	15.30	1.22	.02	242.68	.00	.77	4.00	6.000	4.000	.00	0 .0
WALL	EXIT													

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:10-23-2024 Time: 9:51:58

SD-I1
Q100 10/15/2024
SD-I1-Upstream

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width	Height/Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1021.890	239.520	3.138	242.658	15.30	3.12	.15	242.81	.00	1.32	.00	2.500	.000	.00	1 .0
154.230	.0050				.0014	.21	.00	.00	1.29	.013		.00	.00	PIPE
1176.120	240.290	2.596	242.886	15.30	3.12	.15	243.04	.00	1.32	.00	2.500	.000	.00	1 .0
WALL	ENTRANCE													
1176.120	240.290	2.739	243.029	15.30	1.40	.03	243.06	.00	.77	4.00	6.000	4.000	.00	0 .0
JUNCT STR	.0250				.0001	.00	2.74	.15			.013	.00	.00	BOX
1180.120	240.390	2.655	243.045	10.70	1.01	.02	243.06	.00	.61	4.00	6.000	4.000	.00	0 .0
WALL	EXIT													
1180.120	240.390	2.656	243.046	10.70	3.41	.18	243.23	.00	1.17	.00	2.000	.000	.00	1 .0
100.410	.0050				.0022	.22	2.66	.00	1.20	.013		.00	.00	PIPE
1280.530	240.890	2.381	243.271	10.70	3.41	.18	243.45	.00	1.17	.00	2.000	.000	.00	1 .0
WALL	ENTRANCE													
1280.530	240.890	2.577	243.467	10.70	1.04	.02	243.48	.00	.61	4.00	6.000	4.000	.00	0 .0
JUNCT STR	.0250				.0001	.00	2.58	.11			.013	.00	.00	BOX
1284.530	240.990	2.449	243.439	7.30	.75	.01	243.45	.00	.47	4.00	6.000	4.000	.00	0 .0
WALL	EXIT													
1284.530	240.990	2.449	243.439	7.30	2.32	.08	243.52	.00	.96	.00	2.000	.000	.00	1 .0
96.600	.0050				.0010	.10	.00	.00	.95	.013		.00	.00	PIPE

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:10-23-2024 Time: 9:51:58

SD-I1
Q100 10/15/2024
SD-I1-Upstream

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT or "N"	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp		X-Fall	ZR	Type Ch
1381.130	241.470	2.078	243.548	7.30	2.32	.08	243.63	.00	.96	.00	2.000	.000	.00	1 .0
WALL	ENTRANCE													
1381.130	241.470	2.166	243.636	7.30	.84	.01	243.65	.00	.47	4.00	6.000	4.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.500														
CD	2	3	0	.000	4.000	4.000	.000	.000	.00										

W S P G W

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
SD-I1-1

HEADING LINE NO 2 IS -
Q100 OBR

HEADING LINE NO 3 IS -
SD-I1-1 Q100

W S P G W

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1000.000	239.860	1	242.660

ELEMENT NO 2 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1016.250	239.940	1	.013	.000	.000	.000	0

ELEMENT NO 3 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1016.250	239.940	2	.500

ELEMENT NO 4 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1016.250	239.940	2	239.940

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:10-23-2024 Time: 9:56:54

SD-I1-1
Q100 OBR
SD-I1-1 Q100

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width	Height/Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1000.000	239.860	2.800	242.660	1.70	.96	.01	242.67	.00	.49	.00	1.500	.000	.00	1 .0
16.250	.0049				.0003	.00	2.80	.00	.49	.013		.00	.00	PIPE
1016.250	239.940	2.724	242.664	1.70	.96	.01	242.68	.00	.49	.00	1.500	.000	.00	1 .0
WALL	ENTRANCE													
1016.250	239.940	2.746	242.686	1.70	.15	.00	242.69	.00	.18	4.00	4.000	4.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.000														
CD	2	3	0	.000	4.000	4.000	.000	.000	.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
SD-I1-2

HEADING LINE NO 2 IS -
Q100 OBR

HEADING LINE NO 3 IS -
SD-I1-2 Q100

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1000.000	241.840	1	241.840

ELEMENT NO 2 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1004.250	241.880	1	.013	.000	.000	.000	0

ELEMENT NO 3 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1004.250	241.880	2	.500

ELEMENT NO 4 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1004.250	241.880	2	241.880

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 9- 9-2024 Time: 1:56:30

SD-I1-2
Q100 OBR
SD-I1-2 Q100

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1000.000	241.840	.421	242.261	1.20	3.83	.23	242.49	.00	.46	.99	1.000	.000	.00	1 .0
2.156	.0094					.0081	.02	.42	1.20	.41	.013	.00	.00	PIPE
1002.156	241.860	.428	242.288	1.20	3.73	.22	242.50	.00	.46	.99	1.000	.000	.00	1 .0
1.737	.0094					.0073	.01	.43	1.15	.41	.013	.00	.00	PIPE
1003.893	241.877	.444	242.321	1.20	3.56	.20	242.52	.00	.46	.99	1.000	.000	.00	1 .0
.357	.0094					.0064	.00	.44	1.08	.41	.013	.00	.00	PIPE
1004.250	241.880	.462	242.342	1.20	3.38	.18	242.52	.00	.46	1.00	1.000	.000	.00	1 .0
WALL	ENTRANCE													
1004.250	241.880	1.462	243.342	1.20	.21	.00	243.34	.00	.14	4.00	4.000	4.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.500														
CD	2	3	0	.000	4.000	4.000	.000	.000	.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
SD-I1-3

HEADING LINE NO 2 IS -
Q100 OBR

HEADING LINE NO 3 IS -
SD-I1-3 Q100

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1000.000	241.340	1	241.340

ELEMENT NO 2 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1016.250	241.420	1	.013	.000	.000	.000	0

ELEMENT NO 3 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1016.250	241.420	2	.500

ELEMENT NO 4 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1016.250	241.420	2	241.420

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 9- 9-2024 Time: 1:21:48

SD-I1-3
Q100 OBR
SD-I1-3 Q100

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width / "N"	Height/Dia.-FT / X-Fall	Base Wt or I.D. / ZR	ZL	No Wth Prs/Pip / Type Ch
1000.000	241.340	.623	241.963	2.70	3.89	.23	242.20	.00	.62	1.48	1.500	.000	.00	1 .0
1.768	.0049				.0050	.01	.62	1.00	.63	.013	.00	.00		PIPE
1001.768	241.349	.628	241.977	2.70	3.85	.23	242.21	.00	.62	1.48	1.500	.000	.00	1 .0
14.482	.0049				.0049	.07	.63	.99	.63	.013	.00	.00		PIPE
1016.250	241.420	.628	242.048	2.70	3.85	.23	242.28	.00	.62	1.48	1.500	.000	.00	1 .0
WALL	ENTRANCE													
1016.250	241.420	1.628	243.048	2.70	.41	.00	243.05	.00	.24	4.00	4.000	4.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		2.500														
CD	2	4	1		3.500														
CD	3	4	1		2.500														
CD	4	4	1		2.000														
CD	5	4	1		1.500														
CD	6	4	1		1.000														
CD	7	3	0	.000	8.000	4.000	.000	.000	.00										
CD	8	3	0	.000	8.000	12.000	.000	.000	.00										
CD	9	4	1		3.000														

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
OCEAN BREEZE RANCH
HEADING LINE NO 2 IS -
Q100 10/17/2024
HEADING LINE NO 3 IS -
SD-J1.WSW_100.WSW

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1022.540	220.220	7	220.220

ELEMENT NO 2 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1022.540	220.220	7

WARNING - ADJACENT SECTIONS ARE NOT IDENTICAL - SEE SECTION NUMBERS AND CHANNEL DEFINITIONS

ELEMENT NO 3 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1068.540	220.500	2	.013	.000	.000	18.829	0

ELEMENT NO 4 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1068.540	220.500	8	.200

ELEMENT NO 5 IS A JUNCTION * * * * * *

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	1080.540	220.600	8	9	0	.013	23.900	.000	220.600	.000	.000	-.900

RADIUS	ANGLE
.000	.000

ELEMENT NO 6 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1080.540	220.600	3

ELEMENT NO 7 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1174.940	221.100	3	.013	.000	.000	18.829	0

ELEMENT NO 8 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1174.940	221.100	7	.200

ELEMENT NO 9 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1178.940	221.200	7	.013	.000	.000	.000	0

ELEMENT NO 10 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1178.940	221.200	3

ELEMENT NO 11 IS A REACH * * *

```
                  U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                             1278.740  221.700    3              .013                           .000     .000      .000     0
ELEMENT NO  12 IS A  WALL  ENTRANCE                 *
                  U/S DATA   STATION    INVERT  SECT              FP
                             1278.740  221.700    7              .200
                                                    W S P G W                                                          PAGE NO   3
                          WATER SURFACE PROFILE - ELEMENT CARD LISTING
ELEMENT NO  13 IS A JUNCTION          *         *     *     *                 *                  *                *
                  U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3        Q4     INVERT-3 INVERT-4  PHI 3  PHI 4
                             1282.740  221.800    7     5     0   .013     7.000      .000   221.800      .000    .000    -.800
                                                                                            RADIUS    ANGLE
                                                                                           190.986   1.200
ELEMENT NO  14 IS A  WALL  EXIT                     *
                  U/S DATA   STATION    INVERT  SECT
                             1282.740  221.800    3
ELEMENT NO  15 IS A REACH             *         *     *
                  U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                             1407.500  222.640    3              .013                        306.003  -23.360      .000     0
ELEMENT NO  16 IS A REACH             *         *     *
                  U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                             1528.370  223.450    3              .013                           .000     .000      .000     0
ELEMENT NO  17 IS A REACH             *         *     *
                  U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                             1572.310  223.750    3              .013                        295.144    8.530      .000     0
ELEMENT NO  18 IS A  WALL  ENTRANCE                 *
                  U/S DATA   STATION    INVERT  SECT              FP
                             1572.310  223.750    3              .200
ELEMENT NO  19 IS A REACH             *         *     *
                  U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                             1576.310  224.080    3              .013                           .000     .000      .000     0
ELEMENT NO  20 IS A  WALL  EXIT                     *
                  U/S DATA   STATION    INVERT  SECT
                             1576.310  224.080    3
ELEMENT NO  21 IS A REACH             *         *     *
                  U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                             1622.370  224.310    3              .013                           .000     .000      .000     0
ELEMENT NO  22 IS A  WALL  ENTRANCE                 *
                  U/S DATA   STATION    INVERT  SECT              FP
                             1622.370  224.310    7              .200
ELEMENT NO  23 IS A JUNCTION          *         *     *     *                 *                  *                *
                  U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3        Q4     INVERT-3 INVERT-4  PHI 3  PHI 4
                             1626.370  224.810    7     6     0   .013     7.500      .000   225.810      .000    .000     .600
                                                                                            RADIUS    ANGLE
                                                                                            32.740   7.000
                                                    W S P G W                                                          PAGE NO   4
                          WATER SURFACE PROFILE - ELEMENT CARD LISTING
ELEMENT NO  24 IS A  WALL  EXIT                     *
                  U/S DATA   STATION    INVERT  SECT
                             1626.370  224.810    4
ELEMENT NO  25 IS A REACH             *         *     *
                  U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                             1777.660  227.580    4              .013                           .000     .000      .000     0
ELEMENT NO  26 IS A REACH             *         *     *
                  U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                             1849.380  228.890    4              .013                        350.619  -11.720      .000     0
ELEMENT NO  27 IS A  WALL  ENTRANCE                 *
                  U/S DATA   STATION    INVERT  SECT              FP
                             1849.380  228.890    7              .200
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ELEMENT NO  28 IS A JUNCTION          *         *     *     *                 *                  *              *
                U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3        Q4     INVERT-3 INVERT-4  PHI 3  PHI 4
                           1853.380  229.390    7     6     0   .013     7.100      .000   229.890      .000    .000     .800
                                                                                            RADIUS    ANGLE
                                                                                            26.963   8.500
ELEMENT NO  29 IS A  WALL  EXIT                       *
                U/S DATA   STATION    INVERT  SECT
                           1853.380  229.390    5
ELEMENT NO  30 IS A REACH             *         *     *
                U/S DATA   STATION    INVERT  SECT              N                         RADIUS    ANGLE     ANG PT  MAN H
                           1866.460  230.180    5              .013                       333.078   -2.250      .000     0
ELEMENT NO  31 IS A REACH             *         *     *
                U/S DATA   STATION    INVERT  SECT              N                         RADIUS    ANGLE     ANG PT  MAN H
                           1968.100  235.700    5              .013                         .000     .000      .000     0
ELEMENT NO  32 IS A REACH             *         *     *
                U/S DATA   STATION    INVERT  SECT              N                         RADIUS    ANGLE     ANG PT  MAN H
                           2067.330  241.160    5              .013                       350.306   16.230      .000     0
ELEMENT NO  33 IS A  WALL  ENTRANCE                   *
                U/S DATA   STATION    INVERT  SECT             FP
                           2067.330  241.160    7              .200
ELEMENT NO  34 IS A SYSTEM HEADWORKS                  *                    *
                U/S DATA   STATION    INVERT  SECT                              W S ELEV
                           2067.330  241.160    7                              241.160
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Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:10-18-2024 Time:10:27:24

OCEAN BREEZE RANCH
Q100 10/17/2024
SD-J1.WSW_100.WSW

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1022.540	220.220	1.886	222.106	58.80	7.79	.94	223.05	.00	1.89	4.00	8.000	4.000	.00	0 .0
WALL	EXIT													
1022.540	220.220	1.886	222.106	58.80	7.79	.94	223.05	.00	1.89	4.00	8.000	4.000	.00	0 .0
1022.540	220.220	2.271	222.491	58.80	8.90	1.23	223.72	.00	2.40	3.34	3.500	.000	.00	1 .0
32.376	.0061					.0059	.19	2.27	1.12	2.26	.013	.00	.00	PIPE
1054.916	220.417	2.301	222.718	58.80	8.77	1.19	223.91	.00	2.40	3.32	3.500	.000	.00	1 .0
13.625	.0061					.0055	.07	2.30	1.09	2.26	.013	.00	.00	PIPE
1068.540	220.500	2.402	222.902	58.80	8.35	1.08	223.99	.00	2.40	3.25	3.500	.000	.00	1 .0
WALL	ENTRANCE													
1068.540	220.500	4.402	224.902	58.80	1.11	.02	224.92	.00	.91	12.00	8.000	12.000	.00	0 .0
JUNCT STR	.0083					.0000	.00	4.40	.09		.013	.00	.00	BOX
1080.540	220.600	4.278	224.878	34.90	.68	.01	224.89	.00	.64	12.00	8.000	12.000	.00	0 .0
WALL	EXIT													
1080.540	220.600	4.279	224.879	34.90	7.11	.78	225.66	.00	2.01	.00	2.500	.000	.00	1 .0
94.400	.0053					.0072	.68	4.28	.00	2.50	.013	.00	.00	PIPE
1174.940	221.100	4.511	225.611	34.90	7.11	.78	226.40	.00	2.01	.00	2.500	.000	.00	1 .0
WALL	ENTRANCE													
1174.940	221.100	5.405	226.505	34.90	1.61	.04	226.55	.00	1.33	4.00	8.000	4.000	.00	0 .0
4.000	.0250					.0001	.00	5.40	.12	.73	.013	.00	.00	BOX

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:10-18-2024 Time:10:27:24

OCEAN BREEZE RANCH
Q100 10/17/2024
SD-J1.WSW_100.WSW

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width	Height/Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1178.940	221.200	5.304	226.504	34.90	1.64	.04	226.55	.00	1.33	4.00	8.000	4.000	.00	0 .0
WALL	EXIT													
1178.940	221.200	5.305	226.505	34.90	7.11	.78	227.29	.00	2.01	.00	2.500	.000	.00	1 .0
99.800	.0050				.0072	.72	5.30	.00	2.50	.013	.00	.00	PIPE	
1278.740	221.700	5.527	227.227	34.90	7.11	.78	228.01	.00	2.01	.00	2.500	.000	.00	1 .0
WALL	ENTRANCE													
1278.740	221.700	6.435	228.135	34.90	1.36	.03	228.16	.00	1.33	4.00	8.000	4.000	.00	0 .0
JUNCT STR	.0250				.0001	.00	6.44	.09		.013	.00	.00	BOX	
1282.740	221.800	6.321	228.121	27.90	1.10	.02	228.14	.00	1.15	4.00	8.000	4.000	.00	0 .0
WALL	EXIT													
1282.740	221.800	6.322	228.122	27.90	5.68	.50	228.62	.00	1.80	.00	2.500	.000	.00	1 .0
124.760	.0067				.0046	.58	.00	.00	1.74	.013	.00	.00	PIPE	
1407.500	222.640	6.110	228.750	27.90	5.68	.50	229.25	.00	1.80	.00	2.500	.000	.00	1 .0
120.870	.0067				.0046	.56	6.11	.00	1.74	.013	.00	.00	PIPE	
1528.370	223.450	5.860	229.310	27.90	5.68	.50	229.81	.00	1.80	.00	2.500	.000	.00	1 .0
43.940	.0068				.0046	.20	.00	.00	1.73	.013	.00	.00	PIPE	
1572.310	223.750	5.794	229.544	27.90	5.68	.50	230.05	.00	1.80	.00	2.500	.000	.00	1 .0
HYDRAULIC JUMP														

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:10-18-2024 Time:10:27:24

OCEAN BREEZE RANCH
Q100 10/17/2024
SD-J1.WSW_100.WSW

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width	Height/Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1572.310	223.750	1.386	225.136	27.90	9.99	1.55	226.68	.00	1.80	2.49	2.500	.000	.00	0 .0
HYDRAULIC DROP														
1572.310	223.750	5.794	229.544	27.90	5.68	.50	230.05	.00	1.80	.00	2.500	.000	.00	1 .0
4.000	.0825				.0046	.02	5.79	.00	.83	.013	.00	.00	PIPE	
1576.310	224.080	5.482	229.562	27.90	5.68	.50	230.06	.00	1.80	.00	2.500	.000	.00	0 .0
WALL EXIT														
1576.310	224.080	5.483	229.563	27.90	5.68	.50	230.06	.00	1.80	.00	2.500	.000	.00	1 .0
46.060	.0050				.0046	.21	5.48	.00	1.97	.013	.00	.00	PIPE	
1622.370	224.310	5.466	229.776	27.90	5.68	.50	230.28	.00	1.80	.00	2.500	.000	.00	1 .0
WALL ENTRANCE														
1622.370	224.310	6.043	230.353	27.90	1.15	.02	230.37	.01	1.15	4.00	8.000	4.000	.00	0 .0
JUNCT STR	.1250				.0001	.00	6.05	.08		.013	.00	.00	BOX	
1626.370	224.810	5.552	230.362	20.40	.92	.01	230.37	.00	.93	4.00	8.000	4.000	.00	0 .0
WALL EXIT														
1626.370	224.810	5.552	230.362	20.40	6.49	.65	231.02	.00	1.62	.00	2.000	.000	.00	1 .0
151.290	.0183				.0081	1.23	5.55	.00	1.19	.013	.00	.00	PIPE	
1777.660	227.580	4.012	231.592	20.40	6.49	.65	232.25	.00	1.62	.00	2.000	.000	.00	1 .0
71.720	.0183				.0081	.58	.00	.00	1.19	.013	.00	.00	PIPE	

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:10-18-2024 Time:10:27:24

OCEAN BREEZE RANCH
Q100 10/17/2024
SD-J1.WSW_100.WSW

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width	Height/Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1849.380	228.890	3.333	232.223	20.40	6.49	.65	232.88	.00	1.62	.00	2.000	.000	.00	1 .0
WALL ENTRANCE														
1849.380	228.890	4.089	232.979	20.40	1.25	.02	233.00	.01	.93	4.00	8.000	4.000	.00	0 .0
JUNCT STR	.1250				.0001	.00	4.10	.11			.013	.00	.00	BOX
1853.380	229.390	3.601	232.991	13.30	.92	.01	233.00	.00	.70	4.00	8.000	4.000	.00	0 .0
WALL EXIT														
1853.380	229.390	3.601	232.991	13.30	7.53	.88	233.87	.00	1.36	.00	1.500	.000	.00	1 .0
13.080	.0604				.0160	.21	.00	.00	.76	.013	.00	.00	PIPE	
1866.460	230.180	3.048	233.228	13.30	7.53	.88	234.11	.00	1.36	.00	1.500	.000	.00	1 .0
14.991	.0543				.0160	.24	3.05	.00	.79	.013	.00	.00	PIPE	
1881.451	230.994	2.474	233.468	13.30	7.53	.88	234.35	.00	1.36	.00	1.500	.000	.00	1 .0
HYDRAULIC JUMP														
1881.451	230.994	.788	231.782	13.30	14.14	3.10	234.89	.00	1.36	1.50	1.500	.000	.00	1 .0
8.425	.0543				.0543	.46	.79	3.14	.79	.013	.00	.00	PIPE	
1889.876	231.452	.788	232.240	13.30	14.14	3.10	235.34	.00	1.36	1.50	1.500	.000	.00	1 .0
78.224	.0543				.0531	4.16	.79	3.14	.79	.013	.00	.00	PIPE	
1968.100	235.700	.799	236.499	13.30	13.91	3.00	239.50	.03	1.36	1.50	1.500	.000	.00	1 .0
37.306	.0550				.0493	1.84	.82	3.07	.78	.013	.00	.00	PIPE	

OCEAN BREEZE RANCH
Q100 10/17/2024
SD-J1.WSW_100.WSW

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
2005.406	237.753	.825	238.578	13.30	13.34	2.76	241.34	.02	1.36	1.49	1.500	.000	.00	1 .0
19.532	.0550					.0439	.86	.85	2.88	.78	.013	.00	.00	PIPE
2024.938	238.827	.858	239.686	13.30	12.72	2.51	242.20	.02	1.36	1.48	1.500	.000	.00	1 .0
11.942	.0550					.0387	.46	.88	2.67	.78	.013	.00	.00	PIPE
2036.880	239.485	.892	240.377	13.30	12.13	2.28	242.66	.02	1.36	1.47	1.500	.000	.00	1 .0
8.226	.0550					.0343	.28	.91	2.48	.78	.013	.00	.00	PIPE
2045.106	239.937	.929	240.866	13.30	11.56	2.08	242.94	.02	1.36	1.46	1.500	.000	.00	1 .0
6.079	.0550					.0304	.18	.95	2.29	.78	.013	.00	.00	PIPE
2051.185	240.272	.968	241.240	13.30	11.03	1.89	243.13	.02	1.36	1.44	1.500	.000	.00	1 .0
4.656	.0550					.0270	.13	.98	2.12	.78	.013	.00	.00	PIPE
2055.841	240.528	1.009	241.537	13.30	10.51	1.72	243.25	.01	1.36	1.41	1.500	.000	.00	1 .0
3.579	.0550					.0240	.09	1.02	1.95	.78	.013	.00	.00	PIPE
2059.420	240.725	1.054	241.779	13.30	10.02	1.56	243.34	.01	1.36	1.37	1.500	.000	.00	1 .0
2.793	.0550					.0214	.06	1.07	1.80	.78	.013	.00	.00	PIPE
2062.213	240.878	1.102	241.981	13.30	9.56	1.42	243.40	.01	1.36	1.32	1.500	.000	.00	1 .0
2.147	.0550					.0192	.04	1.11	1.64	.78	.013	.00	.00	PIPE
2064.360	240.997	1.154	242.151	13.30	9.11	1.29	243.44	.01	1.36	1.26	1.500	.000	.00	1 .0
1.569	.0550					.0173	.03	1.16	1.49	.78	.013	.00	.00	PIPE

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:10-18-2024 Time:10:27:24

OCEAN BREEZE RANCH
Q100 10/17/2024
SD-J1.WSW_100.WSW

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT or "N"	Base Wt I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp				Type Ch
2065.929	241.083	1.212	242.295	13.30	8.69	1.17	243.47	.01	1.36	1.18	1.500	.000	.00	1 .0
1.006	.0550					.0157	.02	1.22	1.34	.78	.013	.00	.00	PIPE
2066.935	241.138	1.279	242.417	13.30	8.28	1.07	243.48	.01	1.36	1.06	1.500	.000	.00	1 .0
.395	.0550					.0145	.01	1.29	1.19	.78	.013	.00	.00	PIPE
2067.330	241.160	1.361	242.521	13.30	7.89	.97	243.49	.00	1.36	.87	1.500	.000	.00	1 .0
WALL	ENTRANCE													
2067.330	241.160	3.361	244.521	13.30	.99	.02	244.54	.00	.70	4.00	8.000	4.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	2		3.000														
CD	2	2	0	.000	10.000	3.000			.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
OCEAN BREEZE RANCH
HEADING LINE NO 2 IS -
Q100
HEADING LINE NO 3 IS -
LINE J1-1

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1000.000	220.560	1	224.900

ELEMENT NO 2 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1025.900	221.000	1	.013	.000	.000	.000	0

ELEMENT NO 3 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1025.900	221.000	2	.200

ELEMENT NO 4 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1025.900	221.000	2	227.710

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:10-18-2024 Time: 2:16:48

OCEAN BREEZE RANCH
Q100
LINE J1-1

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT or "N"	Base Wt or I.D.	ZL	ZR	No Wth Prs/Pip	Type Ch
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp		X-Fall				
1000.000	220.560	4.340	224.900	23.90	1.69	.04	224.94	.00	1.10	.00	3.000	.000	.00		2	.0
25.900	.0170					.0003	.01	4.34	.00	.75	.013	.00	.00		PIPE	
1025.900	221.000	3.908	224.908	23.90	1.69	.04	224.95	.00	1.10	.00	3.000	.000	.00		2	.0
WALL	ENTRANCE															
1025.900	221.000	3.892	224.892	23.90	2.05	.07	224.96	.00	1.25	3.00	10.000	3.000	.00		0	.0

FILE: LINE_J1-2.WSW W S P G W - EDIT LISTING - Version 14.11 Date:10-18-2024 Time: 1:37:58

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING PAGE 1

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.500														
CD	2	2	0	.000	13.000	3.000			.00										

W S P G W PAGE NO 1

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -

OCEAN BREEZE RANCH

HEADING LINE NO 2 IS -

Q100

HEADING LINE NO 3 IS -

LINE J1-2

W S P G W PAGE NO 2

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1002.000	221.800	1	228.120

ELEMENT NO 2 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1038.230	221.980	1	.013	.000	.000	.000	0

ELEMENT NO 3 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1038.230	221.980	2	.200

ELEMENT NO 4 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1038.230	221.980	2	221.980

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:10-18-2024 Time: 1:38: 1

OCEAN BREEZE RANCH
Q100
LINE J1-2

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT or "N"	Base Wt or I.D.	ZL	ZR	No Wth Prs/Pip	Type Ch
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp		X-Fall				
1002.000	221.800	6.320	228.120	7.70	4.36	.29	228.41	.00	1.08	.00	1.500	.000	.00		1	.0
36.230	.0050					.0054	.19	6.32	.00	1.29	.013	.00	.00		PIPE	
1038.230	221.980	6.335	228.315	7.70	4.36	.29	228.61	.00	1.08	.00	1.500	.000	.00		1	.0
WALL	ENTRANCE															
1038.230	221.980	6.686	228.666	7.70	.38	.00	228.67	.00	.59	3.00	13.000	3.000	.00		0	.0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.000														
CD	2	2	0	.000	10.000	4.000			.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
OCEAN BREEZE RANCH
HEADING LINE NO 2 IS -
Q100
HEADING LINE NO 3 IS -
LINE J1-3

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1000.000	225.810	1	230.360

ELEMENT NO 2 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1025.590	231.000	1	.013	.000	.000	.000	0

ELEMENT NO 3 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1025.590	231.000	2	.200

ELEMENT NO 4 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1025.590	231.000	2	231.000

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:10-18-2024 Time: 1:30:52

OCEAN BREEZE RANCH
Q100
LINE J1-3

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width / "N"	Height/Dia.-FT / X-Fall	Base Wt or I.D. / ZR	ZL	No Wth Prs/Pip / Type Ch
1000.000	225.810	4.550	230.360	6.70	8.53	1.13	231.49	.00	.97	.00	1.000	.000	.00	1 .0
14.229	.2028					.0354	.50	4.55	.00	.45	.013	.00	.00	PIPE
1014.229	228.696	2.165	230.861	6.70	8.53	1.13	231.99	.00	.97	.00	1.000	.000	.00	1 .0
HYDRAULIC JUMP														
1014.229	228.696	.578	229.273	6.70	14.26	3.16	232.43	.00	.97	.99	1.000	.000	.00	1 .0
1.393	.2028					.0851	.12	.58	3.64	.45	.013	.00	.00	PIPE
1015.623	228.979	.591	229.570	6.70	13.86	2.98	232.55	.00	.97	.98	1.000	.000	.00	1 .0
1.971	.2028					.0773	.15	.59	3.48	.45	.013	.00	.00	PIPE
1017.593	229.378	.615	229.993	6.70	13.22	2.71	232.71	.00	.97	.97	1.000	.000	.00	1 .0
1.650	.2028					.0685	.11	.62	3.23	.45	.013	.00	.00	PIPE
1019.243	229.713	.640	230.353	6.70	12.60	2.47	232.82	.00	.97	.96	1.000	.000	.00	1 .0
1.381	.2028					.0608	.08	.64	2.98	.45	.013	.00	.00	PIPE
1020.624	229.993	.668	230.661	6.70	12.02	2.24	232.90	.00	.97	.94	1.000	.000	.00	1 .0
1.175	.2028					.0541	.06	.67	2.75	.45	.013	.00	.00	PIPE
1021.799	230.231	.697	230.928	6.70	11.46	2.04	232.97	.00	.97	.92	1.000	.000	.00	1 .0
.998	.2028					.0482	.05	.70	2.53	.45	.013	.00	.00	PIPE
1022.797	230.434	.728	231.162	6.70	10.92	1.85	233.01	.00	.97	.89	1.000	.000	.00	1 .0
.836	.2028					.0432	.04	.73	2.32	.45	.013	.00	.00	PIPE

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:10-18-2024 Time: 1:30:52

OCEAN BREEZE RANCH
Q100
LINE J1-3

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT or "N"	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp		X-Fall	ZR	Type Ch
1023.633	230.603	.763	231.366	6.70	10.42	1.68	233.05	.00	.97	.85	1.000	.000	.00	1 .0
.702	.2028					.0389	.03	.76	2.11	.45	.013	.00	.00	PIPE
1024.335	230.746	.801	231.547	6.70	9.93	1.53	233.08	.00	.97	.80	1.000	.000	.00	1 .0
.574	.2028					.0352	.02	.80	1.90	.45	.013	.00	.00	PIPE
1024.910	230.862	.844	231.706	6.70	9.47	1.39	233.10	.00	.97	.73	1.000	.000	.00	1 .0
.438	.2028					.0324	.01	.84	1.69	.45	.013	.00	.00	PIPE
1025.347	230.951	.896	231.847	6.70	9.03	1.27	233.11	.00	.97	.61	1.000	.000	.00	1 .0
.243	.2028					.0312	.01	.90	1.44	.45	.013	.00	.00	PIPE
1025.590	231.000	.971	231.971	6.70	8.60	1.15	233.12	.00	.97	.34	1.000	.000	.00	1 .0
WALL	ENTRANCE													
1025.590	231.000	3.971	234.971	6.70	.42	.00	234.97	.00	.44	4.00	10.000	4.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.000														
CD	2	2	0	.000	10.000	4.000			.00										
CD	4	2	0	.000	10.000	3.000			.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
OCEAN BREEZE RANCH
HEADING LINE NO 2 IS -
Q100
HEADING LINE NO 3 IS -
LINE J1-4

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1002.000	229.890	1	232.990

ELEMENT NO 2 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1013.360	234.500	1	.013	.000	.000	.000	0

ELEMENT NO 3 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1013.360	234.500	2	.200

ELEMENT NO 4 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1017.360	234.830	2	.013	.000	.000	.000	0

ELEMENT NO 5 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1017.360	234.830	2

WARNING - ADJACENT SECTIONS ARE NOT IDENTICAL - SEE SECTION NUMBERS AND CHANNEL DEFINITIONS

ELEMENT NO 6 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1074.940	260.800	1	.013	.000	.000	.000	0

ELEMENT NO 7 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1074.940	260.800	4	.200

ELEMENT NO 8 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1074.940	260.800	4	260.800

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:10-18-2024 Time: 1:46: 9

OCEAN BREEZE RANCH
Q100
LINE J1-4

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width / "N"	Height/ Dia.-FT / X-Fall	Base Wt or I.D. / ZR	ZL	No Wth Prs/Pip / Type Ch
1002.000	229.890	.528	230.418	7.90	18.80	5.49	235.90	.00	.98	1.00	1.000	.000	.00	1 .0
.057	.4058					.1637	.01	.53	5.11	.41	.013	.00	.00	PIPE
1002.057	229.913	.528	230.441	7.90	18.76	5.46	235.90	.00	.98	1.00	1.000	.000	.00	1 .0
1.886	.4058					.1536	.29	.53	5.09	.41	.013	.00	.00	PIPE
1003.943	230.679	.549	231.228	7.90	17.88	4.97	236.19	.00	.98	1.00	1.000	.000	.00	1 .0
1.593	.4058					.1356	.22	.55	4.73	.41	.013	.00	.00	PIPE
1005.536	231.325	.570	231.895	7.90	17.05	4.51	236.41	.00	.98	.99	1.000	.000	.00	1 .0
1.354	.4058					.1197	.16	.57	4.39	.41	.013	.00	.00	PIPE
1006.890	231.875	.593	232.468	7.90	16.26	4.10	236.57	.00	.98	.98	1.000	.000	.00	1 .0
1.161	.4058					.1060	.12	.59	4.07	.41	.013	.00	.00	PIPE
1008.051	232.346	.618	232.964	7.90	15.50	3.73	236.70	.00	.98	.97	1.000	.000	.00	1 .0
1.007	.4058					.0939	.09	.62	3.77	.41	.013	.00	.00	PIPE
1009.059	232.755	.643	233.398	7.90	14.78	3.39	236.79	.00	.98	.96	1.000	.000	.00	1 .0
.869	.4058					.0833	.07	.64	3.49	.41	.013	.00	.00	PIPE
1009.928	233.107	.671	233.778	7.90	14.09	3.08	236.86	.00	.98	.94	1.000	.000	.00	1 .0
.758	.4058					.0742	.06	.67	3.22	.41	.013	.00	.00	PIPE
1010.686	233.415	.700	234.115	7.90	13.44	2.80	236.92	.00	.98	.92	1.000	.000	.00	1 .0
.656	.4058					.0662	.04	.70	2.96	.41	.013	.00	.00	PIPE

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:10-18-2024 Time: 1:46: 9

OCEAN BREEZE RANCH
Q100
LINE J1-4

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width / "N"	Height/ Dia.-FT or X-Fall	Base Wt or I.D. / ZR	ZL	No Wth Prs/Pip / Type Ch
1011.342	233.681	.732	234.413	7.90	12.81	2.55	236.96	.00	.98	.89	1.000	.000	.00	1 .0
.568	.4058					.0593	.03	.73	2.71	.41	.013	.00	.00	PIPE
1011.910	233.912	.767	234.679	7.90	12.21	2.32	237.00	.00	.98	.85	1.000	.000	.00	1 .0
.490	.4058					.0534	.03	.77	2.46	.41	.013	.00	.00	PIPE
1012.400	234.110	.805	234.915	7.90	11.65	2.11	237.02	.00	.98	.79	1.000	.000	.00	1 .0
.413	.4058					.0485	.02	.81	2.22	.41	.013	.00	.00	PIPE
1012.812	234.278	.849	235.127	7.90	11.10	1.91	237.04	.00	.98	.72	1.000	.000	.00	1 .0
.335	.4058					.0447	.01	.85	1.96	.41	.013	.00	.00	PIPE
1013.148	234.414	.902	235.316	7.90	10.59	1.74	237.06	.00	.98	.59	1.000	.000	.00	1 .0
.212	.4058					.0438	.01	.90	1.67	.41	.013	.00	.00	PIPE
1013.360	234.500	.984	235.484	7.90	10.09	1.58	237.07	.00	.98	.25	1.000	.000	.00	1 .0
WALL	ENTRANCE													
1013.360	234.500	4.984	239.484	7.90	.40	.00	239.49	.00	.49	4.00	10.000	4.000	.00	0 .0
2.809	.0825					.0000	.00	4.98	.03	.19	.013	.00	.00	RECTANG
1016.169	234.732	4.752	239.484	7.90	.42	.00	239.49	.00	.49	4.00	10.000	4.000	.00	0 .0
1.191	.0825					.0000	.00	4.75	.03	.19	.013	.00	.00	RECTANG
1017.360	234.830	4.654	239.484	7.90	.42	.00	239.49	.00	.49	4.00	10.000	4.000	.00	0 .0
WALL	EXIT													

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:10-18-2024 Time: 1:46: 9

OCEAN BREEZE RANCH

Q100

LINE J1-4

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1017.360	234.830	4.655	239.485	7.90	.42	.00	239.49	.00	.49	4.00	10.000	4.000	.00	0 .0
12.285	.4510					.4133	5.08	.40	8.60	.40	.013	.00	.00	PIPE
1017.360	234.830	.402	235.232	7.90	26.77	11.12	246.36	.00	.98	.98	1.000	.000	.00	1 .0
12.744	.4510					.3763	4.80	.41	8.33	.40	.013	.00	.00	PIPE
1029.645	240.371	.408	240.779	7.90	26.18	10.65	251.42	.00	.98	.98	1.000	.000	.00	1 .0
7.173	.4510					.3306	2.37	.42	7.77	.40	.013	.00	.00	PIPE
1042.390	246.119	.423	246.542	7.90	24.97	9.68	256.22	.00	.98	.99	1.000	.000	.00	1 .0
4.885	.4510					.2906	1.42	.44	7.25	.40	.013	.00	.00	PIPE
1049.563	249.354	.439	249.794	7.90	23.80	8.80	258.59	.00	.98	.99	1.000	.000	.00	1 .0
3.630	.4510					.2554	.93	.46	6.77	.40	.013	.00	.00	PIPE
1054.447	251.557	.455	252.013	7.90	22.70	8.00	260.01	.00	.98	1.00	1.000	.000	.00	1 .0
2.841	.4510					.2247	.64	.47	6.31	.40	.013	.00	.00	PIPE
1058.077	253.194	.472	253.667	7.90	21.64	7.27	260.94	.00	.98	1.00	1.000	.000	.00	1 .0
2.301	.4510					.1977	.45	.49	5.88	.40	.013	.00	.00	PIPE
1060.918	254.476	.490	254.966	7.90	20.63	6.61	261.58	.00	.98	1.00	1.000	.000	.00	1 .0
1.901	.4510					.1741	.33	.51	5.47	.40	.013	.00	.00	PIPE
1063.219	255.514	.508	256.022	7.90	19.67	6.01	262.03	.00	.98	1.00	1.000	.000	.00	1 .0
1.599	.4510					.1536	.25	.53	5.09	.40	.013	.00	.00	PIPE
1065.120	256.371	.528	256.899	7.90	18.76	5.46	262.36	.00	.98	1.00	1.000	.000	.00	1 .0

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:10-18-2024 Time: 1:46: 9

OCEAN BREEZE RANCH
Q100
LINE J1-4

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width / "N"	Height/Dia.-FT / X-Fall	Base Wt or I.D. / ZR	ZL	No Wth Prs/Pip / Type Ch
1066.719	257.092	.549	257.641	7.90	17.88	4.97	262.61	.00	.98	1.00	1.000	.000	.00	1 .0
1.365	.4510					.1356	.18	.55	4.73	.40	.013	.00	.00	PIPE
1068.084	257.708	.570	258.278	7.90	17.05	4.51	262.79	.00	.98	.99	1.000	.000	.00	1 .0
1.169	.4510					.1197	.14	.57	4.39	.40	.013	.00	.00	PIPE
1069.253	258.235	.593	258.828	7.90	16.26	4.10	262.93	.00	.98	.98	1.000	.000	.00	1 .0
1.009	.4510					.1060	.11	.59	4.07	.40	.013	.00	.00	PIPE
1070.262	258.690	.618	259.308	7.90	15.50	3.73	263.04	.00	.98	.97	1.000	.000	.00	1 .0
.880	.4510					.0939	.08	.62	3.77	.40	.013	.00	.00	PIPE
1071.142	259.087	.643	259.730	7.90	14.78	3.39	263.12	.00	.98	.96	1.000	.000	.00	1 .0
.763	.4510					.0833	.06	.64	3.49	.40	.013	.00	.00	PIPE
1071.905	259.431	.671	260.102	7.90	14.09	3.08	263.19	.00	.98	.94	1.000	.000	.00	1 .0
.667	.4510					.0742	.05	.67	3.22	.40	.013	.00	.00	PIPE
1072.572	259.732	.700	260.432	7.90	13.44	2.80	263.24	.00	.98	.92	1.000	.000	.00	1 .0
.579	.4510					.0662	.04	.70	2.96	.40	.013	.00	.00	PIPE
1073.151	259.993	.732	260.725	7.90	12.81	2.55	263.27	.00	.98	.89	1.000	.000	.00	1 .0
.502	.4510					.0593	.03	.73	2.71	.40	.013	.00	.00	PIPE
1073.653	260.219	.767	260.987	7.90	12.21	2.32	263.30	.00	.98	.85	1.000	.000	.00	1 .0
.434	.4510					.0534	.02	.77	2.46	.40	.013	.00	.00	PIPE

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:10-18-2024 Time: 1:46: 9

OCEAN BREEZE RANCH
Q100
LINE J1-4

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1074.087	260.415	.805	261.220	7.90	11.65	2.11	263.33	.00	.98	.79	1.000	.000	.00	1 .0
.366	.4510					.0485	.02	.81	2.22	.40	.013	.00	.00	PIPE
1074.453	260.580	.849	261.430	7.90	11.10	1.91	263.34	.00	.98	.72	1.000	.000	.00	1 .0
.298	.4510					.0447	.01	.85	1.96	.40	.013	.00	.00	PIPE
1074.751	260.715	.902	261.617	7.90	10.59	1.74	263.36	.00	.98	.59	1.000	.000	.00	1 .0
.189	.4510					.0438	.01	.90	1.67	.40	.013	.00	.00	PIPE
1074.940	260.800	.984	261.784	7.90	10.09	1.58	263.37	.00	.98	.25	1.000	.000	.00	1 .0
WALL	ENTRANCE													
1074.940	260.800	4.984	265.784	7.90	.53	.00	265.79	.00	.60	3.00	10.000	3.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.000														
CD	2	2	0	.000	10.000	3.000			.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
OCEAN BREEZE RANCH
HEADING LINE NO 2 IS -
Q100
HEADING LINE NO 3 IS -
LINE J1-5

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1000.000	241.660	1	242.520

ELEMENT NO 2 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1019.100	247.500	1	.013	52.112	-21.000	.000	0

ELEMENT NO 3 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1019.100	247.500	2	.200

ELEMENT NO 4 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1019.100	247.500	2	247.500

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:10-18-2024 Time: 1:59:59

OCEAN BREEZE RANCH
Q100
LINE J1-5

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1000.000	241.660	.712	242.372	13.30	22.23	7.67	250.05	.27	1.00	.91	1.000	.000	.00	1 .0
3.759	.3058					.1829	.69	.98	4.82	.60	.013	.00	.00	PIPE
1003.759	242.809	.734	243.544	13.30	21.50	7.18	250.72	.24	1.00	.88	1.000	.000	.00	1 .0
4.438	.3058					.1667	.74	.98	4.53	.60	.013	.00	.00	PIPE
1008.197	244.166	.769	244.936	13.30	20.50	6.52	251.46	.21	1.00	.84	1.000	.000	.00	1 .0
3.561	.3058					.1502	.53	.98	4.12	.60	.013	.00	.00	PIPE
1011.758	245.255	.808	246.063	13.30	19.54	5.93	251.99	.18	1.00	.79	1.000	.000	.00	1 .0
2.920	.3058					.1366	.40	.99	3.70	.60	.013	.00	.00	PIPE
1014.678	246.148	.853	247.001	13.30	18.63	5.39	252.39	.15	1.00	.71	1.000	.000	.00	1 .0
2.433	.3058					.1261	.31	1.00	3.27	.60	.013	.00	.00	PIPE
1017.112	246.892	.906	247.798	13.30	17.77	4.90	252.70	1.00	1.00	.58	1.000	.000	.00	1 .0
1.988	.3058					.1280	.25	1.00	2.76	.60	.013	.00	.00	PIPE
1019.100	247.500	.998	248.498	13.30	16.94	4.45	252.95	1.00	1.00	.09	1.000	.000	.00	1 .0
WALL	ENTRANCE													
1019.100	247.500	9.998	257.498	13.30	.44	.00	257.50	.00	.85	3.00	10.000	3.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.500														
CD	2	2	0	.000	10.000	4.500			.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -

OCEAN BREEZE RANCH

HEADING LINE NO 2 IS -

Q100

HEADING LINE NO 3 IS -

LINE J-2

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1000.000	261.660	1	261.660

ELEMENT NO 2 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1057.400	265.760	1	.013	.000	.000	.000	0

ELEMENT NO 3 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1057.400	265.760	2	.200

ELEMENT NO 4 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1057.400	265.760	2	265.760

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:10-18-2024 Time:10:40:55

OCEAN BREEZE RANCH

Q100

LINE J-2

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1000.000	261.660	.674	262.334	10.70	13.90	3.00	265.33	.00	1.26	1.49	1.500	.000	.00	1 .0
1.042	.0714					.0598	.06	.67	3.41	.64	.013	.00	.00	PIPE
1001.042	261.734	.675	262.410	10.70	13.86	2.98	265.39	.00	1.26	1.49	1.500	.000	.00	1 .0
15.898	.0714					.0560	.89	.68	3.39	.64	.013	.00	.00	PIPE
1016.939	262.870	.700	263.570	10.70	13.21	2.71	266.28	.00	1.26	1.50	1.500	.000	.00	1 .0
9.880	.0714					.0492	.49	.70	3.16	.64	.013	.00	.00	PIPE
1026.819	263.576	.727	264.303	10.70	12.60	2.46	266.77	.00	1.26	1.50	1.500	.000	.00	1 .0
7.009	.0714					.0433	.30	.73	2.95	.64	.013	.00	.00	PIPE
1033.828	264.076	.754	264.830	10.70	12.01	2.24	267.07	.00	1.26	1.50	1.500	.000	.00	1 .0
5.246	.0714					.0381	.20	.75	2.75	.64	.013	.00	.00	PIPE
1039.075	264.451	.783	265.234	10.70	11.45	2.04	267.27	.00	1.26	1.50	1.500	.000	.00	1 .0
4.077	.0714					.0336	.14	.78	2.56	.64	.013	.00	.00	PIPE
1043.152	264.742	.814	265.556	10.70	10.92	1.85	267.41	.00	1.26	1.49	1.500	.000	.00	1 .0
3.265	.0714					.0297	.10	.81	2.38	.64	.013	.00	.00	PIPE
1046.417	264.975	.846	265.822	10.70	10.41	1.68	267.50	.00	1.26	1.49	1.500	.000	.00	1 .0
2.632	.0714					.0262	.07	.85	2.21	.64	.013	.00	.00	PIPE
1049.048	265.163	.880	266.044	10.70	9.93	1.53	267.57	.00	1.26	1.48	1.500	.000	.00	1 .0
2.137	.0714					.0232	.05	.88	2.05	.64	.013	.00	.00	PIPE

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:10-18-2024 Time:10:40:55

OCEAN BREEZE RANCH

Q100

LINE J-2

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width / "N"	Height/Dia.-FT / X-Fall	Base Wt or I.D. / ZR	ZL	No Wth Prs/Pip / Type Ch
1051.185	265.316	.916	266.232	10.70	9.46	1.39	267.62	.00	1.26	1.46	1.500	.000	.00	1 .0
1.738	.0714				.0205	.04	.92	1.90	.64	.013	.00	.00	PIPE	
1052.923	265.440	.954	266.394	10.70	9.02	1.26	267.66	.00	1.26	1.44	1.500	.000	.00	1 .0
1.408	.0714				.0182	.03	.95	1.75	.64	.013	.00	.00	PIPE	
1054.331	265.541	.994	266.535	10.70	8.60	1.15	267.68	.00	1.26	1.42	1.500	.000	.00	1 .0
1.113	.0714				.0162	.02	.99	1.62	.64	.013	.00	.00	PIPE	
1055.444	265.620	1.037	266.657	10.70	8.20	1.04	267.70	.00	1.26	1.39	1.500	.000	.00	1 .0
.842	.0714				.0144	.01	1.04	1.49	.64	.013	.00	.00	PIPE	
1056.286	265.680	1.084	266.765	10.70	7.82	.95	267.71	.00	1.26	1.34	1.500	.000	.00	1 .0
.604	.0714				.0129	.01	1.08	1.37	.64	.013	.00	.00	PIPE	
1056.890	265.724	1.135	266.859	10.70	7.46	.86	267.72	.00	1.26	1.29	1.500	.000	.00	1 .0
.376	.0714				.0116	.00	1.14	1.24	.64	.013	.00	.00	PIPE	
1057.266	265.750	1.191	266.942	10.70	7.11	.78	267.73	.00	1.26	1.21	1.500	.000	.00	1 .0
.134	.0714				.0105	.00	1.19	1.12	.64	.013	.00	.00	PIPE	
1057.400	265.760	1.255	267.015	10.70	6.77	.71	267.73	.00	1.26	1.11	1.500	.000	.00	1 .0
WALL	ENTRANCE													
1057.400	265.760	3.255	269.015	10.70	.73	.01	269.02	.00	.56	4.50	10.000	4.500	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.500														
CD	2	2	0	.000	10.000	3.000			.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
OCEAN BREEZE RANCH
HEADING LINE NO 2 IS -
Q100
HEADING LINE NO 3 IS -
LINE Q2

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA STATION	INVERT	SECT	W S ELEV
1000.000	230.220	2	233.030

ELEMENT NO 2 IS A WALL EXIT *

U/S DATA STATION	INVERT	SECT
1000.000	230.220	1

ELEMENT NO 3 IS A REACH * * *

U/S DATA STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
1018.460	230.400	1	.013	.000	.000	.000	0

ELEMENT NO 4 IS A WALL ENTRANCE *

U/S DATA STATION	INVERT	SECT	FP
1018.460	230.400	2	.200

ELEMENT NO 5 IS A JUNCTION * * * * * * *

U/S DATA STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
1022.460	230.730	2	1	0	.013	3.800	.000	230.730	.000	.000	.000

RADIUS	ANGLE
.000	.000

ELEMENT NO 6 IS A WALL EXIT *

U/S DATA STATION	INVERT	SECT
1022.460	230.730	1

ELEMENT NO 7 IS A REACH * * *

U/S DATA STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
1046.960	230.980	1	.013	93.583	15.000	.000	0

ELEMENT NO 8 IS A WALL ENTRANCE *

U/S DATA STATION	INVERT	SECT	FP
1046.960	230.980	2	.200

ELEMENT NO 9 IS A SYSTEM HEADWORKS * *

U/S DATA STATION	INVERT	SECT	W S ELEV
1046.960	230.980	2	230.980

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	2		3.000														
CD	2	2	0	.000	10.000	3.000			.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -

OCEAN BREEZE RANCH

HEADING LINE NO 2 IS -

Q100

HEADING LINE NO 3 IS -

SD-J3

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1000.000	219.100	2	219.100

ELEMENT NO 2 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1000.000	219.100	1

ELEMENT NO 3 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1047.020	219.370	1	.013	.000	.000	.000	0

ELEMENT NO 4 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1047.020	219.370	2	.200

ELEMENT NO 5 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1047.020	219.370	2	219.370

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:10-25-2024 Time: 2:57:50

OCEAN BREEZE RANCH
Q100
SD-J3

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1000.000	219.100	1.642	220.742	35.80	7.27	.82	221.56	.00	1.64	3.00	10.000	3.000	.00	0 .0
WALL	EXIT													
1000.000	219.100	1.642	220.742	35.80	4.52	.32	221.06	.00	1.35	2.99	3.000	.000	.00	2 .0
1000.000	219.100	1.239	220.339	35.80	6.50	.66	220.99	.00	1.35	2.95	3.000	.000	.00	2 .0
29.484	.0057					.0055	.16	1.24	.84	1.23	.013	.00	.00	PIPE
1029.484	219.269	1.258	220.527	35.80	6.36	.63	221.16	.00	1.35	2.96	3.000	.000	.00	2 .0
15.252	.0057					.0050	.08	1.26	.81	1.23	.013	.00	.00	PIPE
1044.735	219.357	1.304	220.661	35.80	6.07	.57	221.23	.00	1.35	2.97	3.000	.000	.00	2 .0
2.285	.0057					.0044	.01	1.30	.76	1.23	.013	.00	.00	PIPE
1047.020	219.370	1.354	220.724	35.80	5.78	.52	221.24	.00	1.35	2.99	3.000	.000	.00	2 .0
WALL	ENTRANCE													
1047.020	219.370	2.354	221.724	35.80	5.07	.40	222.12	.00	1.64	3.00	10.000	3.000	.00	0 .0

FILE: SD-K1-DS.WSW W S P G W - EDIT LISTING - Version 14.11 Date:10-22-2024 Time:10:30:44

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING PAGE 1

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	2	0	.000	4.000	4.000			.00										
CD	2	4	1		3.000														

W S P G W PAGE NO 1

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -

SD-K1

HEADING LINE NO 2 IS -

Q100 05/21/2024

HEADING LINE NO 3 IS -

SD-K1 Q100 DOWNSTREAM

W S P G W PAGE NO 2

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	969.230	224.540	1	227.340

ELEMENT NO 2 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	969.230	224.540	1

ELEMENT NO 3 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	988.000	224.830	1	.013	.000	.000	.000	0

ELEMENT NO 4 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	988.000	224.830	1	224.830

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:10-22-2024 Time:10:30:45

SD-K1
Q100 05/21/2024

SD-K1 Q100 DOWNSTREAM

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width	Height/Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
969.230	224.540	2.800	227.340	42.60	3.80	.22	227.56	.00	1.52	4.00	4.000	4.000	.00	0 .0
WALL	EXIT													
969.230	224.540	2.801	227.341	42.60	3.80	.22	227.57	.00	1.52	4.00	4.000	4.000	.00	0 .0
7.444	.0155					.0010	.01	2.80	.40	.99	.013	.00	.00	RECTANG
976.674	224.655	2.670	227.325	42.60	3.99	.25	227.57	.00	1.52	4.00	4.000	4.000	.00	0 .0
6.931	.0155					.0011	.01	2.67	.43	.99	.013	.00	.00	RECTANG
983.605	224.762	2.546	227.308	42.60	4.18	.27	227.58	.00	1.52	4.00	4.000	4.000	.00	0 .0
4.395	.0155					.0012	.01	2.55	.46	.99	.013	.00	.00	RECTANG
988.000	224.830	2.465	227.295	42.60	4.32	.29	227.59	.00	1.52	4.00	4.000	4.000	.00	0 .0

Oldcastle Infrastructure
A CRH COMPANY

Nutrient Separating Baffle Box® (NSBB™) Head Loss Calculator

V2020.01; *5/28/2024*

Project Information

Project Name:	**Ocean Breeze Ranch**
Location:	**Basin 3D-1**
Design Basis:	**80% of 150µm**
Screen Basket Capacity (% Full):	**0% (Empty)**
Treatment Flow Rate (cfs):	**1.73**
Peak Flow Rate (cfs):	**48.00**
NSBB Model:	**NSBB-612**

Inlet & Outlet Pipe Information

Inlet Pipe Diameter (in):	**36**
Inlet Invert Elevation (ft):	**224.91**
Outlet Pipe Diameter (in):	**36**
Outlet Invert Elevation (ft):	**224.81**
Outlet Slope %:	**1.54%**
Manning's Roughness Coefficient (n):	**0.012**
Tailwater Present?	**Yes**
Tailwater Elevation:	227.34

Outlet Pipe Flow Characteristics

	Treatment	*Peak*
Normal Depth During Design Flow (ft):	**0.288**	**1.56**
Flow Area (sq ft):	**0.35**	**3.71**
Velocity (ft/s):	**4.98**	**12.93**
Wetted Perimeter (ft):	**1.89**	**4.83**
Downstream Depth of Flow (ft):	**0.365**	**2.530**

NSBB Discharge Coefficients

Screen Orifice Coefficient, Co:	**0.60**
Outlet Pipe Entrance Coefficient, K:	**0.20**

System Design Summary

Rim Elevation (ft):	**231.13**
Rim to Invert Out Depth (ft):	**6.32**
Upstream WSE during Treatment (ft):	**225.173**
Upstream WSE during Peak Flow (ft):	**228.343**

Disclaimer: Calculations are best estimate based on information available and are intended only for use by the party to whom they were transmitted and for the project referenced.

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		3.000														
CD	2	4	1		2.500														
CD	3	4	1		2.000														
CD	4	4	1		1.500														
CD	5	4	1		1.000														
CD	6	3	0	.000	6.000	4.000	.000	.000	.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -

OCEAN BREEZE BRANCH

HEADING LINE NO 2 IS -

Q100 10/15/2024

HEADING LINE NO 3 IS -

SD-K1

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1000.000	224.930	6	228.340

ELEMENT NO 2 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1000.000	224.930	6

WARNING - ADJACENT SECTIONS ARE NOT IDENTICAL - SEE SECTION NUMBERS AND CHANNEL DEFINITIONS

ELEMENT NO 3 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1024.270	225.300	1	.013	.000	.000	45.612	0

ELEMENT NO 4 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1024.270	225.300	6	.200

ELEMENT NO 5 IS A JUNCTION * * * * * * *

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	1028.270	225.400	6	6	0	.013	3.500	.002	25.400	.000	.000	.000

RADIUS	ANGLE
.000	.000

ELEMENT NO 6 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1028.270	225.400	1

ELEMENT NO 7 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1038.520	225.570	1	.013	.000	.000	.000	0

ELEMENT NO 8 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1038.520	225.570	6	.200

ELEMENT NO 9 IS A JUNCTION * * * * * * *

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	1042.520	225.670	6	5	0	.013	.010	.000	227.670	.000	.000	-.700

RADIUS	ANGLE
34.725	6.600

ELEMENT NO 10 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1042.520	225.670	1

WATER SURFACE PROFILE - ELEMENT CARD LISTING

```
ELEMENT NO  11 IS A REACH            *         *     *
                U/S DATA   STATION    INVERT  SECT              N                        RADIUS    ANGLE     ANG PT  MAN H
                           1179.180  226.360    1              .013                      300.117  -26.090      .000     0
ELEMENT NO  12 IS A  WALL  ENTRANCE                 *
                U/S DATA   STATION    INVERT  SECT             FP
                           1179.180  226.360    6              .200
ELEMENT NO  13 IS A REACH            *         *     *
                U/S DATA   STATION    INVERT  SECT              N                        RADIUS    ANGLE     ANG PT  MAN H
                           1183.180  226.460    6              .013                        .000     .000      .000     0
ELEMENT NO  14 IS A  WALL  EXIT                     *
                U/S DATA   STATION    INVERT  SECT
                           1183.180  226.460    1
ELEMENT NO  15 IS A REACH            *         *     *
                U/S DATA   STATION    INVERT  SECT              N                        RADIUS    ANGLE     ANG PT  MAN H
                           1275.540  226.970    1              .013                        .000     .000      .000     0
ELEMENT NO  16 IS A REACH            *         *     *
                U/S DATA   STATION    INVERT  SECT              N                        RADIUS    ANGLE     ANG PT  MAN H
                           1338.920  227.320    1              .013                      484.188    7.500      .000     0
ELEMENT NO  17 IS A  WALL  ENTRANCE                 *
                U/S DATA   STATION    INVERT  SECT             FP
                           1338.920  227.320    6              .200
ELEMENT NO  18 IS A JUNCTION         *         *     *     *           *                  *              *
                U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3        Q4     INVERT-3 INVERT-4  PHI 3  PHI 4
                           1342.920  227.820    6     3     0   .013    10.880      .000   228.320      .000    .000     .800
                                                                                          RADIUS    ANGLE
                                                                                          46.772   4.900
ELEMENT NO  19 IS A  WALL  EXIT                     *
                U/S DATA   STATION    INVERT  SECT
                           1342.920  227.820    2
ELEMENT NO  20 IS A REACH            *         *     *
                U/S DATA   STATION    INVERT  SECT              N                        RADIUS    ANGLE     ANG PT  MAN H
                           1410.640  228.160    2              .013                        .000     .000      .000     0
ELEMENT NO  21 IS A  WALL  ENTRANCE                 *
                U/S DATA   STATION    INVERT  SECT             FP
                           1410.640  228.160    6              .200
ELEMENT NO  22 IS A JUNCTION         *         *     *     *           *                  *              *
                U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3        Q4     INVERT-3 INVERT-4  PHI 3  PHI 4
                           1414.640  228.660    6     5     4   .013     .010      .010   229.660   229.160 -90.000     .900
                                                                                          RADIUS    ANGLE
                                                                                            .000     .000
                                                W S P G W                                                    PAGE NO   4
                          WATER SURFACE PROFILE - ELEMENT CARD LISTING
ELEMENT NO  23 IS A  WALL  EXIT                     *
                U/S DATA   STATION    INVERT  SECT
                           1414.640  228.660    3
ELEMENT NO  24 IS A REACH            *         *     *
                U/S DATA   STATION    INVERT  SECT              N                        RADIUS    ANGLE     ANG PT  MAN H
                           1538.330  230.900    3              .013                        .000     .000      .000     0
ELEMENT NO  25 IS A REACH            *         *     *
                U/S DATA   STATION    INVERT  SECT              N                        RADIUS    ANGLE     ANG PT  MAN H
                           1581.050  231.680    3              .013                      345.718   -7.080      .000     0
ELEMENT NO  26 IS A  WALL  ENTRANCE                 *
                U/S DATA   STATION    INVERT  SECT             FP
                           1581.050  231.680    6              .200
ELEMENT NO  27 IS A JUNCTION         *         *     *     *           *                  *              *
                U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3        Q4     INVERT-3 INVERT-4  PHI 3  PHI 4
                           1585.050  232.010    6     5     4   .013     3.300     2.100   233.010   229.160 -90.000     .800
                                                                                          RADIUS    ANGLE
```

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                                                                                                                    36.965   6.200
ELEMENT NO  28 IS A  WALL  EXIT                        *
                  U/S DATA   STATION    INVERT  SECT
                             1585.050  232.010    3
ELEMENT NO  29 IS A REACH             *         *     *
                  U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                             1626.820  234.280    3              .013                       343.856   -6.960      .000     0
ELEMENT NO  30 IS A REACH             *         *     *
                  U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                             1727.230  239.740    3              .013                         .000     .000      .000     0
ELEMENT NO  31 IS A REACH             *         *     *
                  U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                             1839.880  245.870    3              .013                       356.201   18.120      .000     0
ELEMENT NO  32 IS A  WALL  ENTRANCE                    *
                  U/S DATA   STATION    INVERT  SECT             FP
                             1839.880  245.870    6              .200
ELEMENT NO  33 IS A JUNCTION          *         *     *     *               *                  *                 *
                  U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3        Q4     INVERT-3 INVERT-4  PHI 3  PHI 4
                             1843.880  246.200    6     5     4   .013    1.000     1.400   246.700   246.200 -90.000     .900
                                                                                            RADIUS    ANGLE
                                                                                              .000     .000
                                                  W S P G W                                                        PAGE NO   5
                          WATER SURFACE PROFILE - ELEMENT CARD LISTING
ELEMENT NO  34 IS A  WALL  EXIT                        *
                  U/S DATA   STATION    INVERT  SECT
                             1843.880  246.200    3
ELEMENT NO  35 IS A REACH             *         *     *
                  U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                             1994.800  254.830    3              .013                       356.140   24.280      .000     0
ELEMENT NO  36 IS A REACH             *         *     *
                  U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                             2061.980  258.670    3              .013                         .000     .000      .000     0
ELEMENT NO  37 IS A  WALL  ENTRANCE                    *
                  U/S DATA   STATION    INVERT  SECT             FP
                             2061.980  258.670    6              .200
ELEMENT NO  38 IS A JUNCTION          *         *     *     *               *                  *                 *
                  U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3        Q4     INVERT-3 INVERT-4  PHI 3  PHI 4
                             2065.980  259.080    6     5     4   .013    3.900     4.000   259.080   259.080 -90.000     .700
                                                                                            RADIUS    ANGLE
                                                                                            30.558    7.500
ELEMENT NO  39 IS A  WALL  EXIT                        *
                  U/S DATA   STATION    INVERT  SECT
                             2065.980  259.080    4
ELEMENT NO  40 IS A REACH             *         *     *
                  U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                             2104.860  261.220    4              .013                         .000     .000      .000     0
ELEMENT NO  41 IS A  WALL  ENTRANCE                    *
                  U/S DATA   STATION    INVERT  SECT             FP
                             2104.860  261.220    6              .200
ELEMENT NO  42 IS A JUNCTION          *         *     *     *               *                  *                 *
                  U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3        Q4     INVERT-3 INVERT-4  PHI 3  PHI 4
                             2108.860  261.800    6     5     4   .013    1.700     1.900   261.800   261.800 -90.000     .900
                                                                                            RADIUS    ANGLE
                                                                                              .000     .000
ELEMENT NO  43 IS A  WALL  EXIT                        *
                  U/S DATA   STATION    INVERT  SECT
                             2108.860  261.800    4
                                                  W S P G W                                                        PAGE NO   6
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WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 44 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	2276.420	270.920	4	.013	.000	.000	.000	0

ELEMENT NO 45 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	2276.420	270.920	4	.200

ELEMENT NO 46 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	2276.420	270.920	4	270.920

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:10-23-2024 Time:10:15:50

OCEAN BREEZE BRANCH
Q100 10/15/2024
SD-K1

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width / "N"	Height/Dia.-FT / X-Fall	Base Wt or I.D. / ZR	ZL	No Wth Prs/Pip / Type Ch
1000.000	224.930	3.410	228.340	46.21	3.39	.18	228.52	.00	1.61	4.00	6.000	4.000	.00	0 .0
WALL	EXIT													
1000.000	224.930	3.411	228.340	46.21	6.54	.66	229.00	.00	2.21	.00	3.000	.000	.00	1 .0
24.270	.0152				.0048	.12	3.41	.00	1.61	.013	.00	.00	PIPE	
1024.270	225.300	3.257	228.557	46.21	6.54	.66	229.22	.00	2.21	.00	3.000	.000	.00	1 .0
WALL	ENTRANCE													
1024.270	225.300	3.888	229.188	46.21	2.97	.14	229.33	.00	1.61	4.00	6.000	4.000	.00	0 .0
JUNCT STR	.0250				.0005	.00	3.89	.27		.013	.00	.00	BOX	
1028.270	225.400	3.825	229.225	42.71	2.79	.12	229.35	.00	1.52	4.00	6.000	4.000	.00	0 .0
WALL	EXIT													
1028.270	225.400	3.826	229.226	42.71	6.04	.57	229.79	.00	2.13	.00	3.000	.000	.00	1 .0
10.250	.0166				.0041	.04	3.83	.00	1.50	.013	.00	.00	PIPE	
1038.520	225.570	3.698	229.268	42.71	6.04	.57	229.83	.00	2.13	.00	3.000	.000	.00	1 .0
WALL	ENTRANCE													
1038.520	225.570	4.261	229.831	42.71	2.51	.10	229.93	.02	1.52	4.00	6.000	4.000	.00	0 .0
JUNCT STR	.0250				.0003	.00	4.28	.21		.013	.00	.00	BOX	
1042.520	225.670	4.159	229.829	42.70	2.57	.10	229.93	.00	1.52	4.00	6.000	4.000	.00	0 .0
WALL	EXIT													

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:10-23-2024 Time:10:15:50

OCEAN BREEZE BRANCH
Q100 10/15/2024
SD-K1

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width	Height/Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1042.520	225.670	4.159	229.829	42.70	6.04	.57	230.40	.00	2.13	.00	3.000	.000	.00	1 .0
136.660	.0050					.0041	.56	.00	.00	2.23	.013	.00	.00	PIPE
1179.180	226.360	4.090	230.450	42.70	6.04	.57	231.02	.00	2.13	.00	3.000	.000	.00	1 .0
WALL	ENTRANCE													
1179.180	226.360	4.674	231.034	42.70	2.28	.08	231.11	.00	1.52	4.00	6.000	4.000	.00	0 .0
4.000	.0250					.0003	.00	4.67	.19	.84	.013	.00	.00	BOX
1183.180	226.460	4.571	231.031	42.70	2.34	.08	231.12	.00	1.52	4.00	6.000	4.000	.00	0 .0
WALL	EXIT													
1183.180	226.460	4.572	231.032	42.70	6.04	.57	231.60	.00	2.13	.00	3.000	.000	.00	1 .0
92.360	.0055					.0041	.38	4.57	.00	2.15	.013	.00	.00	PIPE
1275.540	226.970	4.441	231.411	42.70	6.04	.57	231.98	.00	2.13	.00	3.000	.000	.00	1 .0
63.380	.0055					.0041	.26	.00	.00	2.15	.013	.00	.00	PIPE
1338.920	227.320	4.383	231.703	42.70	6.04	.57	232.27	.00	2.13	.00	3.000	.000	.00	1 .0
WALL	ENTRANCE													
1338.920	227.320	4.978	232.298	42.70	2.14	.07	232.37	.01	1.52	4.00	6.000	4.000	.00	0 .0
JUNCT STR	.1250					.0002	.00	4.99	.17		.013	.00	.00	BOX
1342.920	227.820	4.474	232.294	31.82	1.78	.05	232.34	.00	1.25	4.00	6.000	4.000	.00	0 .0
WALL	EXIT													

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:10-23-2024 Time:10:15:50

OCEAN BREEZE BRANCH
Q100 10/15/2024
SD-K1

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width / "N"	Height/Dia.-FT / X-Fall	Base Wt or I.D. / ZR	ZL	No Wth Prs/Pip / Type Ch
1342.920	227.820	4.474	232.294	31.82	6.48	.65	232.95	.00	1.92	.00	2.500	.000	.00	1 .0
67.720	.0050				.0060	.41	4.47	.00	2.50	.013	.00	.00		PIPE
1410.640	228.160	4.542	232.702	31.82	6.48	.65	233.35	.00	1.92	.00	2.500	.000	.00	1 .0
WALL	ENTRANCE													
1410.640	228.160	5.282	233.442	31.82	1.51	.04	233.48	.00	1.25	4.00	6.000	4.000	.00	0 .0
JUNCT STR	.1250				.0001	.00	5.28	.12		.013	.00	.00		BOX
1414.640	228.660	4.775	233.435	31.80	1.67	.04	233.48	.00	1.25	4.00	6.000	4.000	.00	0 .0
WALL	EXIT													
1414.640	228.660	4.775	233.435	31.80	10.12	1.59	235.03	.00	1.89	.00	2.000	.000	.00	1 .0
123.690	.0181				.0198	2.44	4.78	.00	1.73	.013	.00	.00		PIPE
1538.330	230.900	4.979	235.879	31.80	10.12	1.59	237.47	.00	1.89	.00	2.000	.000	.00	1 .0
42.720	.0183				.0198	.84	.00	.00	1.72	.013	.00	.00		PIPE
1581.050	231.680	5.133	236.813	31.80	10.12	1.59	238.40	.00	1.89	.00	2.000	.000	.00	1 .0
WALL	ENTRANCE													
1581.050	231.680	7.009	238.689	31.80	1.32	.03	238.72	.00	1.25	4.00	6.000	4.000	.00	0 .0
JUNCT STR	.0825				.0001	.00	.00	.10		.013	.00	.00		BOX
1585.050	232.010	6.693	238.703	26.40	1.10	.02	238.72	.00	1.11	4.00	6.000	4.000	.00	0 .0
WALL	EXIT													

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:10-23-2024 Time:10:15:50

OCEAN BREEZE BRANCH
Q100 10/15/2024
SD-K1

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1585.050	232.010	6.694	238.704	26.40	8.40	1.10	239.80	.00	1.79	.00	2.000	.000	.00	1 .0
41.770	.0543					.0136	.57	.00	.00	1.00	.013	.00	.00	PIPE
1626.820	234.280	5.054	239.334	26.40	8.40	1.10	240.43	.00	1.79	.00	2.000	.000	.00	1 .0
42.311	.0544					.0136	.58	5.05	.00	1.00	.013	.00	.00	PIPE
1669.130	236.581	3.329	239.909	26.40	8.40	1.10	241.01	.00	1.79	.00	2.000	.000	.00	1 .0
HYDRAULIC JUMP														
1669.130	236.581	1.015	237.596	26.40	16.49	4.22	241.82	.00	1.79	2.00	2.000	.000	.00	1 .0
58.099	.0544					.0502	2.92	1.02	3.25	1.00	.013	.00	.00	PIPE
1727.230	239.740	1.034	240.774	26.40	16.11	4.03	244.80	.05	1.79	2.00	2.000	.000	.00	1 .0
22.959	.0544					.0472	1.08	1.08	3.13	1.00	.013	.00	.00	PIPE
1750.189	240.989	1.053	242.042	26.40	15.74	3.85	245.89	.04	1.79	2.00	2.000	.000	.00	1 .0
27.277	.0544					.0431	1.18	1.10	3.03	1.00	.013	.00	.00	PIPE
1777.466	242.474	1.094	243.568	26.40	15.01	3.50	247.07	.04	1.79	1.99	2.000	.000	.00	1 .0
16.782	.0544					.0380	.64	1.13	2.81	1.00	.013	.00	.00	PIPE
1794.248	243.387	1.137	244.524	26.40	14.31	3.18	247.70	.04	1.79	1.98	2.000	.000	.00	1 .0
11.720	.0544					.0336	.39	1.17	2.61	1.00	.013	.00	.00	PIPE
1805.968	244.025	1.182	245.207	26.40	13.65	2.89	248.10	.03	1.79	1.97	2.000	.000	.00	1 .0
8.656	.0544					.0297	.26	1.21	2.42	1.00	.013	.00	.00	PIPE

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:10-23-2024 Time:10:15:50

OCEAN BREEZE BRANCH
Q100 10/15/2024
SD-K1

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1814.624	244.496	1.231	245.727	26.40	13.01	2.63	248.36	.03	1.79	1.95	2.000	.000	.00	1 .0
6.692	.0544					.0263	.18	1.26	2.25	1.00	.013	.00	.00	PIPE
1821.315	244.860	1.282	246.142	26.40	12.41	2.39	248.53	.03	1.79	1.92	2.000	.000	.00	1 .0
5.225	.0544					.0234	.12	1.31	2.08	1.00	.013	.00	.00	PIPE
1826.540	245.144	1.337	246.481	26.40	11.83	2.17	248.65	.02	1.79	1.88	2.000	.000	.00	1 .0
4.148	.0544					.0208	.09	1.36	1.91	1.00	.013	.00	.00	PIPE
1830.688	245.370	1.395	246.765	26.40	11.28	1.97	248.74	.02	1.79	1.84	2.000	.000	.00	1 .0
3.248	.0544					.0185	.06	1.42	1.76	1.00	.013	.00	.00	PIPE
1833.936	245.547	1.458	247.005	26.40	10.75	1.80	248.80	.02	1.79	1.78	2.000	.000	.00	1 .0
2.491	.0544					.0166	.04	1.48	1.61	1.00	.013	.00	.00	PIPE
1836.427	245.682	1.527	247.209	26.40	10.25	1.63	248.84	.02	1.79	1.70	2.000	.000	.00	1 .0
1.808	.0544					.0149	.03	1.54	1.47	1.00	.013	.00	.00	PIPE
1838.236	245.781	1.604	247.385	26.40	9.78	1.48	248.87	.01	1.79	1.59	2.000	.000	.00	1 .0
1.197	.0544					.0136	.02	1.62	1.32	1.00	.013	.00	.00	PIPE
1839.432	245.846	1.690	247.536	26.40	9.32	1.35	248.88	.01	1.79	1.45	2.000	.000	.00	1 .0
.448	.0544					.0125	.01	1.70	1.17	1.00	.013	.00	.00	PIPE
1839.880	245.870	1.795	247.665	26.40	8.88	1.23	248.89	.01	1.79	1.21	2.000	.000	.00	1 .0
WALL	ENTRANCE													

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:10-23-2024 Time:10:15:50

OCEAN BREEZE BRANCH
Q100 10/15/2024
SD-K1

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width	Height/Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1839.880	245.870	4.795	250.665	26.40	1.38	.03	250.69	.00	1.11	4.00	6.000	4.000	.00	0 .0
JUNCT STR	.0825					.0001	.00	4.80	.11		.013	.00	.00	BOX
1843.880	246.200	4.470	250.670	24.00	1.34	.03	250.70	.00	1.04	4.00	6.000	4.000	.00	0 .0
WALL EXIT														
1843.880	246.200	4.471	250.671	24.00	7.64	.91	251.58	.00	1.73	.00	2.000	.000	.00	1 .0
25.705	.0572					.0113	.29	.00	.00	.93	.013	.00	.00	PIPE
1869.585	247.670	3.315	250.985	24.00	7.64	.91	251.89	.00	1.73	.00	2.000	.000	.00	1 .0
HYDRAULIC JUMP														
1869.585	247.670	.935	248.604	24.00	16.67	4.31	252.92	.05	1.73	2.00	2.000	.000	.00	1 .0
8.938	.0572					.0566	.51	.98	3.46	.93	.013	.00	.00	PIPE
1878.523	248.181	.936	249.117	24.00	16.63	4.29	253.41	.05	1.73	2.00	2.000	.000	.00	1 .0
86.012	.0572					.0531	4.56	.98	3.45	.93	.013	.00	.00	PIPE
1964.535	253.099	.971	254.070	24.00	15.85	3.90	257.97	.04	1.73	2.00	2.000	.000	.00	1 .0
30.265	.0572					.0467	1.41	1.01	3.21	.93	.013	.00	.00	PIPE
1994.800	254.830	1.009	255.839	24.00	15.11	3.55	259.39	.00	1.73	2.00	2.000	.000	.00	1 .0
11.767	.0572					.0422	.50	1.01	2.99	.93	.013	.00	.00	PIPE
2006.568	255.503	1.031	256.534	24.00	14.69	3.35	259.89	.00	1.73	2.00	2.000	.000	.00	1 .0
13.954	.0572					.0382	.53	1.03	2.86	.93	.013	.00	.00	PIPE

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:10-23-2024 Time:10:15:50

OCEAN BREEZE BRANCH
Q100 10/15/2024
SD-K1

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
2020.521	256.300	1.071	257.371	24.00	14.01	3.05	260.42	.00	1.73	1.99	2.000	.000	.00	1 .0
10.013	.0572					.0337	.34	1.07	2.66	.93	.013	.00	.00	PIPE
2030.534	256.873	1.113	257.986	24.00	13.36	2.77	260.76	.00	1.73	1.99	2.000	.000	.00	1 .0
7.581	.0572					.0297	.23	1.11	2.48	.93	.013	.00	.00	PIPE
2038.115	257.306	1.157	258.463	24.00	12.74	2.52	260.98	.00	1.73	1.98	2.000	.000	.00	1 .0
5.895	.0572					.0263	.15	1.16	2.30	.93	.013	.00	.00	PIPE
2044.009	257.643	1.204	258.847	24.00	12.14	2.29	261.14	.00	1.73	1.96	2.000	.000	.00	1 .0
4.696	.0572					.0233	.11	1.20	2.13	.93	.013	.00	.00	PIPE
2048.706	257.911	1.253	259.164	24.00	11.58	2.08	261.25	.00	1.73	1.93	2.000	.000	.00	1 .0
3.729	.0572					.0206	.08	1.25	1.97	.93	.013	.00	.00	PIPE
2052.435	258.124	1.306	259.431	24.00	11.04	1.89	261.32	.00	1.73	1.90	2.000	.000	.00	1 .0
2.988	.0572					.0183	.05	1.31	1.82	.93	.013	.00	.00	PIPE
2055.423	258.295	1.362	259.657	24.00	10.53	1.72	261.38	.00	1.73	1.86	2.000	.000	.00	1 .0
2.336	.0572					.0163	.04	1.36	1.68	.93	.013	.00	.00	PIPE
2057.760	258.429	1.423	259.852	24.00	10.04	1.56	261.42	.00	1.73	1.81	2.000	.000	.00	1 .0
1.813	.0572					.0146	.03	1.42	1.54	.93	.013	.00	.00	PIPE
2059.573	258.532	1.488	260.021	24.00	9.57	1.42	261.44	.00	1.73	1.75	2.000	.000	.00	1 .0
1.299	.0572					.0131	.02	1.49	1.41	.93	.013	.00	.00	PIPE

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:10-23-2024 Time:10:15:50

OCEAN BREEZE BRANCH
Q100 10/15/2024
SD-K1

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width	Height/Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
2060.872	258.607	1.560	260.167	24.00	9.12	1.29	261.46	.00	1.73	1.66	2.000	.000	.00	1 .0
.805	.0572					.0118	.01	1.56	1.28	.93	.013	.00	.00	PIPE
2061.677	258.653	1.641	260.294	24.00	8.70	1.18	261.47	.00	1.73	1.53	2.000	.000	.00	1 .0
.302	.0572					.0108	.00	1.64	1.14	.93	.013	.00	.00	PIPE
2061.980	258.670	1.735	260.405	24.00	8.29	1.07	261.47	.00	1.73	1.36	2.000	.000	.00	1 .0
WALL	ENTRANCE													
2061.980	258.670	3.735	262.405	24.00	1.61	.04	262.45	.01	1.04	4.00	6.000	4.000	.00	0 .0
JUNCT STR	.1025					.0001	.00	3.75	.15		.013	.00	.00	BOX
2065.980	259.080	3.348	262.428	16.10	1.20	.02	262.45	.00	.80	4.00	6.000	4.000	.00	0 .0
WALL	EXIT													
2065.980	259.080	3.348	262.428	16.10	9.11	1.29	263.72	.00	1.43	.00	1.500	.000	.00	1 .0
38.880	.0550					.0235	.91	3.35	.00	.88	.013	.00	.00	PIPE
2104.860	261.220	2.122	263.342	16.10	9.11	1.29	264.63	.00	1.43	.00	1.500	.000	.00	1 .0
WALL	ENTRANCE													
2104.860	261.220	3.646	264.866	16.10	1.10	.02	264.88	.00	.80	4.00	6.000	4.000	.00	0 .0
JUNCT STR	.1450					.0001	.00	3.65	.10		.013	.00	.00	BOX
2108.860	261.800	3.073	264.873	12.50	1.02	.02	264.89	.00	.67	4.00	6.000	4.000	.00	0 .0
WALL	EXIT													

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:10-23-2024 Time:10:15:50

OCEAN BREEZE BRANCH
Q100 10/15/2024
SD-K1

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
2108.860	261.800	3.074	264.874	12.50	7.07	.78	265.65	.00	1.33	.00	1.500	.000	.00	1 .0
16.194	.0544					.0142	.23	3.07	.00	.76	.013	.00	.00	PIPE
2125.054	262.681	2.421	265.102	12.50	7.07	.78	265.88	.00	1.33	.00	1.500	.000	.00	1 .0
HYDRAULIC JUMP														
2125.054	262.681	.759	263.440	12.50	13.94	3.02	266.46	.00	1.33	1.50	1.500	.000	.00	1 .0
1.936	.0544					.0544	.11	.76	3.18	.76	.013	.00	.00	PIPE
2126.990	262.787	.759	263.546	12.50	13.94	3.02	266.56	.00	1.33	1.50	1.500	.000	.00	1 .0
75.972	.0544					.0515	3.91	.76	3.18	.76	.013	.00	.00	PIPE
2202.962	266.922	.785	267.707	12.50	13.35	2.77	270.47	.00	1.33	1.50	1.500	.000	.00	1 .0
25.177	.0544					.0456	1.15	.79	2.97	.76	.013	.00	.00	PIPE
2228.139	268.292	.815	269.107	12.50	12.73	2.51	271.62	.00	1.33	1.49	1.500	.000	.00	1 .0
13.814	.0544					.0403	.56	.82	2.77	.76	.013	.00	.00	PIPE
2241.953	269.044	.848	269.892	12.50	12.13	2.29	272.18	.00	1.33	1.49	1.500	.000	.00	1 .0
9.270	.0544					.0356	.33	.85	2.57	.76	.013	.00	.00	PIPE
2251.223	269.549	.881	270.430	12.50	11.57	2.08	272.51	.00	1.33	1.48	1.500	.000	.00	1 .0
6.654	.0544					.0314	.21	.88	2.38	.76	.013	.00	.00	PIPE
2257.877	269.911	.917	270.828	12.50	11.03	1.89	272.72	.00	1.33	1.46	1.500	.000	.00	1 .0
5.033	.0544					.0279	.14	.92	2.21	.76	.013	.00	.00	PIPE

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:10-23-2024 Time:10:15:50

OCEAN BREEZE BRANCH
Q100 10/15/2024
SD-K1

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width / "N"	Height/ Dia.-FT / X-Fall	Base Wt or I.D. / ZR	ZL	No Wth Prs/Pip / Type Ch
2262.909	270.185	.955	271.140	12.50	10.52	1.72	272.86	.00	1.33	1.44	1.500	.000	.00	1 .0
3.875	.0544					.0247	.10	.96	2.04	.76	.013	.00	.00	PIPE
2266.785	270.396	.996	271.392	12.50	10.03	1.56	272.95	.00	1.33	1.42	1.500	.000	.00	1 .0
3.049	.0544					.0220	.07	1.00	1.88	.76	.013	.00	.00	PIPE
2269.834	270.562	1.039	271.601	12.50	9.56	1.42	273.02	.00	1.33	1.38	1.500	.000	.00	1 .0
2.355	.0544					.0196	.05	1.04	1.73	.76	.013	.00	.00	PIPE
2272.189	270.690	1.086	271.776	12.50	9.12	1.29	273.07	.00	1.33	1.34	1.500	.000	.00	1 .0
1.797	.0544					.0175	.03	1.09	1.59	.76	.013	.00	.00	PIPE
2273.986	270.788	1.137	271.925	12.50	8.69	1.17	273.10	.00	1.33	1.28	1.500	.000	.00	1 .0
1.284	.0544					.0158	.02	1.14	1.45	.76	.013	.00	.00	PIPE
2275.271	270.857	1.194	272.052	12.50	8.29	1.07	273.12	.00	1.33	1.21	1.500	.000	.00	1 .0
.846	.0544					.0143	.01	1.19	1.31	.76	.013	.00	.00	PIPE
2276.116	270.903	1.257	272.161	12.50	7.90	.97	273.13	.00	1.33	1.11	1.500	.000	.00	1 .0
.304	.0544					.0131	.00	1.26	1.16	.76	.013	.00	.00	PIPE
2276.420	270.920	1.334	272.254	12.50	7.53	.88	273.13	.00	1.33	.94	1.500	.000	.00	1 .0
WALL	ENTRANCE													
2276.420	270.920	1.415	272.335	12.50	7.24	.81	273.15	.00	1.33	.69	1.500	.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.000														
CD	2	2	0	.000	10.000	4.000			.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -

OCEAN BREEZE RANCH

HEADING LINE NO 2 IS -

Q100

HEADING LINE NO 3 IS -

LINE K1-2

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1000.000	229.660	1	233.440

ELEMENT NO 2 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1004.250	229.700	1	.013	.000	.000	.000	0

ELEMENT NO 3 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1004.250	229.700	2	.200

ELEMENT NO 4 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1004.250	229.700	2	229.700

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:10-19-2024 Time: 3:33:30

OCEAN BREEZE RANCH
Q100
LINE K1-2

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1000.000	229.660	3.780	233.440	.60	.76	.01	233.45	.00	.32	.00	1.000	.000	.00	1 .0
4.250	.0094					.0003	.00	3.78	.00	.28	.013	.00	.00	PIPE
1004.250	229.700	3.741	233.441	.60	.76	.01	233.45	.00	.32	.00	1.000	.000	.00	1 .0
WALL	ENTRANCE													
1004.250	229.700	3.752	233.452	.60	.04	.00	233.45	.00	.09	4.00	10.000	4.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.500														
CD	2	2	0	.000	10.000	4.000			.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -

OCEAN BREEZE RANCH

HEADING LINE NO 2 IS -

Q100

HEADING LINE NO 3 IS -

LINE K1-3

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1000.000	229.160	1	233.440

ELEMENT NO 2 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1016.250	229.320	1	.013	.000	.000	.000	0

ELEMENT NO 3 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1016.250	229.320	2	.200

ELEMENT NO 4 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1016.250	229.320	2	229.320

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:10-19-2024 Time: 3:33:24

OCEAN BREEZE RANCH
Q100
LINE K1-3

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT or "N"	Base Wt or I.D.	ZL	ZR	No Wth Prs/Pip	Ch
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp		X-Fall			Type	
1000.000	229.160	4.280	233.440	2.10	1.19	.02	233.46	.00	.55	.00	1.500	.000	.00		1	.0
16.250	.0098					.0004	.01	4.28	.00	.46	.013	.00	.00		PIPE	
1016.250	229.320	4.126	233.447	2.10	1.19	.02	233.47	.00	.55	.00	1.500	.000	.00		1	.0
WALL	ENTRANCE															
1016.250	229.320	4.153	233.473	2.10	.13	.00	233.47	.00	.20	4.00	10.000	4.000	.00		0	.0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.000														
CD	2	2	0	.000	10.000	4.000			.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -

OCEAN BREEZE RANCH

HEADING LINE NO 2 IS -

Q100

HEADING LINE NO 3 IS -

LINE K1-4

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1000.000	246.700	1	250.670

ELEMENT NO 2 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1004.250	248.000	1	.013	.000	.000	.000	0

ELEMENT NO 3 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1004.250	248.000	2	.200

ELEMENT NO 4 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1004.250	248.000	2	248.000

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:10-18-2024 Time: 9:32:12

OCEAN BREEZE RANCH
Q100
LINE K1-4

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT or "N"	Base Wt or I.D.	ZL	ZR	No Wth Prs/Pip	Type Ch
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp		X-Fall				
1000.000	246.700	3.970	250.670	1.00	1.27	.03	250.70	.00	.42	.00	1.000	.000	.00	.00	1	.0
4.250	.3059					.0008	.00	3.97	.00	.15	.013	.00	.00		PIPE	
1004.250	248.000	2.673	250.673	1.00	1.27	.03	250.70	.00	.42	.00	1.000	.000	.00	.00	1	.0
WALL	ENTRANCE															
1004.250	248.000	2.704	250.704	1.00	.09	.00	250.70	.00	.12	4.00	10.000	4.000	.00	.00	0	.0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.500														
CD	2	2	0	.000	10.000	4.000			.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -

OCEAN BREEZE RANCH

HEADING LINE NO 2 IS -

Q100

HEADING LINE NO 3 IS -

LINE K1-5

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1000.000	246.200	1	250.670

ELEMENT NO 2 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1016.250	246.400	1	.013	.000	.000	.000	0

ELEMENT NO 3 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1016.250	246.400	2	.200

ELEMENT NO 4 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1016.250	246.400	2	246.400

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:10-18-2024 Time: 9:32:30

OCEAN BREEZE RANCH

Q100

LINE K1-5

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1000.000	246.200	4.470	250.670	1.40	.79	.01	250.68	.00	.44	.00	1.500	.000	.00	1 .0
16.250	.0123					.0002	.00	4.47	.00	.35	.013	.00	.00	PIPE
1016.250	246.400	4.273	250.673	1.40	.79	.01	250.68	.00	.44	.00	1.500	.000	.00	1 .0
WALL	ENTRANCE													
1016.250	246.400	4.285	250.685	1.40	.08	.00	250.68	.00	.16	4.00	10.000	4.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.000														
CD	2	2	0	.000	10.000	4.000			.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -

OCEAN BREEZE RANCH

HEADING LINE NO 2 IS -

Q100

HEADING LINE NO 3 IS -

LINE K1-6

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1000.000	262.050	1	264.660

ELEMENT NO 2 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1004.250	263.800	1	.013	.000	.000	.000	0

ELEMENT NO 3 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1004.250	263.800	2	.200

ELEMENT NO 4 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1004.250	263.800	2	263.800

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:10-18-2024 Time: 9:32:47

OCEAN BREEZE RANCH

Q100

LINE K1-6

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1000.000	262.050	2.610	264.660	1.80	2.29	.08	264.74	.00	.57	.00	1.000	.000	.00	1 .0
3.934	.4118					.0025	.01	2.61	.00	.19	.013	.00	.00	PIPE
1003.934	263.670	1.000	264.670	1.80	2.29	.08	264.75	.00	.57	.00	1.000	.000	.00	1 .0
.205	.4118					.0024	.00	1.00	.00	.19	.013	.00	.00	PIPE
1004.139	263.754	.907	264.661	1.80	2.40	.09	264.75	.00	.57	.58	1.000	.000	.00	1 .0
.110	.4118					.0023	.00	.91	.37	.19	.013	.00	.00	PIPE
1004.250	263.800	.853	264.653	1.80	2.52	.10	264.75	.00	.57	.71	1.000	.000	.00	1 .0
WALL	ENTRANCE													
1004.250	263.800	1.853	265.653	1.80	.24	.00	265.65	.00	.18	4.00	10.000	4.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.500														
CD	2	2	0	.000	10.000	4.000			.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -

OCEAN BREEZE RANCH

HEADING LINE NO 2 IS -

Q100

HEADING LINE NO 3 IS -

LINE K1-7

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1000.000	261.550	1	264.660

ELEMENT NO 2 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1016.250	261.800	1	.013	.000	.000	.000	0

ELEMENT NO 3 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1016.250	261.800	2	.200

ELEMENT NO 4 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1016.250	261.800	2	261.800

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:10-18-2024 Time: 9:33: 1

OCEAN BREEZE RANCH

Q100

LINE K1-7

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1000.000	261.550	3.110	264.660	1.30	.74	.01	264.67	.00	.43	.00	1.500	.000	.00	1 .0
16.250	.0154					.0002	.00	3.11	.00	.32	.013	.00	.00	PIPE
1016.250	261.800	2.863	264.663	1.30	.74	.01	264.67	.00	.43	.00	1.500	.000	.00	1 .0
WALL	ENTRANCE													
1016.250	261.800	2.873	264.673	1.30	.11	.00	264.67	.00	.15	4.00	10.000	4.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		2.000														
CD	2	4	1		1.500														
CD	3	4	1		1.000														
CD	4	2	0	.000	6.000	4.000			.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -

OCEAN BREEZE RANCH

HEADING LINE NO 2 IS -

Q100 10/18/2024

HEADING LINE NO 3 IS -

SD-K2

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1067.030	228.320	4	232.290

ELEMENT NO 2 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1067.030	228.320	1

ELEMENT NO 3 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1128.080	228.630	1	.013	299.735	11.670	.000	0

ELEMENT NO 4 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1128.080	228.630	4	.200

ELEMENT NO 5 IS A JUNCTION * * * * * * *

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	1132.080	229.130	4	3	0	.013	7.100	.000	229.630	.000	.000	-.700

RADIUS	ANGLE
327.404	.700

ELEMENT NO 6 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1132.080	229.130	2

ELEMENT NO 7 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1329.980	231.110	2	.013	300.049	37.790	.000	0

ELEMENT NO 8 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1329.980	231.110	2	.200

ELEMENT NO 9 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1329.980	231.110	2	231.110

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:10-19-2024 Time: 3:34:10

OCEAN BREEZE RANCH
Q100 10/18/2024
SD-K2

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT or I.D.	Base Wt ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall ZR	Type Ch
1067.030	228.320	3.970	232.290	15.20	.96	.01	232.30	.00	.77	4.00	6.000	4.000 .00	0 .0
WALL	EXIT												
1067.030	228.320	3.970	232.290	15.20	4.84	.36	232.65	.00	1.41	.00	2.000	.000 .00	1 .0
61.050	.0051					.0045	.28	.00	.00	1.55	.013	.00 .00	PIPE
1128.080	228.630	3.962	232.592	15.20	4.84	.36	232.96	.00	1.41	.00	2.000	.000 .00	1 .0
WALL	ENTRANCE												
1128.080	228.630	4.384	233.014	15.20	.87	.01	233.03	.00	.77	4.00	6.000	4.000 .00	0 .0
JUNCT STR	.1250					.0000	.00	4.38	.07		.013	.00 .00	RECTANG
1132.080	229.130	3.892	233.022	8.10	.52	.00	233.03	.00	.50	4.00	6.000	4.000 .00	0 .0
WALL	EXIT												
1132.080	229.130	3.892	233.022	8.10	4.58	.33	233.35	.00	1.10	.00	1.500	.000 .00	1 .0
197.900	.0100					.0059	1.18	.00	.00	.99	.013	.00 .00	PIPE
WALL	ENTRANCE												
1329.980	231.110	3.131	234.241	8.10	4.58	.33	234.57	.00	1.10	.00	1.500	.000 .00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.000														
CD	2	2	0	.000	10.000	4.000			.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
OCEAN BREEZE RANCH
HEADING LINE NO 2 IS -
Q100
HEADING LINE NO 3 IS -
LINE K2-1

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1000.000	229.630	1	229.630

ELEMENT NO 2 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1010.250	229.730	1	.013	.000	.000	.000	0

ELEMENT NO 3 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1010.250	229.730	2	.200

ELEMENT NO 4 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1010.250	229.730	2	229.730

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 9-10-2024 Time: 2: 1:13

OCEAN BREEZE RANCH
Q100
LINE K2-1

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1000.000	229.630	.927	230.557	5.20	6.85	.73	231.28	.00	.93	.52	1.000	.000	.00	1 .0
2.835	.0098					.0190	.05	.93	1.00	1.00	.013	.00	.00	PIPE
1002.835	229.658	1.000	230.658	5.20	6.62	.68	231.34	.00	.93	.00	1.000	.000	.00	1 .0
7.415	.0098					.0204	.15	1.00	.00	1.00	.013	.00	.00	PIPE
1010.250	229.730	1.086	230.816	5.20	6.62	.68	231.50	.00	.93	.00	1.000	.000	.00	1 .0
WALL	ENTRANCE													
1010.250	229.730	1.893	231.623	5.20	.69	.01	231.63	.00	.37	4.00	10.000	4.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.000														
CD	2	2	0	.000	10.000	4.000			.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
OCEAN BREEZE RANCH
HEADING LINE NO 2 IS -
Q100
HEADING LINE NO 3 IS -
LINE K2-5

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1000.000	229.630	1	229.630

ELEMENT NO 2 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1018.940	229.820	1	.013	.000	.000	.000	0

ELEMENT NO 3 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1018.940	229.820	2	.200

ELEMENT NO 4 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1022.940	230.150	2	.013	.000	.000	.000	0

ELEMENT NO 5 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1022.940	230.150	2

WARNING - ADJACENT SECTIONS ARE NOT IDENTICAL - SEE SECTION NUMBERS AND CHANNEL DEFINITIONS

ELEMENT NO 6 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1074.810	241.500	1	.013	.000	.000	.000	0

ELEMENT NO 7 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1074.810	241.500	1	.200

ELEMENT NO 8 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1074.810	241.500	1	241.500

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 9-10-2024 Time: 9: 3:14

OCEAN BREEZE RANCH
Q100
LINE K2-5

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width / "N"	Height/Dia.-FT / X-Fall	Base Wt or I.D. / ZR	ZL	No Wth Prs/Pip / Type Ch
1000.000	229.630	.619	230.249	2.50	4.90	.37	230.62	.00	.68	.97	1.000	.000	.00	1 .0
8.822	.0100				.0098	.09	.62	1.19	.62	.013	.00	.00		PIPE
1008.823	229.719	.622	230.341	2.50	4.86	.37	230.71	.00	.68	.97	1.000	.000	.00	1 .0
8.975	.0100				.0092	.08	.62	1.18	.62	.013	.00	.00		PIPE
1017.798	229.809	.648	230.457	2.50	4.64	.33	230.79	.00	.68	.96	1.000	.000	.00	1 .0
1.142	.0100				.0082	.01	.65	1.09	.62	.013	.00	.00		PIPE
1018.940	229.820	.677	230.497	2.50	4.41	.30	230.80	.00	.68	.93	1.000	.000	.00	1 .0
WALL	ENTRANCE													
1018.940	229.820	1.677	231.497	2.50	.37	.00	231.50	.00	.23	4.00	10.000	4.000	.00	0 .0
.944	.0825				.0000	.00	1.68	.05	.09	.013	.00	.00		RECTANG
1019.884	229.898	1.599	231.497	2.50	.39	.00	231.50	.00	.23	4.00	10.000	4.000	.00	0 .0
.899	.0825				.0000	.00	1.60	.05	.09	.013	.00	.00		RECTANG
1020.783	229.972	1.525	231.497	2.50	.41	.00	231.50	.00	.23	4.00	10.000	4.000	.00	0 .0
.857	.0825				.0000	.00	1.52	.06	.09	.013	.00	.00		RECTANG
1021.640	230.043	1.454	231.497	2.50	.43	.00	231.50	.00	.23	4.00	10.000	4.000	.00	0 .0
.817	.0825				.0000	.00	1.45	.06	.09	.013	.00	.00		RECTANG
1022.457	230.110	1.386	231.496	2.50	.45	.00	231.50	.00	.23	4.00	10.000	4.000	.00	0 .0
.483	.0825				.0000	.00	1.39	.07	.09	.013	.00	.00		RECTANG

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 9-10-2024 Time: 9: 3:14

OCEAN BREEZE RANCH
Q100
LINE K2-5

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width	Height/Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1022.940	230.150	1.346	231.496	2.50	.46	.00	231.50	.00	.23	4.00	10.000	4.000	.00	0 .0
WALL	EXIT													
1022.940	230.150	1.347	231.497	2.50	.46	.00	231.50	.00	.23	4.00	10.000	4.000	.00	0 .0
1022.940	230.150	.262	230.412	2.50	15.26	3.62	234.03	.00	.68	.88	1.000	.000	.00	1 .0
1.702	.2188					.2189	.37	.26	6.23	.26	.013	.00	.00	PIPE
1024.642	230.522	.262	230.784	2.50	15.26	3.62	234.40	.00	.68	.88	1.000	.000	.00	1 .0
23.236	.2188					.2051	4.77	.26	6.23	.26	.013	.00	.00	PIPE
1047.878	235.607	.270	235.877	2.50	14.56	3.29	239.17	.00	.68	.89	1.000	.000	.00	1 .0
7.343	.2188					.1794	1.32	.27	5.83	.26	.013	.00	.00	PIPE
1055.221	237.214	.280	237.494	2.50	13.88	2.99	240.48	.00	.68	.90	1.000	.000	.00	1 .0
4.256	.2188					.1570	.67	.28	5.46	.26	.013	.00	.00	PIPE
1059.477	238.145	.289	238.434	2.50	13.23	2.72	241.15	.00	.68	.91	1.000	.000	.00	1 .0
2.910	.2188					.1373	.40	.29	5.11	.26	.013	.00	.00	PIPE
1062.386	238.781	.299	239.081	2.50	12.62	2.47	241.55	.00	.68	.92	1.000	.000	.00	1 .0
2.168	.2188					.1203	.26	.30	4.78	.26	.013	.00	.00	PIPE
1064.555	239.256	.310	239.566	2.50	12.03	2.25	241.81	.00	.68	.93	1.000	.000	.00	1 .0
1.704	.2188					.1054	.18	.31	4.47	.26	.013	.00	.00	PIPE
1066.259	239.629	.321	239.950	2.50	11.47	2.04	241.99	.00	.68	.93	1.000	.000	.00	1 .0
1.381	.2188					.0923	.13	.32	4.18	.26	.013	.00	.00	PIPE

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 9-10-2024 Time: 9: 3:14

OCEAN BREEZE RANCH
Q100
LINE K2-5

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width / "N"	Height/ Dia.-FT / X-Fall	Base Wt or I.D. / ZR	ZL	No Wth Prs/Pip / Type Ch
1067.640	239.931	.332	240.263	2.50	10.94	1.86	242.12	.00	.68	.94	1.000	.000	.00	1 .0
1.137	.2188					.0808	.09	.33	3.91	.26	.013	.00	.00	PIPE
1068.777	240.180	.344	240.524	2.50	10.43	1.69	242.21	.00	.68	.95	1.000	.000	.00	1 .0
.956	.2188					.0708	.07	.34	3.66	.26	.013	.00	.00	PIPE
1069.733	240.389	.356	240.745	2.50	9.94	1.53	242.28	.00	.68	.96	1.000	.000	.00	1 .0
.807	.2188					.0621	.05	.36	3.42	.26	.013	.00	.00	PIPE
1070.540	240.566	.369	240.935	2.50	9.48	1.40	242.33	.00	.68	.97	1.000	.000	.00	1 .0
.693	.2188					.0545	.04	.37	3.20	.26	.013	.00	.00	PIPE
1071.233	240.717	.382	241.099	2.50	9.04	1.27	242.37	.00	.68	.97	1.000	.000	.00	1 .0
.592	.2188					.0478	.03	.38	2.99	.26	.013	.00	.00	PIPE
1071.825	240.847	.396	241.243	2.50	8.62	1.15	242.40	.00	.68	.98	1.000	.000	.00	1 .0
.508	.2188					.0420	.02	.40	2.79	.26	.013	.00	.00	PIPE
1072.333	240.958	.411	241.369	2.50	8.22	1.05	242.42	.00	.68	.98	1.000	.000	.00	1 .0
.441	.2188					.0369	.02	.41	2.60	.26	.013	.00	.00	PIPE
1072.775	241.055	.426	241.481	2.50	7.83	.95	242.43	.00	.68	.99	1.000	.000	.00	1 .0
.384	.2188					.0323	.01	.43	2.43	.26	.013	.00	.00	PIPE
1073.159	241.139	.441	241.580	2.50	7.47	.87	242.45	.00	.68	.99	1.000	.000	.00	1 .0
.324	.2188					.0284	.01	.44	2.27	.26	.013	.00	.00	PIPE

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 9-10-2024 Time: 9: 3:14

OCEAN BREEZE RANCH
Q100
LINE K2-5

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1073.483	241.210	.458	241.668	2.50	7.12	.79	242.46	.00	.68	1.00	1.000	.000	.00	1 .0
.282	.2188					.0250	.01	.46	2.11	.26	.013	.00	.00	PIPE
1073.765	241.271	.475	241.746	2.50	6.79	.72	242.46	.00	.68	1.00	1.000	.000	.00	1 .0
.239	.2188					.0220	.01	.48	1.97	.26	.013	.00	.00	PIPE
1074.004	241.324	.493	241.817	2.50	6.47	.65	242.47	.00	.68	1.00	1.000	.000	.00	1 .0
.201	.2188					.0194	.00	.49	1.84	.26	.013	.00	.00	PIPE
1074.206	241.368	.512	241.880	2.50	6.17	.59	242.47	.00	.68	1.00	1.000	.000	.00	1 .0
.167	.2188					.0171	.00	.51	1.71	.26	.013	.00	.00	PIPE
1074.373	241.404	.532	241.936	2.50	5.89	.54	242.47	.00	.68	1.00	1.000	.000	.00	1 .0
.142	.2188					.0150	.00	.53	1.59	.26	.013	.00	.00	PIPE
1074.515	241.435	.552	241.988	2.50	5.61	.49	242.48	.00	.68	.99	1.000	.000	.00	1 .0
.109	.2188					.0133	.00	.55	1.48	.26	.013	.00	.00	PIPE
1074.624	241.459	.574	242.033	2.50	5.35	.44	242.48	.00	.68	.99	1.000	.000	.00	1 .0
.084	.2188					.0117	.00	.57	1.37	.26	.013	.00	.00	PIPE
1074.708	241.478	.597	242.075	2.50	5.10	.40	242.48	.00	.68	.98	1.000	.000	.00	1 .0
.056	.2188					.0104	.00	.60	1.27	.26	.013	.00	.00	PIPE
1074.765	241.490	.622	242.112	2.50	4.86	.37	242.48	.00	.68	.97	1.000	.000	.00	1 .0
.035	.2188					.0092	.00	.62	1.18	.26	.013	.00	.00	PIPE

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 9-10-2024 Time: 9: 3:14

OCEAN BREEZE RANCH
Q100
LINE K2-5

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT or "N"	Base Wt or I.D.	ZL	ZR	No Wth Prs/Pip	Type Ch
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp		X-Fall				
1074.800	241.498	.648	242.146	2.50	4.64	.33	242.48	.00	.68	.96	1.000	.000	.00	1	.0	
.010	.2188					.0082	.00	.65	1.09	.26	.013	.00	.00	PIPE		
1074.810	241.500	.677	242.177	2.50	4.41	.30	242.48	.00	.68	.93	1.000	.000	.00	1	.0	
WALL	ENTRANCE															
1074.810	241.500	.744	242.244	2.50	3.99	.25	242.49	.00	.68	.87	1.000	.000	.00	0	.0	

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.500														
CD	2	2	0	.000	10.000	3.000			.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
OCEAN BREEZE RANCH
HEADING LINE NO 2 IS -
Q100
HEADING LINE NO 3 IS -
LINE Q1

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1000.000	226.800	2	226.800

ELEMENT NO 2 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1000.000	226.800	1

ELEMENT NO 3 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1045.710	227.200	1	.013	.000	.000	.000	0

ELEMENT NO 4 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1045.710	227.200	2	.200

ELEMENT NO 5 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1045.710	227.200	2	233.030

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 5-30-2024 Time: 3:19:36

OCEAN BREEZE RANCH
Q100
LINE Q1

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1000.000	226.800	.100	226.900	1.50	5.03 / .39 /	227.29	.00	.20	3.00	10.000	3.000	.00	0 .0
WALL EXIT													
1000.000	226.800	.396	227.196	1.50	4.02 / .25 /	227.45	.00	.46	1.32	1.500	.000	.00	1 .0
10.125	.0088				.0088	.09	.40	1.33	.40	.013	.00	.00	PIPE
1010.125	226.889	.396	227.285	1.50	4.02 / .25 /	227.54	.00	.46	1.32	1.500	.000	.00	1 .0
21.367	.0088				.0086	.18	.40	1.33	.40	.013	.00	.00	PIPE
1031.491	227.076	.399	227.475	1.50	3.97 / .24 /	227.72	.00	.46	1.33	1.500	.000	.00	1 .0
9.654	.0088				.0079	.08	.40	1.31	.40	.013	.00	.00	PIPE
1041.145	227.160	.413	227.573	1.50	3.78 / .22 /	227.80	.00	.46	1.34	1.500	.000	.00	1 .0
2.836	.0088				.0069	.02	.41	1.23	.40	.013	.00	.00	PIPE
1043.981	227.185	.428	227.613	1.50	3.61 / .20 /	227.81	.00	.46	1.35	1.500	.000	.00	1 .0
1.618	.0088				.0061	.01	.43	1.15	.40	.013	.00	.00	PIPE
1045.599	227.199	.442	227.641	1.50	3.44 / .18 /	227.82	.00	.46	1.37	1.500	.000	.00	1 .0
.111	.0088				.0053	.00	.44	1.07	.40	.013	.00	.00	PIPE
1045.710	227.200	.459	227.659	1.50	3.27 / .17 /	227.83	.00	.46	1.38	1.500	.000	.00	1 .0
WALL ENTRANCE													
1045.710	227.200	1.459	228.659	1.50	.34 / .00 /	228.66	.00	.20	3.00	10.000	3.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.500														
CD	2	2	0	.000	10.000	3.000			.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
OCEAN BREEZE RANCH
HEADING LINE NO 2 IS -
Q100
HEADING LINE NO 3 IS -
LINE Q2

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA STATION	INVERT	SECT	W S ELEV
1000.000	230.220	2	233.030

ELEMENT NO 2 IS A WALL EXIT *

U/S DATA STATION	INVERT	SECT
1000.000	230.220	1

ELEMENT NO 3 IS A REACH * * *

U/S DATA STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
1018.460	230.400	1	.013	.000	.000	.000	0

ELEMENT NO 4 IS A WALL ENTRANCE *

U/S DATA STATION	INVERT	SECT	FP
1018.460	230.400	2	.200

ELEMENT NO 5 IS A JUNCTION * * * * * * *

U/S DATA STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
1022.460	230.730	2	1	0	.013	3.800	.000	230.730	.000	.000	.000

RADIUS	ANGLE
.000	.000

ELEMENT NO 6 IS A WALL EXIT *

U/S DATA STATION	INVERT	SECT
1022.460	230.730	1

ELEMENT NO 7 IS A REACH * * *

U/S DATA STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
1046.960	230.980	1	.013	93.583	15.000	.000	0

ELEMENT NO 8 IS A WALL ENTRANCE *

U/S DATA STATION	INVERT	SECT	FP
1046.960	230.980	2	.200

ELEMENT NO 9 IS A SYSTEM HEADWORKS * *

U/S DATA STATION	INVERT	SECT	W S ELEV
1046.960	230.980	2	230.980

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 5-28-2024 Time: 4:54:14

OCEAN BREEZE RANCH
Q100
LINE Q2

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1000.000	230.220	2.810	233.030	7.60	.90	.01	233.04	.00	.58	3.00	10.000	3.000	.00	0 .0
WALL	EXIT													
1000.000	230.220	2.811	233.031	7.60	4.30	.29	233.32	.00	1.07	.00	1.500	.000	.00	1 .0
18.460	.0098				.0052	.10	2.81	.00	.95	.013	.00	.00	PIPE	
1018.460	230.400	2.727	233.127	7.60	4.30	.29	233.41	.00	1.07	.00	1.500	.000	.00	1 .0
WALL	ENTRANCE													
1018.460	230.400	3.059	233.459	7.60	.83	.01	233.47	.00	.58	3.00	10.000	3.000	.00	0 .0
JUNCT STR	.0825				.0000	.00	3.06	.08		.013	.00	.00	RECTANG	
1022.460	230.730	2.716	233.446	3.80	.47	.00	233.45	.00	.37	3.00	10.000	3.000	.00	0 .0
WALL	EXIT													
1022.460	230.730	2.716	233.446	3.80	2.15	.07	233.52	.00	.75	.00	1.500	.000	.00	1 .0
24.500	.0102				.0013	.03	.00	.00	.62	.013	.00	.00	PIPE	
1046.960	230.980	2.504	233.484	3.80	2.15	.07	233.56	.00	.75	.00	1.500	.000	.00	1 .0
WALL	ENTRANCE													
1046.960	230.980	2.586	233.566	3.80	.49	.00	233.57	.00	.37	3.00	10.000	3.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		2.500														
CD	2	2	0	.000	10.000	4.000			.00										
CD	4	4	1		1.500														

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
OCEAN BREEZE RANCH
HEADING LINE NO 2 IS -
Q100
HEADING LINE NO 3 IS -
LINE Q3

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1000.000	229.110	2	229.110

ELEMENT NO 2 IS A WALL EXIT

U/S DATA	STATION	INVERT	SECT
	1000.000	229.110	1

ELEMENT NO 3 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1028.410	229.280	1	.013	.000	.000	.000	0

ELEMENT NO 4 IS A WALL ENTRANCE

U/S DATA	STATION	INVERT	SECT	FP
	1028.410	229.280	2	.200

ELEMENT NO 5 IS A JUNCTION

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	1032.410	229.380	2	4	0	.013	1.700	.000	230.380	.000	58.000	.000

RADIUS	ANGLE
.000	.000

ELEMENT NO 6 IS A WALL EXIT

U/S DATA	STATION	INVERT	SECT
	1032.410	229.380	1

ELEMENT NO 7 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1056.520	229.520	1	.013	.000	.000	.000	0

ELEMENT NO 8 IS A WALL ENTRANCE

U/S DATA	STATION	INVERT	SECT	FP
	1056.520	229.520	2	.200

ELEMENT NO 9 IS A SYSTEM HEADWORKS

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1056.520	229.520	2	229.520

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 5-28-2024 Time: 4:54:35

OCEAN BREEZE RANCH
Q100
LINE Q3

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1000.000	229.110	.824	229.934	33.10	10.04	1.56	231.50	.00	1.29	4.00	10.000	4.000	.00	0 .0
WALL	EXIT													
1000.000	229.110	1.957	231.067	33.10	8.03	1.00	232.07	.00	1.96	2.06	2.500	.000	.00	1 .0
12.090	.0060					.0068	.08	1.96	1.00	2.16	.013	.00	.00	PIPE
1012.090	229.182	2.058	231.240	33.10	7.65	.91	232.15	.00	1.96	1.91	2.500	.000	.00	1 .0
16.320	.0060					.0064	.10	2.06	.90	2.16	.013	.00	.00	PIPE
1028.410	229.280	2.088	231.368	33.10	7.56	.89	232.25	.00	1.96	1.86	2.500	.000	.00	1 .0
WALL	ENTRANCE													
1028.410	229.280	4.088	233.368	33.10	2.02	.06	233.43	.00	1.29	4.00	10.000	4.000	.00	0 .0
JUNCT STR	.0250					.0002	.00	4.09	.18		.013	.00	.00	RECTANG
1032.410	229.380	3.997	233.377	31.40	1.96	.06	233.44	.00	1.24	4.00	10.000	4.000	.00	0 .0
WALL	EXIT													
1032.410	229.380	3.997	233.377	31.40	6.40	.64	234.01	.00	1.91	.00	2.500	.000	.00	1 .0
24.110	.0058					.0059	.14	4.00	.00	2.06	.013	.00	.00	PIPE
1056.520	229.520	3.998	233.518	31.40	6.40	.64	234.15	.00	1.91	.00	2.500	.000	.00	1 .0
WALL	ENTRANCE													
1056.520	229.520	4.709	234.229	31.40	1.67	.04	234.27	.00	1.24	4.00	10.000	4.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.500														
CD	2	2	0	.000	10.000	3.000			.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
OCEAN BREEZE RANCH
HEADING LINE NO 2 IS -
Q100
HEADING LINE NO 3 IS -
LINE Q3-1

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1002.000	230.380	2	233.380

ELEMENT NO 2 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1002.000	230.380	1

ELEMENT NO 3 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1044.800	230.790	1	.013	.000	.000	.000	0

ELEMENT NO 4 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1044.800	230.790	2	.200

ELEMENT NO 5 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1044.800	230.790	2	230.790

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 5-28-2024 Time: 1: 3:45

OCEAN BREEZE RANCH
Q100
LINE Q3-1

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1002.000	230.380	3.000	233.380	1.90	.21	.00	233.38	.00	.23	3.00	10.000	3.000	.00	0 .0
WALL EXIT														
1002.000	230.380	3.000	233.380	1.90	1.08	.02	233.40	.00	.52	.00	1.500	.000	.00	1 .0
42.800	.0096					.0003	.01	3.00	.00	.44	.013	.00	.00	PIPE
1044.800	230.790	2.604	233.394	1.90	1.08	.02	233.41	.00	.52	.00	1.500	.000	.00	1 .0
WALL ENTRANCE														
1044.800	230.790	2.626	233.416	1.90	.24	.00	233.42	.00	.23	3.00	10.000	3.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		2.000														
CD	2	2	0	.000	10.000	3.000			.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
OCEAN BREEZE RANCH
HEADING LINE NO 2 IS -
Q100
HEADING LINE NO 3 IS -
LINE R1

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1000.000	222.220	2	222.220

ELEMENT NO 2 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1000.000	222.220	1

ELEMENT NO 3 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1006.820	222.290	1	.013	.000	.000	.000	0

ELEMENT NO 4 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1040.910	222.630	1	.013	21.002	-93.000	.000	0

ELEMENT NO 5 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1094.650	223.170	1	.013	.000	.000	.000	0

ELEMENT NO 6 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1119.870	223.420	1	.013	22.578	64.000	.000	0

ELEMENT NO 7 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1138.210	223.600	1	.013	.000	.000	.000	0

ELEMENT NO 8 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1138.210	223.600	2	.200

ELEMENT NO 9 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1138.210	223.600	2	233.600

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 5-30-2024 Time: 9:15: 0

OCEAN BREEZE RANCH
Q100
LINE R1

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1000.000	222.220	.514	222.734	13.40	8.68 / 1.17 /	223.91 /	.00 /	.85 /	3.00 /	10.000 /	3.000 /	.00 /	0 / .0
WALL	EXIT												
1000.000	222.220	1.107	223.327	13.40	7.51 / .88 /	224.20 /	.00 /	1.32 /	1.99 /	2.000 /	.000 /	.00 /	1 / .0
6.820	.0103				/ .0100	.07	1.11	1.40	1.10	.013	.00	.00	PIPE
1006.820	222.290	1.108	223.398	13.40	7.50 / .87 /	224.27 /	.17 /	1.32 /	1.99 /	2.000 /	.000 /	.00 /	1 / .0
34.090	.0100				/ .0100	.34	1.27	1.39	1.11	.013	.00	.00	PIPE
1040.910	222.630	1.108	223.738	13.40	7.50 / .87 /	224.61 /	.00 /	1.32 /	1.99 /	2.000 /	.000 /	.00 /	1 / .0
53.740	.0100				/ .0097	.52	1.11	1.39	1.11	.013	.00	.00	PIPE
1094.650	223.170	1.131	224.301	13.40	7.31 / .83 /	225.13 /	.15 /	1.32 /	1.98 /	2.000 /	.000 /	.00 /	1 / .0
25.220	.0099				/ .0089	.22	1.28	1.34	1.11	.013	.00	.00	PIPE
1119.870	223.420	1.167	224.587	13.40	7.04 / .77 /	225.36 /	.00 /	1.32 /	1.97 /	2.000 /	.000 /	.00 /	1 / .0
12.165	.0098				/ .0080	.10	1.17	1.26	1.11	.013	.00	.00	PIPE
1132.035	223.539	1.212	224.751	13.40	6.72 / .70 /	225.45 /	.00 /	1.32 /	1.95 /	2.000 /	.000 /	.00 /	1 / .0
5.070	.0098				/ .0071	.04	1.21	1.17	1.11	.013	.00	.00	PIPE
1137.105	223.589	1.262	224.851	13.40	6.41 / .64 /	225.49 /	.00 /	1.32 /	1.93 /	2.000 /	.000 /	.00 /	1 / .0
1.105	.0098				/ .0063	.01	1.26	1.09	1.11	.013	.00	.00	PIPE
1138.210	223.600	1.317	224.917	13.40	6.11 / .58 /	225.50 /	.00 /	1.32 /	1.90 /	2.000 /	.000 /	.00 /	1 / .0
WALL	ENTRANCE												

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 5-30-2024 Time: 9:15: 0

OCEAN BREEZE RANCH
Q100
LINE R1

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1138.210	223.600	2.317	225.917	13.40	1.93	.06	225.97	.00	.85	3.00	10.000	3.000	.00	0 .0

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 5-30-2024 Time: 3:41:38

OCEAN BREEZE RANCH
Q100
LINE R3

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1000.000	222.300	.318	222.618	9.10	9.53	1.41	224.03	.00	.66	3.00	10.000	3.000	.00	0 .0
WALL	EXIT													
1000.000	222.300	.871	223.171	9.10	8.55	1.14	224.31	.00	1.17	1.48	1.500	.000	.00	1 .0
10.229	.0232					.0175	.18	.87	1.78	.81	.013	.00	.00	PIPE
1010.229	222.537	.899	223.436	9.10	8.22	1.05	224.49	.00	1.17	1.47	1.500	.000	.00	1 .0
7.740	.0232					.0157	.12	.90	1.67	.81	.013	.00	.00	PIPE
1017.969	222.717	.936	223.653	9.10	7.84	.95	224.61	.00	1.17	1.45	1.500	.000	.00	1 .0
5.014	.0232					.0139	.07	.94	1.55	.81	.013	.00	.00	PIPE
1022.984	222.833	.976	223.810	9.10	7.47	.87	224.68	.00	1.17	1.43	1.500	.000	.00	1 .0
3.390	.0232					.0123	.04	.98	1.43	.81	.013	.00	.00	PIPE
1026.374	222.912	1.018	223.930	9.10	7.13	.79	224.72	.00	1.17	1.40	1.500	.000	.00	1 .0
2.183	.0232					.0110	.02	1.02	1.32	.81	.013	.00	.00	PIPE
1028.557	222.963	1.063	224.026	9.10	6.79	.72	224.74	.00	1.17	1.36	1.500	.000	.00	1 .0
1.206	.0232					.0098	.01	1.06	1.21	.81	.013	.00	.00	PIPE
1029.763	222.991	1.112	224.103	9.10	6.48	.65	224.75	.00	1.17	1.31	1.500	.000	.00	1 .0
.397	.0232					.0088	.00	1.11	1.10	.81	.013	.00	.00	PIPE
1030.160	223.000	1.167	224.167	9.10	6.17	.59	224.76	.00	1.17	1.25	1.500	.000	.00	1 .0
WALL	ENTRANCE													

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 5-30-2024 Time: 3:41:38

OCEAN BREEZE RANCH
Q100
LINE R3

Invert	Depth	Water	Q	Vel	Vel

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.500														
CD	2	2	0	.000	10.000	3.000			.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
OCEAN BREEZE RANCH
HEADING LINE NO 2 IS -
Q100
HEADING LINE NO 3 IS -
LINE R3

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1000.000	222.300	2	222.320

ELEMENT NO 2 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1000.000	222.300	1

ELEMENT NO 3 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1030.160	223.000	1	.013	.000	.000	.000	0

ELEMENT NO 4 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1030.160	223.000	2	.200

ELEMENT NO 5 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1030.160	223.000	2	228.970

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		2.500														
CD	2	2	0	.000	10.000	3.000			.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
OCEAN BREEZE RANCH
HEADING LINE NO 2 IS -
Q100
HEADING LINE NO 3 IS -
LINE S

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	967.120	225.500	2	225.500

ELEMENT NO 2 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	967.120	225.500	1

ELEMENT NO 3 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1032.270	225.820	1	.013	.000	.000	.000	0

ELEMENT NO 4 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1032.270	225.820	2	.200

ELEMENT NO 5 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1032.270	225.820	2	225.820

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 5-28-2024 Time: 4:55:56

OCEAN BREEZE RANCH
Q100
LINE S

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
967.120	225.500	.950	226.450	23.90	8.39	1.09	227.54	.00	1.25	3.00	10.000	3.000	.00	0 .0
WALL	EXIT													
967.120	225.500	1.665	227.165	23.90	6.88	.74	227.90	.00	1.66	2.36	2.500	.000	.00	1 .0
16.987	.0049					.0052	.09	1.66	1.00	1.74	.013	.00	.00	PIPE
984.107	225.583	1.737	227.321	23.90	6.56	.67	227.99	.00	1.66	2.30	2.500	.000	.00	1 .0
48.163	.0049					.0049	.24	1.74	.92	1.74	.013	.00	.00	PIPE
1032.270	225.820	1.737	227.557	23.90	6.56	.67	228.23	.00	1.66	2.30	2.500	.000	.00	1 .0
WALL	ENTRANCE													
1032.270	225.820	2.737	228.557	23.90	2.91	.13	228.69	.00	1.25	3.00	10.000	3.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		2.000														
CD	2	2	0	.000	10.000	3.000			.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
OCEAN BREEZE RANCH
HEADING LINE NO 2 IS -
Q100
HEADING LINE NO 3 IS -
LINE T1

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA STATION	INVERT	SECT	W S ELEV
1000.000	229.190	2	229.190

ELEMENT NO 2 IS A WALL EXIT *

U/S DATA STATION	INVERT	SECT
1000.000	229.190	1

ELEMENT NO 3 IS A REACH * * *

U/S DATA STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
1005.390	229.210	1	.013	.000	.000	.000	0

ELEMENT NO 4 IS A REACH * * *

U/S DATA STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
1040.740	229.390	1	.013	22.504	-90.000	.000	0

ELEMENT NO 5 IS A REACH * * *

U/S DATA STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
1129.390	229.830	1	.013	.000	.000	.000	0

ELEMENT NO 6 IS A REACH * * *

U/S DATA STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
1244.040	230.410	1	.013	294.045	-22.340	.000	0

ELEMENT NO 7 IS A WALL ENTRANCE *

U/S DATA STATION	INVERT	SECT	FP
1244.040	230.410	2	.200

ELEMENT NO 8 IS A REACH * * *

U/S DATA STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
1248.040	230.510	2	.013	.000	.000	.000	0

ELEMENT NO 9 IS A WALL EXIT *

U/S DATA STATION	INVERT	SECT
1248.040	230.510	1

ELEMENT NO 10 IS A REACH * * *

U/S DATA STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
1261.550	230.570	1	.013	.000	.000	.000	0

ELEMENT NO 11 IS A REACH * * *

U/S DATA STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
1296.900	230.750	1	.013	22.504	90.000	.000	0

```
ELEMENT NO  12 IS A REACH            *         *     *
                  U/S DATA   STATION    INVERT  SECT              N                          RADIUS    ANGLE     ANG PT  MAN H
                             1315.170  230.840    1              .013                           .000     .000      .000     0
ELEMENT NO  13 IS A  WALL  ENTRANCE                 *
                  U/S DATA   STATION    INVERT  SECT             FP
                             1315.170  230.840    2              .200
ELEMENT NO  14 IS A SYSTEM HEADWORKS                *                      *
                  U/S DATA   STATION    INVERT  SECT                              W S ELEV
                             1315.170  230.840    2                              230.840
                                                W S P G W                                                    PAGE NO   3
                        WATER SURFACE PROFILE - ELEMENT CARD LISTING
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Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 5-30-2024 Time:10:34:18

OCEAN BREEZE RANCH
Q100
LINE T1

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width / "N"	Height/Dia.-FT / X-Fall	Base Wt or I.D. / ZR	ZL	No Wth Prs/Pip / Type Ch
1000.000	229.190	.489	229.679	10.70	7.30	.83	230.51	.00	.73	3.00	10.000	3.000	.00	0 .0
WALL EXIT														
1000.000	229.190	1.172	230.362	10.70	5.59	.49	230.85	.00	1.17	1.97	2.000	.000	.00	1 .0
2.235	.0037					.0050	.01	1.17	1.00	1.32	.013	.00	.00	PIPE
1002.235	229.198	1.219	230.417	10.70	5.33	.44	230.86	.00	1.17	1.95	2.000	.000	.00	1 .0
3.155	.0037					.0046	.01	1.22	.93	1.32	.013	.00	.00	PIPE
1005.390	229.210	1.237	230.447	10.70	5.25	.43	230.87	.04	1.17	1.94	2.000	.000	.00	1 .0
19.075	.0051					.0048	.09	1.27	.90	1.19	.013	.00	.00	PIPE
1024.465	229.307	1.190	230.497	10.70	5.49	.47	230.97	.04	1.17	1.96	2.000	.000	.00	1 .0
16.275	.0051					.0051	.08	1.23	.97	1.19	.013	.00	.00	PIPE
1040.740	229.390	1.190	230.580	10.70	5.49	.47	231.05	.00	1.17	1.96	2.000	.000	.00	1 .0
15.282	.0050					.0050	.08	1.19	.97	1.20	.013	.00	.00	PIPE
1056.022	229.466	1.199	230.665	10.70	5.44	.46	231.12	.00	1.17	1.96	2.000	.000	.00	1 .0
73.368	.0050					.0049	.36	1.20	.96	1.20	.013	.00	.00	PIPE
1129.390	229.830	1.199	231.029	10.70	5.44	.46	231.49	.00	1.17	1.96	2.000	.000	.00	1 .0
8.104	.0051					.0050	.04	1.20	.96	1.19	.013	.00	.00	PIPE
1137.494	229.871	1.192	231.063	10.70	5.48	.47	231.53	.00	1.17	1.96	2.000	.000	.00	1 .0
106.547	.0051					.0050	.53	1.20	.97	1.19	.013	.00	.00	PIPE

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 5-30-2024 Time:10:34:18

OCEAN BREEZE RANCH
Q100
LINE T1

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1244.040	230.410	1.192	231.602	10.70	5.48	.47	232.07	.00	1.17	1.96	2.000	.000	.00	1 .0
WALL ENTRANCE														
1244.040	230.410	2.192	232.602	10.70	1.63	.04	232.64	.00	.73	3.00	10.000	3.000	.00	0 .0
3.956	.0250					.0003	.00	2.19	.19	.42	.013	.00	.00	RECTANG
1247.996	230.509	2.090	232.599	10.70	1.71	.05	232.64	.00	.73	3.00	10.000	3.000	.00	0 .0
.044	.0250					.0003	.00	2.09	.21	.42	.013	.00	.00	RECTANG
1248.040	230.510	2.089	232.599	10.70	1.71	.05	232.64	.00	.73	3.00	10.000	3.000	.00	0 .0
WALL EXIT														
1248.040	230.510	2.089	232.599	10.70	3.41	.18	232.78	.00	1.17	.00	2.000	.000	.00	1 .0
13.510	.0044					.0022	.03	2.09	.00	1.24	.013	.00	.00	PIPE
1261.550	230.570	2.059	232.629	10.70	3.41	.18	232.81	.00	1.17	.00	2.000	.000	.00	1 .0
32.923	.0051					.0022	.07	.00	.00	1.19	.013	.00	.00	PIPE
1294.473	230.738	2.000	232.738	10.70	3.41	.18	232.92	2.00	1.17	.00	2.000	.000	.00	1 .0
2.427	.0051					.0022	.01	2.00	.00	1.19	.013	.00	.00	PIPE
1296.900	230.750	1.993	232.743	10.70	3.41	.18	232.92	.00	1.17	.24	2.000	.000	.00	1 .0
18.270	.0049					.0020	.04	1.99	.17	1.20	.013	.00	.00	PIPE
1315.170	230.840	1.937	232.777	10.70	3.44	.18	232.96	.00	1.17	.70	2.000	.000	.00	1 .0
WALL ENTRANCE														

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 5-30-2024 Time:10:34:18

OCEAN BREEZE RANCH
Q100
LINE T1

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1315.170	230.840	2.937	233.777	10.70	1.21	.02	233.80	.00	.73	3.00	10.000	3.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.500														
CD	2	2	0	.000	10.000	3.000			.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
OCEAN BREEZE RANCH
HEADING LINE NO 2 IS -
Q100
HEADING LINE NO 3 IS -
LINE T2

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1000.000	232.520	2	234.870

ELEMENT NO 2 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1000.000	232.520	1

ELEMENT NO 3 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1062.080	232.830	1	.013	.000	.000	.000	0

ELEMENT NO 4 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1062.080	232.830	2	.200

ELEMENT NO 5 IS A JUNCTION * * * * * * *

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	1066.080	232.930	2	1	0	.013	3.100	.000	232.930	.000	90.000	.000

RADIUS	ANGLE
.000	.000

ELEMENT NO 6 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1066.080	232.930	1

ELEMENT NO 7 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1090.580	233.050	1	.013	15.597	90.000	.000	0

ELEMENT NO 8 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1090.580	233.050	2	.200

ELEMENT NO 9 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1090.580	233.050	2	233.050

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 5-30-2024 Time:11:51:55

OCEAN BREEZE RANCH
Q100
LINE T2

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1000.000	232.520	2.350	234.870	7.10	1.01	.02	234.89	.00	.56	3.00	10.000	3.000	.00	0 .0
WALL	EXIT													
1000.000	232.520	2.351	234.871	7.10	4.02	.25	235.12	.00	1.03	.00	1.500	.000	.00	1 .0
62.080	.0050					.0046	.28	2.35	.00	1.17	.013	.00	.00	PIPE
1062.080	232.830	2.324	235.154	7.10	4.02	.25	235.41	.00	1.03	.00	1.500	.000	.00	1 .0
WALL	ENTRANCE													
1062.080	232.830	2.610	235.440	7.10	.91	.01	235.45	.00	.56	3.00	10.000	3.000	.00	0 .0
JUNCT STR	.0250					.0000	.00	2.61	.10		.013	.00	.00	RECTANG
1066.080	232.930	2.528	235.458	4.00	.53	.00	235.46	.00	.38	3.00	10.000	3.000	.00	0 .0
WALL	EXIT													
1066.080	232.930	2.528	235.458	4.00	2.26	.08	235.54	.00	.77	.00	1.500	.000	.00	1 .0
24.500	.0049					.0015	.04	.00	.00	.79	.013	.00	.00	PIPE
1090.580	233.050	2.460	235.510	4.00	2.26	.08	235.59	.00	.77	.00	1.500	.000	.00	1 .0
WALL	ENTRANCE													
1090.580	233.050	2.551	235.601	4.00	.52	.00	235.60	.00	.38	3.00	10.000	3.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.500														
CD	2	2	0	.000	10.000	3.000			.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
OCEAN BREEZE RANCH
HEADING LINE NO 2 IS -
Q100
HEADING LINE NO 3 IS -
LINE T3

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1000.000	228.760	2	228.760

ELEMENT NO 2 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1000.000	228.760	1

ELEMENT NO 3 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1053.420	229.500	1	.013	.000	.000	.000	0

ELEMENT NO 4 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1053.420	229.500	2	.200

ELEMENT NO 5 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1053.420	229.500	2	234.870

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 5-30-2024 Time: 3:48:11

OCEAN BREEZE RANCH
Q100
LINE T3

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1000.000	228.760	.179	228.939	3.80	7.06	.77	229.71	.00	.37	3.00	10.000	3.000	.00	0 .0
WALL EXIT														
1000.000	228.760	.575	229.335	3.80	6.10	.58	229.91	.00	.75	1.46	1.500	.000	.00	1 .0
11.956	.0139					.0134	.16	.57	1.65	.57	.013	.00	.00	PIPE
1011.956	228.926	.577	229.503	3.80	6.06	.57	230.07	.00	.75	1.46	1.500	.000	.00	1 .0
22.307	.0139					.0125	.28	.58	1.63	.57	.013	.00	.00	PIPE
1034.262	229.235	.598	229.833	3.80	5.78	.52	230.35	.00	.75	1.47	1.500	.000	.00	1 .0
8.979	.0139					.0109	.10	.60	1.52	.57	.013	.00	.00	PIPE
1043.242	229.359	.619	229.978	3.80	5.51	.47	230.45	.00	.75	1.48	1.500	.000	.00	1 .0
4.676	.0139					.0096	.04	.62	1.42	.57	.013	.00	.00	PIPE
1047.918	229.424	.642	230.066	3.80	5.26	.43	230.49	.00	.75	1.48	1.500	.000	.00	1 .0
2.767	.0139					.0084	.02	.64	1.33	.57	.013	.00	.00	PIPE
1050.684	229.462	.666	230.128	3.80	5.01	.39	230.52	.00	.75	1.49	1.500	.000	.00	1 .0
1.622	.0139					.0074	.01	.67	1.24	.57	.013	.00	.00	PIPE
1052.307	229.485	.691	230.176	3.80	4.78	.35	230.53	.00	.75	1.50	1.500	.000	.00	1 .0
.849	.0139					.0065	.01	.69	1.15	.57	.013	.00	.00	PIPE
1053.155	229.496	.717	230.213	3.80	4.56	.32	230.54	.00	.75	1.50	1.500	.000	.00	1 .0
.265	.0139					.0057	.00	.72	1.08	.57	.013	.00	.00	PIPE

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 5-30-2024 Time: 3:48:11

OCEAN BREEZE RANCH
Q100
LINE T3

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope				SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch	
1053.420	229.500	.745	230.245	3.80	4.34	.29	230.54	.00	.75	1.50	1.500	.000	.00	1 .0
WALL	ENTRANCE													

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.500														
CD	2	2	0	.000	10.000	3.000			.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
OCEAN BREEZE RANCH
HEADING LINE NO 2 IS -
Q100
HEADING LINE NO 3 IS -
LINE U1

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	958.570	234.000	2	234.000

ELEMENT NO 2 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	958.570	234.000	1

ELEMENT NO 3 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1033.110	234.750	1	.013	.000	.000	.000	0

ELEMENT NO 4 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1033.110	234.750	2	.200

ELEMENT NO 5 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1033.110	234.750	2	234.750

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 5-26-2024 Time: 9:52:25

OCEAN BREEZE RANCH
Q100
LINE U1

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
958.570	234.000	.325	234.325	7.70	7.90	.97	235.29	.00	.59	3.00	10.000	3.000	.00	0 .0
WALL	EXIT													
958.570	234.000	.952	234.952	7.70	6.51	.66	235.61	.00	1.08	1.44	1.500	.000	.00	1 .0
28.128	.0101					.0101	.28	.95	1.27	.95	.013	.00	.00	PIPE
986.698	234.283	.952	235.235	7.70	6.51	.66	235.89	.00	1.08	1.44	1.500	.000	.00	1 .0
36.285	.0101					.0096	.35	.95	1.27	.95	.013	.00	.00	PIPE
1022.983	234.648	.985	235.633	7.70	6.25	.61	236.24	.00	1.08	1.42	1.500	.000	.00	1 .0
8.380	.0101					.0086	.07	.99	1.19	.95	.013	.00	.00	PIPE
1031.363	234.732	1.028	235.761	7.70	5.96	.55	236.31	.00	1.08	1.39	1.500	.000	.00	1 .0
1.747	.0101					.0077	.01	1.03	1.09	.95	.013	.00	.00	PIPE
1033.110	234.750	1.075	235.825	7.70	5.68	.50	236.33	.00	1.08	1.35	1.500	.000	.00	1 .0
WALL	ENTRANCE													
1033.110	234.750	2.075	236.825	7.70	1.24	.02	236.85	.00	.59	3.00	10.000	3.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	2		2.000														
CD	2	2	0	.000	10.000	9.000			.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -

OCEAN BREEZE RANCH

HEADING LINE NO 2 IS -

Q100

HEADING LINE NO 3 IS -

LINE V1

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	941.600	238.030	1	238.030

ELEMENT NO 2 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1033.950	238.950	1	.013	.000	.000	.000	0

ELEMENT NO 3 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1033.950	238.950	2	.200

ELEMENT NO 4 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1033.950	238.950	2	238.950

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:10-21-2024 Time: 6:57:48

OCEAN BREEZE RANCH
Q100
LINE V1

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
941.600	238.030	1.482	239.512	40.60	8.13	1.03	240.54	.00	1.62	1.75	2.000	.000	.00	2 .0
38.248	.0100					.0100	.38	1.48	.85	1.48	.013	.00	.00	PIPE
979.848	238.411	1.482	239.893	40.60	8.13	1.03	240.92	.00	1.62	1.75	2.000	.000	.00	2 .0
47.262	.0100					.0096	.45	1.48	.85	1.48	.013	.00	.00	PIPE
1027.110	238.882	1.538	240.420	40.60	7.83	.95	241.37	.00	1.62	1.69	2.000	.000	.00	2 .0
6.840	.0100					.0087	.06	1.54	.79	1.48	.013	.00	.00	PIPE
1033.950	238.950	1.617	240.567	40.60	7.46	.86	241.43	.00	1.62	1.57	2.000	.000	.00	2 .0
WALL	ENTRANCE													
1033.950	238.950	3.617	242.567	40.60	1.25	.02	242.59	.00	.86	9.00	10.000	9.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		2.000														
CD	2	2	0	.000	10.000	3.000			.00										
CD	4	4	1		1.500														

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
OCEAN BREEZE RANCH
HEADING LINE NO 2 IS -
Q100
HEADING LINE NO 3 IS -
LINE V2

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA STATION	INVERT	SECT	W S ELEV
972.740	251.360	2	251.360

ELEMENT NO 2 IS A WALL EXIT *

U/S DATA STATION	INVERT	SECT
972.740	251.360	1

ELEMENT NO 3 IS A REACH * * *

U/S DATA STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
992.000	251.550	1	.013	.000	.000	.000	0

ELEMENT NO 4 IS A WALL ENTRANCE *

U/S DATA STATION	INVERT	SECT	FP
992.000	251.550	2	.200

ELEMENT NO 5 IS A JUNCTION * * * * * * *

U/S DATA STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
996.000	251.650	2	4	0	.013	5.300	.000	252.050	.000	-90.000	.000

RADIUS	ANGLE
.000	.000

ELEMENT NO 6 IS A WALL EXIT *

U/S DATA STATION	INVERT	SECT
996.000	251.650	1

ELEMENT NO 7 IS A REACH * * *

U/S DATA STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
1020.470	251.890	1	.013	.000	.000	.000	0

ELEMENT NO 8 IS A WALL ENTRANCE *

U/S DATA STATION	INVERT	SECT	FP
1020.470	251.890	2	.200

ELEMENT NO 9 IS A SYSTEM HEADWORKS * *

U/S DATA STATION	INVERT	SECT	W S ELEV
1020.470	251.890	2	251.890

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 5-30-2024 Time:12:25:28

OCEAN BREEZE RANCH
Q100
LINE V2

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
972.740	251.360	.718	252.078	20.30	9.43	1.38	253.46	.00	1.12	3.00	10.000	3.000	.00	0 .0
WALL	EXIT													
972.740	251.360	1.515	252.875	20.30	7.95	.98	253.86	.00	1.62	1.71	2.000	.000	.00	1 .0
11.849	.0099					.0093	.11	1.51	1.15	1.49	.013	.00	.00	PIPE
984.589	251.477	1.538	253.015	20.30	7.83	.95	253.97	.00	1.62	1.69	2.000	.000	.00	1 .0
7.411	.0099					.0087	.06	1.54	1.11	1.49	.013	.00	.00	PIPE
992.000	251.550	1.617	253.167	20.30	7.46	.86	254.03	.00	1.62	1.57	2.000	.000	.00	1 .0
WALL	ENTRANCE													
992.000	251.550	3.617	255.167	20.30	1.87	.05	255.22	.00	1.12	3.00	10.000	3.000	.00	0 .0
JUNCT STR	.0250					.0002	.00	3.62	.17		.013	.00	.00	RECTANG
996.000	251.650	3.566	255.216	15.00	1.40	.03	255.25	.00	.92	3.00	10.000	3.000	.00	0 .0
WALL	EXIT													
996.000	251.650	3.567	255.217	15.00	4.77	.35	255.57	.00	1.40	.00	2.000	.000	.00	1 .0
24.470	.0098					.0044	.11	3.57	.00	1.20	.013	.00	.00	PIPE
1020.470	251.890	3.435	255.325	15.00	4.77	.35	255.68	.00	1.40	.00	2.000	.000	.00	1 .0
WALL	ENTRANCE													
1020.470	251.890	3.827	255.717	15.00	1.31	.03	255.74	.00	.92	3.00	10.000	3.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.500														
CD	2	2	0	.000	10.000	3.000			.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -

OCEAN BREEZE RANCH

HEADING LINE NO 2 IS -

Q100

HEADING LINE NO 3 IS -

LINE V2-1

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	996.000	252.050	2	255.220

ELEMENT NO 2 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	996.000	252.050	1

ELEMENT NO 3 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1043.180	252.520	1	.013	.000	.000	.000	0

ELEMENT NO 4 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1043.180	252.520	2	.200

ELEMENT NO 5 IS A JUNCTION * * * * * *

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	1047.180	252.850	2	0	0	.013	.000	.000	.000	.000	.000	.000

RADIUS	ANGLE
.000	.000

ELEMENT NO 6 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1047.180	252.850	1

ELEMENT NO 7 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1116.700	253.550	1	.013	.000	.000	.000	0

ELEMENT NO 8 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1116.700	253.550	2	.200

ELEMENT NO 9 IS A JUNCTION * * * * * *

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	1120.700	253.880	2	1	0	.013	.700	.000	253.590	.000	90.000	.000

RADIUS	ANGLE
.000	.000

ELEMENT NO 10 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1120.700	253.880	1

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 11 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1148.690	254.160	1	.013	.000	.000	.000	0

ELEMENT NO 12 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H

```
                          1187.870  254.570    1              .013                        45.005   49.880      .000     0
ELEMENT NO  13 IS A REACH            *         *     *
                  U/S DATA   STATION    INVERT  SECT             N                         RADIUS    ANGLE     ANG PT  MAN H
                          1210.750  254.800    1              .013                         .000     .000      .000     0
ELEMENT NO  14 IS A  WALL  ENTRANCE                  *
                  U/S DATA   STATION    INVERT  SECT            FP
                          1210.750  254.800    2              .200
ELEMENT NO  15 IS A SYSTEM HEADWORKS                 *                    *
                  U/S DATA   STATION    INVERT  SECT                                 W S ELEV
                          1210.750  254.800    2                                    254.800
```

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 5-30-2024 Time:12:27:28

OCEAN BREEZE RANCH
Q100
LINE V2-1

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
996.000	252.050	3.170	255.220	5.30	.56	.00	255.22	.00	.46	3.00	10.000	3.000	.00	0 .0
WALL	EXIT													
996.000	252.050	3.171	255.221	5.30	3.00	.14	255.36	.00	.89	.00	1.500	.000	.00	1 .0
47.180	.0100					.0025	.12	3.17	.00	.75	.013	.00	.00	PIPE
1043.180	252.520	2.821	255.341	5.30	3.00	.14	255.48	.00	.89	.00	1.500	.000	.00	1 .0
WALL	ENTRANCE													
1043.180	252.520	2.982	255.502	5.30	.59	.01	255.51	.00	.46	3.00	10.000	3.000	.00	0 .0
JUNCT STR	.0825					.0000	.00	2.98	.06		.013	.00	.00	RECTANG
1047.180	252.850	2.651	255.501	5.30	.67	.01	255.51	.00	.46	3.00	10.000	3.000	.00	0 .0
WALL	EXIT													
1047.180	252.850	2.651	255.501	5.30	3.00	.14	255.64	.00	.89	.00	1.500	.000	.00	1 .0
69.520	.0101					.0025	.18	2.65	.00	.75	.013	.00	.00	PIPE
1116.700	253.550	2.128	255.678	5.30	3.00	.14	255.82	.00	.89	.00	1.500	.000	.00	1 .0
WALL	ENTRANCE													
1116.700	253.550	2.285	255.835	5.30	.77	.01	255.84	.00	.46	3.00	10.000	3.000	.00	0 .0
JUNCT STR	.0825					.0001	.00	2.28	.09		.013	.00	.00	RECTANG
1120.700	253.880	1.957	255.837	4.60	.78	.01	255.85	.00	.42	3.00	10.000	3.000	.00	0 .0
WALL	EXIT													

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 5-30-2024 Time:12:27:28

OCEAN BREEZE RANCH
Q100
LINE V2-1

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1120.700	253.880	1.958	255.838	4.60	2.60	.11	255.94	.00	.82	.00	1.500	.000	.00	1 .0
27.990	.0100					.0019	.05	1.96	.00	.69	.013	.00	.00	PIPE
1148.690	254.160	1.731	255.891	4.60	2.60	.11	256.00	.00	.82	.00	1.500	.000	.00	1 .0
28.615	.0105					.0019	.05	.00	.00	.69	.013	.00	.00	PIPE
1177.305	254.459	1.500	255.959	4.60	2.60	.11	256.06	1.50	.82	.00	1.500	.000	.00	1 .0
10.565	.0105					.0018	.02	1.50	.00	.69	.013	.00	.00	PIPE
1187.870	254.570	1.401	255.971	4.60	2.68	.11	256.08	.00	.82	.74	1.500	.000	.00	1 .0
9.555	.0101					.0017	.02	1.40	.31	.69	.013	.00	.00	PIPE
1197.425	254.666	1.310	255.976	4.60	2.81	.12	256.10	.00	.82	1.00	1.500	.000	.00	1 .0
7.132	.0101					.0018	.01	1.31	.39	.69	.013	.00	.00	PIPE
1204.557	254.738	1.239	255.977	4.60	2.95	.13	256.11	.00	.82	1.14	1.500	.000	.00	1 .0
6.016	.0101					.0020	.01	1.24	.44	.69	.013	.00	.00	PIPE
1210.573	254.798	1.177	255.975	4.60	3.09	.15	256.12	.00	.82	1.23	1.500	.000	.00	1 .0
.177	.0101					.0021	.00	1.18	.50	.69	.013	.00	.00	PIPE
1210.750	254.800	1.175	255.975	4.60	3.10	.15	256.12	.00	.82	1.24	1.500	.000	.00	1 .0
WALL	ENTRANCE													
1210.750	254.800	2.175	256.975	4.60	.70	.01	256.98	.00	.42	3.00	10.000	3.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.500														
CD	2	2	0	.000	10.000	3.000			.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -

OCEAN BREEZE RANCH

HEADING LINE NO 2 IS -

Q100

HEADING LINE NO 3 IS -

LINE V2-2

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1002.000	253.590	2	255.840

ELEMENT NO 2 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1002.000	253.590	1

ELEMENT NO 3 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1050.560	254.100	1	.013	.000	.000	.000	0

ELEMENT NO 4 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1050.560	254.100	2	.200

ELEMENT NO 5 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1050.560	254.100	2	254.100

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 5-30-2024 Time:12:29:51

OCEAN BREEZE RANCH
Q100
LINE V2-2

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1002.000	253.590	2.250	255.840	.70	.10	.00	255.84	.00	.12	3.00	10.000	3.000	.00	0 .0
WALL	EXIT													

WSPG OUTPUT

OFFSITE

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		3.000														
CD	2	4	1		2.000														
CD	3	4	1		1.500														
CD	4	3	0	.000	4.000	4.000	.000	.000	.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
LINE_X1
HEADING LINE NO 2 IS -
Q100
HEADING LINE NO 3 IS -
OBR

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1218.890	605.460	4	605.460

ELEMENT NO 2 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1218.890	605.460	1

ELEMENT NO 3 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1260.150	605.790	1	.013	.000	.000	-351.450	6

ELEMENT NO 4 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1260.150	605.790	4	.200

ELEMENT NO 5 IS A JUNCTION * * * * * * *

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	1264.150	605.890	4	2	0	.013	4.900	.000	605.890	.000	-46.600	.000

RADIUS	ANGLE
.000	.000

ELEMENT NO 6 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1264.150	605.890	1

ELEMENT NO 7 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1371.740	606.750	1	.013	.000	.000	.000	0

ELEMENT NO 8 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1371.740	606.750	4	.200

ELEMENT NO 9 IS A JUNCTION * * * * * * *

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	1375.740	607.750	4	3	0	.013	15.700	.000	607.750	.000	-76.300	.000

RADIUS	ANGLE
.000	.000

ELEMENT NO 10 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1375.740	607.750	2

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 11 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1457.960	610.950	2	.013	.000	.000	.000	0

```
ELEMENT NO  12 IS A  WALL  ENTRANCE                  *
            U/S DATA   STATION    INVERT  SECT              FP
                       1457.960  610.950    4              .200
ELEMENT NO  13 IS A JUNCTION          *         *     *     *               *                  *                *
            U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3        Q4     INVERT-3 INVERT-4  PHI 3  PHI 4
                       1461.960  611.050    4     2     0   .013     6.700      .000   614.910      .000 -88.900     .000
                                                                                        RADIUS    ANGLE
                                                                                          .000    .000
ELEMENT NO  14 IS A  WALL  EXIT                      *
            U/S DATA   STATION    INVERT  SECT
                       1461.960  611.050    2
ELEMENT NO  15 IS A REACH             *         *     *
            U/S DATA   STATION    INVERT  SECT               N                          RADIUS    ANGLE     ANG PT  MAN H
                       1545.740  614.080    2              .013                           .000     .000      .000     0
ELEMENT NO  16 IS A  WALL  ENTRANCE                  *
            U/S DATA   STATION    INVERT  SECT              FP
                       1545.740  614.080    4              .200
ELEMENT NO  17 IS A REACH             *         *     *
            U/S DATA   STATION    INVERT  SECT               N                          RADIUS    ANGLE     ANG PT  MAN H
                       1549.740  614.410    4              .013                           .000     .000      .000     0
ELEMENT NO  18 IS A  WALL  EXIT                      *
            U/S DATA   STATION    INVERT  SECT
                       1549.740  614.410    2
ELEMENT NO  19 IS A REACH             *         *     *
            U/S DATA   STATION    INVERT  SECT               N                          RADIUS    ANGLE     ANG PT  MAN H
                       1715.850  622.050    2              .013                           .000     .000      .000     0
ELEMENT NO  20 IS A  WALL  ENTRANCE                  *
            U/S DATA   STATION    INVERT  SECT              FP
                       1715.850  622.050    4              .200
ELEMENT NO  21 IS A REACH             *         *     *
            U/S DATA   STATION    INVERT  SECT               N                          RADIUS    ANGLE     ANG PT  MAN H
                       1719.850  622.380    4              .013                           .000     .000      .000     0
ELEMENT NO  22 IS A  WALL  EXIT                      *
            U/S DATA   STATION    INVERT  SECT
                       1719.850  622.380    2
                                        W S P G W                                                          PAGE NO   4
                    WATER SURFACE PROFILE - ELEMENT CARD LISTING
ELEMENT NO  23 IS A REACH             *         *     *
            U/S DATA   STATION    INVERT  SECT               N                          RADIUS    ANGLE     ANG PT  MAN H
                       1803.720  627.380    2              .013                        ********    -.070      .000     0
ELEMENT NO  24 IS A REACH             *         *     *
            U/S DATA   STATION    INVERT  SECT               N                          RADIUS    ANGLE     ANG PT  MAN H
                       1915.760  633.350    2              .013                       649.082   -9.890      .000     0
ELEMENT NO  25 IS A  WALL  ENTRANCE                  *
            U/S DATA   STATION    INVERT  SECT              FP
                       1915.760  633.350    4              .200
ELEMENT NO  26 IS A REACH             *         *     *
            U/S DATA   STATION    INVERT  SECT               N                          RADIUS    ANGLE     ANG PT  MAN H
                       1919.760  633.680    4              .013                           .000     .000      .000     0
ELEMENT NO  27 IS A  WALL  EXIT                      *
            U/S DATA   STATION    INVERT  SECT
                       1919.760  633.680    2
ELEMENT NO  28 IS A REACH             *         *     *
            U/S DATA   STATION    INVERT  SECT               N                          RADIUS    ANGLE     ANG PT  MAN H
                       2140.950  645.840    2              .013                           .000     .000      .000     0
ELEMENT NO  29 IS A REACH             *         *     *
            U/S DATA   STATION    INVERT  SECT               N                          RADIUS    ANGLE     ANG PT  MAN H
                       2165.240  645.840    2              .013                       579.882   -2.400      .000     0
```

ELEMENT NO 30 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	2165.240	645.840	4	.200

ELEMENT NO 31 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	2169.240	647.510	4	.013	.000	.000	.000	0

ELEMENT NO 32 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	2169.240	647.510	2

ELEMENT NO 33 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	2274.090	653.280	2	.013	126.927	47.330	.000	0

ELEMENT NO 34 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	2274.090	653.280	4	.200

ELEMENT NO 35 IS A JUNCTION * * * * * * *

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	2278.090	653.500	4	4	0	.013	9.400	.000	653.810	.000	.000	.000

RADIUS	ANGLE
.000	.000

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 36 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	2278.090	653.500	2

ELEMENT NO 37 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	2426.820	663.160	2	.013	.000	.000	.000	0

ELEMENT NO 38 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	2426.820	663.160	4	.200

ELEMENT NO 39 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	2430.820	663.420	4	.013	2.546	-90.000	.000	0

ELEMENT NO 40 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	2430.820	663.420	2

ELEMENT NO 41 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	2460.020	665.320	2	.013	.000	.000	.000	0

ELEMENT NO 42 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	2460.020	665.320	4	.500

ELEMENT NO 43 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	2460.020	665.320	4	665.320

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:11- 2-2024 Time: 9: 7:52

LINE_X1
Q100
OBR

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width / "N"	Height/ Dia.-FT / X-Fall	Base Wt or I.D. / ZR	ZL	No Wth Prs/Pip / Type Ch
1218.890	605.460	.941	606.402	38.00	10.09	1.58	607.98	.00	1.41	4.00	4.000	4.000	.00	0 .0
WALL EXIT														
1218.890	605.460	1.789	607.249	38.00	8.64	1.16	608.41	.00	2.01	2.94	3.000	.000	.00	1 .0
26.184	.0080					.0070	.18	1.79	1.25	1.74	.013	.00	.00	PIPE
1245.074	605.669	1.846	607.516	38.00	8.33	1.08	608.59	.00	2.01	2.92	3.000	.000	.00	1 .0
12.161	.0080					.0063	.08	1.85	1.17	1.74	.013	.00	.00	PIPE
1257.235	605.767	1.923	607.690	38.00	7.94	.98	608.67	.00	2.01	2.88	3.000	.000	.00	1 .0
2.915	.0080					.0056	.02	1.92	1.08	1.74	.013	.00	.00	PIPE
1260.150	605.790	2.006	607.796	38.00	7.57	.89	608.68	.00	2.01	2.82	3.000	.000	.00	1 .0
WALL ENTRANCE														
1260.150	605.790	2.867	608.657	38.00	3.31	.17	608.83	.00	1.41	4.00	4.000	4.000	.00	0 .0
JUNCT STR	.0250					.0007	.00	2.87	.34		.013	.00	.00	BOX
1264.150	605.890	2.835	608.725	33.10	2.92	.13	608.86	.00	1.29	4.00	4.000	4.000	.00	0 .0
WALL EXIT														
1264.150	605.890	2.835	608.725	33.10	4.79	.36	609.08	.00	1.87	1.37	3.000	.000	.00	1 .0
26.923	.0080					.0022	.06	2.84	.37	1.60	.013	.00	.00	PIPE
1291.073	606.105	2.643	608.748	33.10	5.02	.39	609.14	.00	1.87	1.94	3.000	.000	.00	1 .0
18.790	.0080					.0023	.04	2.64	.48	1.60	.013	.00	.00	PIPE

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:11- 2-2024 Time: 9: 7:52

LINE_X1
Q100
OBR

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1309.863	606.255	2.497	608.753	33.10	5.26	.43	609.18	.00	1.87	2.24	3.000	.000	.00	1 .0
14.970	.0080					.0025	.04	2.50	.55	1.60	.013	.00	.00	PIPE
1324.833	606.375	2.372	608.747	33.10	5.52	.47	609.22	.00	1.87	2.44	3.000	.000	.00	1 .0
12.218	.0080					.0028	.03	2.37	.62	1.60	.013	.00	.00	PIPE
1337.052	606.473	2.261	608.734	33.10	5.79	.52	609.25	.00	1.87	2.59	3.000	.000	.00	1 .0
9.993	.0080					.0031	.03	2.26	.69	1.60	.013	.00	.00	PIPE
1347.044	606.553	2.160	608.713	33.10	6.07	.57	609.29	.00	1.87	2.69	3.000	.000	.00	1 .0
7.665	.0080					.0035	.03	2.16	.75	1.60	.013	.00	.00	PIPE
1354.709	606.614	2.068	608.682	33.10	6.37	.63	609.31	.00	1.87	2.78	3.000	.000	.00	1 .0
2.445	.0080					.0037	.01	2.07	.82	1.60	.013	.00	.00	PIPE
1357.155	606.633	2.068	608.702	33.10	6.37	.63	609.33	.00	1.87	2.78	3.000	.000	.00	1 .0
HYDRAULIC JUMP														
1357.155	606.633	1.723	608.357	33.10	7.88	.96	609.32	.00	1.87	2.97	3.000	.000	.00	1 .0
3.879	.0080					.0062	.02	1.72	1.17	1.60	.013	.00	.00	PIPE
1361.033	606.664	1.723	608.388	33.10	7.88	.96	609.35	.00	1.87	2.97	3.000	.000	.00	1 .0
8.802	.0080					.0059	.05	1.72	1.17	1.60	.013	.00	.00	PIPE
1369.835	606.735	1.792	608.527	33.10	7.51	.88	609.40	.00	1.87	2.94	3.000	.000	.00	1 .0
1.905	.0080					.0052	.01	1.79	1.08	1.60	.013	.00	.00	PIPE

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:11- 2-2024 Time: 9: 7:52

LINE_X1
Q100
OBR

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1371.740	606.750	1.867	608.617	33.10	7.16	.80	609.41	.00	1.87	2.91	3.000	.000	.00	1 .0
WALL ENTRANCE														
1371.740	606.750	2.867	609.617	33.10	2.89	.13	609.75	.00	1.29	4.00	4.000	4.000	.00	0 .0
JUNCT STR	.2500					.0005	.00	2.87	.30		.013	.00	.00	BOX
1375.740	607.750	1.945	609.695	17.40	2.24	.08	609.77	.00	.84	4.00	4.000	4.000	.00	0 .0
HYDRAULIC JUMP														
1375.740	607.750	.902	608.652	17.40	12.65	2.48	611.14	.00	1.50	1.99	2.000	.000	.00	1 .0
23.292	.0389					.0321	.75	.90	2.68	.87	.013	.00	.00	PIPE
1399.032	608.657	.929	609.586	17.40	12.18	2.30	611.89	.00	1.50	1.99	2.000	.000	.00	1 .0
16.981	.0389					.0287	.49	.93	2.54	.87	.013	.00	.00	PIPE
1416.013	609.317	.964	610.282	17.40	11.61	2.09	612.37	.00	1.50	2.00	2.000	.000	.00	1 .0
11.254	.0389					.0252	.28	.96	2.36	.87	.013	.00	.00	PIPE
1427.267	609.755	1.000	610.756	17.40	11.07	1.90	612.66	.00	1.50	2.00	2.000	.000	.00	1 .0
8.069	.0389					.0222	.18	1.00	2.20	.87	.013	.00	.00	PIPE
1435.337	610.069	1.038	611.108	17.40	10.55	1.73	612.84	.00	1.50	2.00	2.000	.000	.00	1 .0
6.005	.0389					.0196	.12	1.04	2.05	.87	.013	.00	.00	PIPE
1441.342	610.303	1.079	611.382	17.40	10.06	1.57	612.95	.00	1.50	1.99	2.000	.000	.00	1 .0
4.660	.0389					.0173	.08	1.08	1.90	.87	.013	.00	.00	PIPE

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:11- 2-2024 Time: 9: 7:52

LINE_X1
Q100
OBR

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1446.002	610.485	1.121	611.606	17.40	9.59	1.43	613.03	.00	1.50	1.99	2.000	.000	.00	1 .0
3.587	.0389					.0152	.05	1.12	1.77	.87	.013	.00	.00	PIPE
1449.589	610.624	1.166	611.790	17.40	9.15	1.30	613.09	.00	1.50	1.97	2.000	.000	.00	1 .0
2.796	.0389					.0135	.04	1.17	1.64	.87	.013	.00	.00	PIPE
1452.385	610.733	1.213	611.946	17.40	8.72	1.18	613.13	.00	1.50	1.95	2.000	.000	.00	1 .0
2.126	.0389					.0119	.03	1.21	1.52	.87	.013	.00	.00	PIPE
1454.511	610.816	1.263	612.079	17.40	8.32	1.07	613.15	.00	1.50	1.93	2.000	.000	.00	1 .0
1.540	.0389					.0106	.02	1.26	1.41	.87	.013	.00	.00	PIPE
1456.051	610.876	1.317	612.193	17.40	7.93	.98	613.17	.00	1.50	1.90	2.000	.000	.00	1 .0
1.076	.0389					.0094	.01	1.32	1.30	.87	.013	.00	.00	PIPE
1457.127	610.918	1.374	612.292	17.40	7.56	.89	613.18	.00	1.50	1.85	2.000	.000	.00	1 .0
.644	.0389					.0084	.01	1.37	1.20	.87	.013	.00	.00	PIPE
1457.771	610.943	1.435	612.378	17.40	7.21	.81	613.18	.00	1.50	1.80	2.000	.000	.00	1 .0
.189	.0389					.0075	.00	1.44	1.10	.87	.013	.00	.00	PIPE
1457.960	610.950	1.504	612.454	17.40	6.87	.73	613.19	.00	1.50	1.73	2.000	.000	.00	1 .0
WALL	ENTRANCE													
1457.960	610.950	3.504	614.454	17.40	1.24	.02	614.48	.00	.84	4.00	4.000	4.000	.00	0 .0
JUNCT STR	.0250					.0001	.00	3.50	.12		.013	.00	.00	BOX

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:11- 2-2024 Time: 9: 7:52

LINE_X1
Q100
OBR

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1461.960	611.050	3.433	614.483	10.70	.78	.01	614.49	.00	.61	4.00	4.000	4.000	.00	0 .0
WALL EXIT														
1461.960	611.050	3.434	614.484	10.70	3.41	.18	614.66	.00	1.17	.00	2.000	.000	.00	1 .0
42.265	.0362				.0022	.09	3.43	.00	.68	.013	.00	.00	PIPE	
1504.224	612.579	2.000	614.579	10.70	3.41	.18	614.76	.00	1.17	.00	2.000	.000	.00	1 .0
4.895	.0362				.0021	.01	2.00	.00	.68	.013	.00	.00	PIPE	
1509.120	612.756	1.814	614.570	10.70	3.57	.20	614.77	.00	1.17	1.16	2.000	.000	.00	1 .0
.966	.0362				.0020	.00	1.81	.39	.68	.013	.00	.00	PIPE	
1510.086	612.791	1.775	614.566	10.70	3.63	.20	614.77	.00	1.17	1.26	2.000	.000	.00	1 .0
HYDRAULIC JUMP														
1510.086	612.791	.751	613.542	10.70	9.92	1.53	615.07	.00	1.17	1.94	2.000	.000	.00	1 .0
2.403	.0362				.0248	.06	.75	2.34	.68	.013	.00	.00	PIPE	
1512.489	612.878	.751	613.629	10.70	9.92	1.53	615.16	.00	1.17	1.94	2.000	.000	.00	1 .0
8.686	.0362				.0233	.20	.75	2.34	.68	.013	.00	.00	PIPE	
1521.174	613.192	.778	613.970	10.70	9.46	1.39	615.36	.00	1.17	1.95	2.000	.000	.00	1 .0
6.243	.0362				.0204	.13	.78	2.19	.68	.013	.00	.00	PIPE	
1527.417	613.417	.806	614.224	10.70	9.02	1.26	615.49	.00	1.17	1.96	2.000	.000	.00	1 .0
4.649	.0362				.0179	.08	.81	2.04	.68	.013	.00	.00	PIPE	

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:11- 2-2024 Time: 9: 7:52

LINE_X1
Q100
OBR

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT or "N"	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp		X-Fall	ZR	Type Ch
1532.067	613.586	.836	614.422	10.70	8.60	1.15	615.57	.00	1.17	1.97	2.000	.000	.00	1 .0
3.641	.0362					.0157	.06	.84	1.91	.68	.013	.00	.00	PIPE
1535.707	613.717	.866	614.583	10.70	8.20	1.04	615.63	.00	1.17	1.98	2.000	.000	.00	1 .0
2.814	.0362					.0138	.04	.87	1.78	.68	.013	.00	.00	PIPE
1538.521	613.819	.898	614.717	10.70	7.82	.95	615.67	.00	1.17	1.99	2.000	.000	.00	1 .0
2.176	.0362					.0122	.03	.90	1.66	.68	.013	.00	.00	PIPE
1540.697	613.898	.932	614.830	10.70	7.45	.86	615.69	.00	1.17	2.00	2.000	.000	.00	1 .0
1.703	.0362					.0107	.02	.93	1.55	.68	.013	.00	.00	PIPE
1542.400	613.959	.967	614.926	10.70	7.11	.78	615.71	.00	1.17	2.00	2.000	.000	.00	1 .0
1.281	.0362					.0094	.01	.97	1.44	.68	.013	.00	.00	PIPE
1543.681	614.006	1.004	615.010	10.70	6.77	.71	615.72	.00	1.17	2.00	2.000	.000	.00	1 .0
.961	.0362					.0083	.01	1.00	1.34	.68	.013	.00	.00	PIPE
1544.642	614.040	1.042	615.082	10.70	6.46	.65	615.73	.00	1.17	2.00	2.000	.000	.00	1 .0
.620	.0362					.0073	.00	1.04	1.25	.68	.013	.00	.00	PIPE
1545.262	614.063	1.083	615.146	10.70	6.16	.59	615.73	.00	1.17	1.99	2.000	.000	.00	1 .0
.355	.0362					.0064	.00	1.08	1.16	.68	.013	.00	.00	PIPE
1545.616	614.076	1.126	615.202	10.70	5.87	.54	615.74	.00	1.17	1.98	2.000	.000	.00	1 .0
.124	.0362					.0057	.00	1.13	1.08	.68	.013	.00	.00	PIPE

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:11- 2-2024 Time: 9: 7:52

LINE_X1
Q100
OBR

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1545.740	614.080	1.172	615.252	10.70	5.59	.49	615.74	.00	1.17	1.97	2.000	.000	.00	1 .0
WALL ENTRANCE														
1545.740	614.080	2.172	616.252	10.70	1.23	.02	616.28	.00	.61	4.00	4.000	4.000	.00	0 .0
1.198	.0825					.0001	.00	2.17	.15	.23	.013	.00	.00	BOX
1546.938	614.179	2.071	616.250	10.70	1.29	.03	616.28	.00	.61	4.00	4.000	4.000	.00	0 .0
1.139	.0825					.0001	.00	2.07	.16	.23	.013	.00	.00	BOX
1548.077	614.273	1.975	616.247	10.70	1.35	.03	616.28	.00	.61	4.00	4.000	4.000	.00	0 .0
1.081	.0825					.0002	.00	1.97	.17	.23	.013	.00	.00	BOX
1549.159	614.362	1.883	616.245	10.70	1.42	.03	616.28	.00	.61	4.00	4.000	4.000	.00	0 .0
.581	.0825					.0002	.00	1.88	.18	.23	.013	.00	.00	BOX
1549.740	614.410	1.833	616.243	10.70	1.46	.03	616.28	.00	.61	4.00	4.000	4.000	.00	0 .0
HYDRAULIC JUMP														
1549.740	614.410	.638	615.048	10.70	12.40	2.39	617.43	.00	1.17	1.86	2.000	.000	.00	1 .0
19.248	.0460					.0460	.89	.64	3.21	.64	.013	.00	.00	PIPE
1568.989	615.295	.638	615.933	10.70	12.40	2.39	618.32	.00	1.17	1.86	2.000	.000	.00	1 .0
68.252	.0460					.0440	3.00	.64	3.21	.64	.013	.00	.00	PIPE
1637.240	618.434	.653	619.087	10.70	12.00	2.24	621.32	.00	1.17	1.88	2.000	.000	.00	1 .0
27.485	.0460					.0394	1.08	.65	3.07	.64	.013	.00	.00	PIPE

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:11- 2-2024 Time: 9: 7:52

LINE_X1
Q100
OBR

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1664.725	619.698	.676	620.375	10.70	11.44	2.03	622.41	.00	1.17	1.89	2.000	.000	.00	1 .0
14.055	.0460					.0346	.49	.68	2.87	.64	.013	.00	.00	PIPE
1678.781	620.345	.700	621.045	10.70	10.91	1.85	622.89	.00	1.17	1.91	2.000	.000	.00	1 .0
9.104	.0460					.0303	.28	.70	2.68	.64	.013	.00	.00	PIPE
1687.885	620.764	.725	621.489	10.70	10.40	1.68	623.17	.00	1.17	1.92	2.000	.000	.00	1 .0
6.520	.0460					.0266	.17	.73	2.51	.64	.013	.00	.00	PIPE
1694.405	621.064	.751	621.815	10.70	9.92	1.53	623.34	.00	1.17	1.94	2.000	.000	.00	1 .0
4.927	.0460					.0233	.11	.75	2.34	.64	.013	.00	.00	PIPE
1699.332	621.290	.778	622.068	10.70	9.46	1.39	623.46	.00	1.17	1.95	2.000	.000	.00	1 .0
3.843	.0460					.0204	.08	.78	2.19	.64	.013	.00	.00	PIPE
1703.175	621.467	.806	622.273	10.70	9.02	1.26	623.54	.00	1.17	1.96	2.000	.000	.00	1 .0
3.021	.0460					.0179	.05	.81	2.04	.64	.013	.00	.00	PIPE
1706.196	621.606	.836	622.442	10.70	8.60	1.15	623.59	.00	1.17	1.97	2.000	.000	.00	1 .0
2.458	.0460					.0157	.04	.84	1.91	.64	.013	.00	.00	PIPE
1708.653	621.719	.866	622.585	10.70	8.20	1.04	623.63	.00	1.17	1.98	2.000	.000	.00	1 .0
1.954	.0460					.0138	.03	.87	1.78	.64	.013	.00	.00	PIPE
1710.608	621.809	.898	622.707	10.70	7.82	.95	623.66	.00	1.17	1.99	2.000	.000	.00	1 .0
1.544	.0460					.0122	.02	.90	1.66	.64	.013	.00	.00	PIPE

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:11- 2-2024 Time: 9: 7:52

LINE_X1
Q100
OBR

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width	Height/Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1712.151	621.880	.932	622.812	10.70	7.45	.86	623.67	.00	1.17	2.00	2.000	.000	.00	1 .0
1.229	.0460				.0107	.01	.93	1.55	.64	.013	.00	.00	PIPE	
1713.380	621.936	.967	622.904	10.70	7.11	.78	623.69	.00	1.17	2.00	2.000	.000	.00	1 .0
.937	.0460				.0094	.01	.97	1.44	.64	.013	.00	.00	PIPE	
1714.317	621.979	1.004	622.984	10.70	6.77	.71	623.70	.00	1.17	2.00	2.000	.000	.00	1 .0
.710	.0460				.0083	.01	1.00	1.34	.64	.013	.00	.00	PIPE	
1715.027	622.012	1.042	623.054	10.70	6.46	.65	623.70	.00	1.17	2.00	2.000	.000	.00	1 .0
.463	.0460				.0073	.00	1.04	1.25	.64	.013	.00	.00	PIPE	
1715.490	622.033	1.083	623.117	10.70	6.16	.59	623.71	.00	1.17	1.99	2.000	.000	.00	1 .0
.267	.0460				.0064	.00	1.08	1.16	.64	.013	.00	.00	PIPE	
1715.757	622.046	1.126	623.172	10.70	5.87	.54	623.71	.00	1.17	1.98	2.000	.000	.00	1 .0
.093	.0460				.0057	.00	1.13	1.08	.64	.013	.00	.00	PIPE	
1715.850	622.050	1.172	623.222	10.70	5.59	.49	623.71	.00	1.17	1.97	2.000	.000	.00	1 .0
WALL	ENTRANCE													
1715.850	622.050	2.172	624.222	10.70	1.23	.02	624.25	.00	.61	4.00	4.000	4.000	.00	0 .0
1.198	.0825				.0001	.00	2.17	.15	.23	.013	.00	.00	BOX	
1717.048	622.149	2.071	624.220	10.70	1.29	.03	624.25	.00	.61	4.00	4.000	4.000	.00	0 .0
1.139	.0825				.0001	.00	2.07	.16	.23	.013	.00	.00	BOX	

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:11- 2-2024 Time: 9: 7:52

LINE_X1
Q100
OBR

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width / "N"	Height/Dia.-FT / X-Fall	Base Wt or I.D. / ZR	ZL	No Wth Prs/Pip / Type Ch
1718.187	622.243	1.975	624.217	10.70	1.35	.03	624.25	.00	.61	4.00	4.000	4.000	.00	0 .0
1.081	.0825				.0002	.00	1.97	.17	.23	.013	.00	.00		BOX
1719.268	622.332	1.883	624.215	10.70	1.42	.03	624.25	.00	.61	4.00	4.000	4.000	.00	0 .0
.582	.0825				.0002	.00	1.88	.18	.23	.013	.00	.00		BOX
1719.850	622.380	1.833	624.213	10.70	1.46	.03	624.25	.00	.61	4.00	4.000	4.000	.00	0 .0
HYDRAULIC JUMP														
1719.850	622.380	.597	622.977	10.70	13.60	2.87	625.85	.00	1.17	1.83	2.000	.000	.00	1 .0
25.911	.0596				.0594	1.54	.60	3.66	.60	.013	.00	.00		PIPE
1745.761	623.925	.597	624.522	10.70	13.57	2.86	627.38	.00	1.17	1.83	2.000	.000	.00	1 .0
57.959	.0596				.0555	3.22	.60	3.64	.60	.013	.00	.00		PIPE
1803.720	627.380	.619	627.999	10.70	12.94	2.60	630.60	.01	1.17	1.85	2.000	.000	.00	1 .0
38.016	.0533				.0499	1.90	.63	3.41	.61	.013	.00	.00		PIPE
1841.736	629.406	.631	630.037	10.70	12.59	2.46	632.50	.01	1.17	1.86	2.000	.000	.00	1 .0
24.411	.0533				.0450	1.10	.65	3.28	.61	.013	.00	.00		PIPE
1866.146	630.706	.653	631.359	10.70	12.00	2.24	633.60	.01	1.17	1.88	2.000	.000	.00	1 .0
13.018	.0533				.0394	.51	.67	3.07	.61	.013	.00	.00		PIPE
1879.165	631.400	.676	632.076	10.70	11.44	2.03	634.11	.01	1.17	1.89	2.000	.000	.00	1 .0
8.585	.0533				.0346	.30	.69	2.87	.61	.013	.00	.00		PIPE

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:11- 2-2024 Time: 9: 7:52

LINE_X1
Q100
OBR

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT or "N"	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp		X-Fall	ZR	Type Ch
1887.750	631.857	.700	632.557	10.70	10.91	1.85	634.41	.01	1.17	1.91	2.000	.000	.00	1 .0
6.219	.0533					.0303	.19	.71	2.68	.61	.013	.00	.00	PIPE
1893.969	632.189	.725	632.914	10.70	10.40	1.68	634.59	.01	1.17	1.92	2.000	.000	.00	1 .0
4.742	.0533					.0266	.13	.74	2.51	.61	.013	.00	.00	PIPE
1898.710	632.441	.751	633.193	10.70	9.92	1.53	634.72	.01	1.17	1.94	2.000	.000	.00	1 .0
3.729	.0533					.0233	.09	.76	2.34	.61	.013	.00	.00	PIPE
1902.440	632.640	.778	633.418	10.70	9.46	1.39	634.81	.01	1.17	1.95	2.000	.000	.00	1 .0
2.990	.0533					.0204	.06	.79	2.19	.61	.013	.00	.00	PIPE
1905.430	632.800	.806	633.606	10.70	9.02	1.26	634.87	.01	1.17	1.96	2.000	.000	.00	1 .0
2.398	.0533					.0179	.04	.81	2.04	.61	.013	.00	.00	PIPE
1907.828	632.927	.836	633.763	10.70	8.60	1.15	634.91	.01	1.17	1.97	2.000	.000	.00	1 .0
1.980	.0533					.0157	.03	.84	1.91	.61	.013	.00	.00	PIPE
1909.808	633.033	.866	633.899	10.70	8.20	1.04	634.94	.01	1.17	1.98	2.000	.000	.00	1 .0
1.593	.0533					.0138	.02	.87	1.78	.61	.013	.00	.00	PIPE
1911.401	633.118	.898	634.016	10.70	7.82	.95	634.96	.01	1.17	1.99	2.000	.000	.00	1 .0
1.270	.0533					.0122	.02	.90	1.66	.61	.013	.00	.00	PIPE
1912.671	633.185	.932	634.118	10.70	7.45	.86	634.98	.01	1.17	2.00	2.000	.000	.00	1 .0
1.019	.0533					.0107	.01	.94	1.55	.61	.013	.00	.00	PIPE

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:11- 2-2024 Time: 9: 7:52

LINE_X1
Q100
OBR

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1913.690	633.240	.967	634.207	10.70	7.11	.78	634.99	.00	1.17	2.00	2.000	.000	.00	1 .0
.781	.0533					.0094	.01	.97	1.44	.61	.013	.00	.00	PIPE
1914.471	633.281	1.004	634.285	10.70	6.77	.71	635.00	.00	1.17	2.00	2.000	.000	.00	1 .0
.595	.0533					.0083	.00	1.01	1.34	.61	.013	.00	.00	PIPE
1915.067	633.313	1.042	634.355	10.70	6.46	.65	635.00	.00	1.17	2.00	2.000	.000	.00	1 .0
.389	.0533					.0073	.00	1.05	1.25	.61	.013	.00	.00	PIPE
1915.456	633.334	1.083	634.417	10.70	6.16	.59	635.01	.00	1.17	1.99	2.000	.000	.00	1 .0
.225	.0533					.0064	.00	1.09	1.16	.61	.013	.00	.00	PIPE
1915.681	633.346	1.126	634.472	10.70	5.87	.54	635.01	.00	1.17	1.98	2.000	.000	.00	1 .0
.079	.0533					.0057	.00	1.13	1.08	.61	.013	.00	.00	PIPE
1915.760	633.350	1.172	634.522	10.70	5.59	.49	635.01	.00	1.17	1.97	2.000	.000	.00	1 .0
WALL	ENTRANCE													
1915.760	633.350	2.172	635.522	10.70	1.23	.02	635.55	.00	.61	4.00	4.000	4.000	.00	0 .0
1.198	.0825					.0001	.00	2.17	.15	.23	.013	.00	.00	BOX
1916.958	633.449	2.071	635.520	10.70	1.29	.03	635.55	.00	.61	4.00	4.000	4.000	.00	0 .0
1.139	.0825					.0001	.00	2.07	.16	.23	.013	.00	.00	BOX
1918.097	633.543	1.975	635.517	10.70	1.35	.03	635.55	.00	.61	4.00	4.000	4.000	.00	0 .0
1.081	.0825					.0002	.00	1.97	.17	.23	.013	.00	.00	BOX

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:11- 2-2024 Time: 9: 7:52

LINE_X1
Q100
OBR

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1919.178	633.632	1.883	635.515	10.70	1.42	.03	635.55	.00	.61	4.00	4.000	4.000	.00	0 .0
.582	.0825					.0002	.00	1.88	.18	.23	.013	.00	.00	BOX
1919.760	633.680	1.833	635.513	10.70	1.46	.03	635.55	.00	.61	4.00	4.000	4.000	.00	0 .0
HYDRAULIC JUMP														
1919.760	633.680	.609	634.289	10.70	13.22	2.71	637.00	.00	1.17	1.84	2.000	.000	.00	1 .0
24.897	.0550					.0550	1.37	.61	3.51	.61	.013	.00	.00	PIPE
1944.656	635.049	.609	635.658	10.70	13.22	2.71	638.37	.00	1.17	1.84	2.000	.000	.00	1 .0
67.457	.0550					.0549	3.70	.61	3.51	.61	.013	.00	.00	PIPE
2012.113	638.757	.609	639.366	10.70	13.20	2.71	642.07	.00	1.17	1.84	2.000	.000	.00	1 .0
62.566	.0550					.0514	3.22	.61	3.51	.61	.013	.00	.00	PIPE
2074.679	642.197	.631	642.828	10.70	12.59	2.46	645.29	.00	1.17	1.86	2.000	.000	.00	1 .0
20.262	.0550					.0450	.91	.63	3.28	.61	.013	.00	.00	PIPE
2094.941	643.311	.653	643.964	10.70	12.00	2.24	646.20	.00	1.17	1.88	2.000	.000	.00	1 .0
11.602	.0550					.0394	.46	.65	3.07	.61	.013	.00	.00	PIPE
2106.543	643.948	.676	644.624	10.70	11.44	2.03	646.66	.00	1.17	1.89	2.000	.000	.00	1 .0
7.875	.0550					.0346	.27	.68	2.87	.61	.013	.00	.00	PIPE
2114.417	644.381	.700	645.081	10.70	10.91	1.85	646.93	.00	1.17	1.91	2.000	.000	.00	1 .0
5.793	.0550					.0303	.18	.70	2.68	.61	.013	.00	.00	PIPE

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WATER SURFACE PROFILE LISTING Date:11- 2-2024 Time: 9: 7:52

LINE_X1
Q100
OBR

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width / "N"	Height/ Dia.-FT / X-Fall	Base Wt or I.D. / ZR	ZL	No Wth Prs/Pip / Type Ch
2120.210	644.700	.725	645.425	10.70	10.40	1.68	647.11	.00	1.17	1.92	2.000	.000	.00	1 .0
4.460	.0550					.0266	.12	.73	2.51	.61	.013	.00	.00	PIPE
2124.670	644.945	.751	645.696	10.70	9.92	1.53	647.22	.00	1.17	1.94	2.000	.000	.00	1 .0
3.530	.0550					.0233	.08	.75	2.34	.61	.013	.00	.00	PIPE
2128.200	645.139	.778	645.917	10.70	9.46	1.39	647.31	.00	1.17	1.95	2.000	.000	.00	1 .0
2.844	.0550					.0204	.06	.78	2.19	.61	.013	.00	.00	PIPE
2131.044	645.295	.806	646.102	10.70	9.02	1.26	647.36	.00	1.17	1.96	2.000	.000	.00	1 .0
2.289	.0550					.0179	.04	.81	2.04	.61	.013	.00	.00	PIPE
2133.333	645.421	.836	646.257	10.70	8.60	1.15	647.41	.00	1.17	1.97	2.000	.000	.00	1 .0
1.895	.0550					.0157	.03	.84	1.91	.61	.013	.00	.00	PIPE
2135.228	645.525	.866	646.391	10.70	8.20	1.04	647.43	.00	1.17	1.98	2.000	.000	.00	1 .0
1.528	.0550					.0138	.02	.87	1.78	.61	.013	.00	.00	PIPE
2136.755	645.609	.898	646.507	10.70	7.82	.95	647.46	.00	1.17	1.99	2.000	.000	.00	1 .0
1.220	.0550					.0122	.01	.90	1.66	.61	.013	.00	.00	PIPE
2137.975	645.676	.932	646.609	10.70	7.45	.86	647.47	.00	1.17	2.00	2.000	.000	.00	1 .0
.980	.0550					.0107	.01	.93	1.55	.61	.013	.00	.00	PIPE
2138.955	645.730	.967	646.697	10.70	7.11	.78	647.48	.00	1.17	2.00	2.000	.000	.00	1 .0
.752	.0550					.0094	.01	.97	1.44	.61	.013	.00	.00	PIPE

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:11- 2-2024 Time: 9: 7:52

LINE_X1
Q100
OBR

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
2139.707	645.772	1.004	646.776	10.70	6.77	.71	647.49	.00	1.17	2.00	2.000	.000	.00	1 .0
.574	.0550					.0083	.00	1.00	1.34	.61	.013	.00	.00	PIPE
2140.281	645.803	1.042	646.845	10.70	6.46	.65	647.49	.00	1.17	2.00	2.000	.000	.00	1 .0
.375	.0550					.0073	.00	1.04	1.25	.61	.013	.00	.00	PIPE
2140.656	645.824	1.083	646.907	10.70	6.16	.59	647.50	.00	1.17	1.99	2.000	.000	.00	1 .0
.217	.0550					.0064	.00	1.08	1.16	.61	.013	.00	.00	PIPE
2140.874	645.836	1.126	646.962	10.70	5.87	.54	647.50	.00	1.17	1.98	2.000	.000	.00	1 .0
.076	.0550					.0057	.00	1.13	1.08	.61	.013	.00	.00	PIPE
2140.950	645.840	1.172	647.012	10.70	5.59	.49	647.50	.00	1.17	1.97	2.000	.000	.00	1 .0
1.042	.0000					.0050	.01	1.18	1.00	.00	.013	.00	.00	PIPE
2141.992	645.840	1.231	647.071	10.70	5.28	.43	647.50	.00	1.17	1.95	2.000	.000	.00	1 .0
3.505	.0000					.0043	.02	1.23	.91	.00	.013	.00	.00	PIPE
2145.497	645.840	1.292	647.132	10.70	4.98	.39	647.52	.00	1.17	1.91	2.000	.000	.00	1 .0
6.490	.0000					.0037	.02	1.29	.83	.00	.013	.00	.00	PIPE
2151.986	645.840	1.357	647.197	10.70	4.72	.35	647.54	.00	1.17	1.87	2.000	.000	.00	1 .0
10.043	.0000					.0033	.03	1.36	.75	.00	.013	.00	.00	PIPE
2162.029	645.840	1.425	647.265	10.70	4.47	.31	647.57	.00	1.17	1.81	2.000	.000	.00	1 .0
3.211	.0000					.0030	.01	1.43	.69	.00	.013	.00	.00	PIPE

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Q100
OBR

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width / "N"	Height/Dia.-FT / X-Fall	Base Wt or I.D. / ZR	ZL	No Wth Prs/Pip / Type Ch
2165.240	645.840	1.442	647.282	10.70	4.41	.30	647.58	.00	1.17	1.79	2.000	.000	.00	1 .0
WALL ENTRANCE														
2165.240	645.840	2.442	648.282	10.70	1.10	.02	648.30	.00	.61	4.00	4.000	4.000	.00	0 .0
.268	.4175				.0001	.00	2.44	.12	.14	.013	.00	.00	BOX	
2165.508	645.952	2.329	648.281	10.70	1.15	.02	648.30	.00	.61	4.00	4.000	4.000	.00	0 .0
.255	.4175				.0001	.00	2.33	.13	.14	.013	.00	.00	BOX	
2165.762	646.058	2.220	648.279	10.70	1.20	.02	648.30	.00	.61	4.00	4.000	4.000	.00	0 .0
.242	.4175				.0001	.00	2.22	.14	.14	.013	.00	.00	BOX	
2166.005	646.159	2.117	648.276	10.70	1.26	.02	648.30	.00	.61	4.00	4.000	4.000	.00	0 .0
.230	.4175				.0001	.00	2.12	.15	.14	.013	.00	.00	BOX	
2166.235	646.255	2.019	648.274	10.70	1.33	.03	648.30	.00	.61	4.00	4.000	4.000	.00	0 .0
.219	.4175				.0001	.00	2.02	.16	.14	.013	.00	.00	BOX	
2166.453	646.347	1.925	648.271	10.70	1.39	.03	648.30	.00	.61	4.00	4.000	4.000	.00	0 .0
.208	.4175				.0002	.00	1.92	.18	.14	.013	.00	.00	BOX	
2166.661	646.433	1.835	648.268	10.70	1.46	.03	648.30	.00	.61	4.00	4.000	4.000	.00	0 .0
.197	.4175				.0002	.00	1.84	.19	.14	.013	.00	.00	BOX	
2166.858	646.515	1.750	648.265	10.70	1.53	.04	648.30	.00	.61	4.00	4.000	4.000	.00	0 .0
.187	.4175				.0002	.00	1.75	.20	.14	.013	.00	.00	BOX	

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:11- 2-2024 Time: 9: 7:52

LINE_X1
Q100
OBR

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width / "N"	Height/Dia.-FT / X-Fall	Base Wt or I.D. / ZR	ZL	No Wth Prs/Pip / Type Ch
2167.044	646.593	1.668	648.261	10.70	1.60	.04	648.30	.00	.61	4.00	4.000	4.000	.00	0 .0
.177	.4175				.0002	.00	1.67	.22	.14	.013	.00	.00		BOX
2167.221	646.667	1.591	648.257	10.70	1.68	.04	648.30	.00	.61	4.00	4.000	4.000	.00	0 .0
.167	.4175				.0003	.00	1.59	.23	.14	.013	.00	.00		BOX
2167.388	646.737	1.517	648.253	10.70	1.76	.05	648.30	.00	.61	4.00	4.000	4.000	.00	0 .0
.107	.4175				.0003	.00	1.52	.25	.14	.013	.00	.00		BOX
2167.495	646.781	1.468	648.249	10.70	1.82	.05	648.30	.00	.61	4.00	4.000	4.000	.00	0 .0
HYDRAULIC JUMP														
2167.495	646.781	.183	646.964	10.70	14.62	3.32	650.28	.00	.61	4.00	4.000	4.000	.00	0 .0
.713	.4175				.1692	.12	.18	6.02	.14	.013	.00	.00		BOX
2168.208	647.079	.188	647.267	10.70	14.21	3.14	650.40	.00	.61	4.00	4.000	4.000	.00	0 .0
1.032	.4175				.1502	.16	.19	5.77	.14	.013	.00	.00		BOX
2169.240	647.510	.197	647.707	10.70	13.55	2.85	650.56	.18	.61	4.00	4.000	4.000	.00	0 .0
WALL EXIT														
2169.240	647.510	.615	648.125	10.70	13.06	2.65	650.77	.08	1.17	1.85	2.000	.000	.00	1 .0
38.801	.0550				.0506	1.96	.69	3.45	.61	.013	.00	.00		PIPE
2208.040	649.645	.631	650.276	10.70	12.59	2.46	652.74	.07	1.17	1.86	2.000	.000	.00	1 .0
20.150	.0550				.0450	.91	.70	3.28	.61	.013	.00	.00		PIPE

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:11- 2-2024 Time: 9: 7:52

LINE_X1
Q100
OBR

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
2228.190	650.754	.653	651.407	10.70	12.00	2.24	653.64	.07	1.17	1.88	2.000	.000	.00	1 .0
11.561	.0550					.0394	.46	.72	3.07	.61	.013	.00	.00	PIPE
2239.750	651.390	.676	652.066	10.70	11.44	2.03	654.10	.06	1.17	1.89	2.000	.000	.00	1 .0
7.853	.0550					.0346	.27	.74	2.87	.61	.013	.00	.00	PIPE
2247.604	651.823	.700	652.523	10.70	10.91	1.85	654.37	.06	1.17	1.91	2.000	.000	.00	1 .0
5.780	.0550					.0303	.18	.76	2.68	.61	.013	.00	.00	PIPE
2253.383	652.141	.725	652.866	10.70	10.40	1.68	654.55	.05	1.17	1.92	2.000	.000	.00	1 .0
4.451	.0550					.0266	.12	.78	2.51	.61	.013	.00	.00	PIPE
2257.834	652.386	.751	653.137	10.70	9.92	1.53	654.66	.05	1.17	1.94	2.000	.000	.00	1 .0
3.524	.0550					.0233	.08	.80	2.34	.61	.013	.00	.00	PIPE
2261.358	652.579	.778	653.358	10.70	9.46	1.39	654.75	.04	1.17	1.95	2.000	.000	.00	1 .0
2.839	.0550					.0204	.06	.82	2.19	.61	.013	.00	.00	PIPE
2264.198	652.736	.806	653.542	10.70	9.02	1.26	654.80	.04	1.17	1.96	2.000	.000	.00	1 .0
2.285	.0550					.0179	.04	.85	2.04	.61	.013	.00	.00	PIPE
2266.483	652.861	.836	653.698	10.70	8.60	1.15	654.85	.04	1.17	1.97	2.000	.000	.00	1 .0
1.892	.0550					.0157	.03	.87	1.91	.61	.013	.00	.00	PIPE
2268.375	652.966	.866	653.832	10.70	8.20	1.04	654.88	.03	1.17	1.98	2.000	.000	.00	1 .0
1.525	.0550					.0138	.02	.90	1.78	.61	.013	.00	.00	PIPE

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:11- 2-2024 Time: 9: 7:52

LINE_X1
Q100
OBR

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
2269.901	653.049	.898	653.948	10.70	7.82	.95	654.90	.03	1.17	1.99	2.000	.000	.00	1 .0
1.218	.0550					.0122	.01	.93	1.66	.61	.013	.00	.00	PIPE
2271.119	653.117	.932	654.049	10.70	7.45	.86	654.91	.03	1.17	2.00	2.000	.000	.00	1 .0
.979	.0550					.0107	.01	.96	1.55	.61	.013	.00	.00	PIPE
2272.098	653.170	.967	654.137	10.70	7.11	.78	654.92	.02	1.17	2.00	2.000	.000	.00	1 .0
.751	.0550					.0094	.01	.99	1.44	.61	.013	.00	.00	PIPE
2272.849	653.212	1.004	654.216	10.70	6.77	.71	654.93	.02	1.17	2.00	2.000	.000	.00	1 .0
.573	.0550					.0083	.00	1.03	1.34	.61	.013	.00	.00	PIPE
2273.422	653.243	1.042	654.285	10.70	6.46	.65	654.93	.02	1.17	2.00	2.000	.000	.00	1 .0
.375	.0550					.0073	.00	1.06	1.25	.61	.013	.00	.00	PIPE
2273.797	653.264	1.083	654.347	10.70	6.16	.59	654.94	.02	1.17	1.99	2.000	.000	.00	1 .0
.217	.0550					.0064	.00	1.10	1.16	.61	.013	.00	.00	PIPE
2274.014	653.276	1.126	654.402	10.70	5.87	.54	654.94	.02	1.17	1.98	2.000	.000	.00	1 .0
.076	.0550					.0057	.00	1.14	1.08	.61	.013	.00	.00	PIPE
2274.090	653.280	1.172	654.452	10.70	5.59	.49	654.94	.02	1.17	1.97	2.000	.000	.00	1 .0
WALL	ENTRANCE													
2274.090	653.280	2.172	655.452	10.70	1.23	.02	655.48	.00	.61	4.00	4.000	4.000	.00	0 .0
JUNCT STR	.0550					.0001	.00	2.17	.15		.013	.00	.00	BOX

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:11- 2-2024 Time: 9: 7:52

LINE_X1
Q100
OBR

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width	Height/Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
2278.090	653.500	1.950	655.450	1.30	.17	.00	655.45	.00	.15	4.00	4.000	4.000	.00	0 .0
WALL EXIT														
2278.090	653.500	1.951	655.451	1.30	.42	.00	655.45	.00	.39	.62	2.000	.000	.00	1 .0
2.345	.0649				.0000	.00	1.95	.03	.21	.013	.00	.00	PIPE	
2280.435	653.652	1.798	655.450	1.30	.44	.00	655.45	.00	.39	1.21	2.000	.000	.00	1 .0
1.613	.0649				.0000	.00	1.80	.05	.21	.013	.00	.00	PIPE	
2282.048	653.757	1.693	655.450	1.30	.46	.00	655.45	.00	.39	1.44	2.000	.000	.00	1 .0
1.335	.0649				.0000	.00	1.69	.06	.21	.013	.00	.00	PIPE	
2283.383	653.844	1.606	655.450	1.30	.48	.00	655.45	.00	.39	1.59	2.000	.000	.00	1 .0
1.165	.0649				.0000	.00	1.61	.06	.21	.013	.00	.00	PIPE	
2284.548	653.919	1.530	655.450	1.30	.50	.00	655.45	.00	.39	1.70	2.000	.000	.00	1 .0
1.057	.0649				.0000	.00	1.53	.07	.21	.013	.00	.00	PIPE	
2285.605	653.988	1.461	655.449	1.30	.53	.00	655.45	.00	.39	1.77	2.000	.000	.00	1 .0
.979	.0649				.0000	.00	1.46	.08	.21	.013	.00	.00	PIPE	
2286.584	654.052	1.397	655.449	1.30	.55	.00	655.45	.00	.39	1.84	2.000	.000	.00	1 .0
.886	.0649				.0001	.00	1.40	.09	.21	.013	.00	.00	PIPE	
2287.471	654.109	1.339	655.448	1.30	.58	.01	655.45	.00	.39	1.88	2.000	.000	.00	1 .0
.839	.0649				.0001	.00	1.34	.09	.21	.013	.00	.00	PIPE	

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:11- 2-2024 Time: 9: 7:52

LINE_X1
Q100
OBR

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width / "N"	Height/Dia.-FT / X-Fall	Base Wt or I.D. / ZR	ZL	No Wth Prs/Pip / Type Ch
2288.310	654.164	1.284	655.448	1.30	.61	.01	655.45	.00	.39	1.92	2.000	.000	.00	1 .0
.792	.0649				.0001	.00	1.28	.10	.21	.013	.00	.00		PIPE
2289.103	654.215	1.232	655.447	1.30	.64	.01	655.45	.00	.39	1.95	2.000	.000	.00	1 .0
.730	.0649				.0001	.00	1.23	.11	.21	.013	.00	.00		PIPE
2289.833	654.263	1.184	655.447	1.30	.67	.01	655.45	.00	.39	1.97	2.000	.000	.00	1 .0
.698	.0649				.0001	.00	1.18	.12	.21	.013	.00	.00		PIPE
2290.531	654.308	1.138	655.446	1.30	.70	.01	655.45	.00	.39	1.98	2.000	.000	.00	1 .0
.651	.0649				.0001	.00	1.14	.13	.21	.013	.00	.00		PIPE
2291.182	654.350	1.095	655.445	1.30	.74	.01	655.45	.00	.39	1.99	2.000	.000	.00	1 .0
.619	.0649				.0001	.00	1.10	.14	.21	.013	.00	.00		PIPE
2291.801	654.391	1.054	655.445	1.30	.77	.01	655.45	.00	.39	2.00	2.000	.000	.00	1 .0
.587	.0649				.0001	.00	1.05	.15	.21	.013	.00	.00		PIPE
2292.388	654.429	1.015	655.444	1.30	.81	.01	655.45	.00	.39	2.00	2.000	.000	.00	1 .0
.555	.0649				.0001	.00	1.02	.16	.21	.013	.00	.00		PIPE
2292.943	654.465	.978	655.443	1.30	.85	.01	655.45	.00	.39	2.00	2.000	.000	.00	1 .0
.538	.0649				.0002	.00	.98	.17	.21	.013	.00	.00		PIPE
2293.481	654.500	.942	655.442	1.30	.89	.01	655.45	.00	.39	2.00	2.000	.000	.00	1 .0
.506	.0649				.0002	.00	.94	.18	.21	.013	.00	.00		PIPE

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:11- 2-2024 Time: 9: 7:52

LINE_X1
Q100
OBR

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
2293.987	654.533	.908	655.441	1.30	.94	.01	655.45	.00	.39	1.99	2.000	.000	.00	1 .0
.473	.0649					.0002	.00	.91	.20	.21	.013	.00	.00	PIPE
2294.460	654.563	.876	655.439	1.30	.98	.01	655.45	.00	.39	1.98	2.000	.000	.00	1 .0
.471	.0649					.0002	.00	.88	.21	.21	.013	.00	.00	PIPE
2294.932	654.594	.844	655.438	1.30	1.03	.02	655.45	.00	.39	1.98	2.000	.000	.00	1 .0
.423	.0649					.0003	.00	.84	.23	.21	.013	.00	.00	PIPE
2295.354	654.621	.815	655.436	1.30	1.08	.02	655.45	.00	.39	1.97	2.000	.000	.00	1 .0
.420	.0649					.0003	.00	.82	.24	.21	.013	.00	.00	PIPE
2295.775	654.649	.786	655.435	1.30	1.13	.02	655.45	.00	.39	1.95	2.000	.000	.00	1 .0
.387	.0649					.0003	.00	.79	.26	.21	.013	.00	.00	PIPE
2296.162	654.674	.759	655.433	1.30	1.19	.02	655.45	.00	.39	1.94	2.000	.000	.00	1 .0
.384	.0649					.0004	.00	.76	.28	.21	.013	.00	.00	PIPE
2296.546	654.699	.732	655.431	1.30	1.25	.02	655.45	.00	.39	1.93	2.000	.000	.00	1 .0
.350	.0649					.0004	.00	.73	.30	.21	.013	.00	.00	PIPE
2296.896	654.721	.707	655.429	1.30	1.31	.03	655.46	.00	.39	1.91	2.000	.000	.00	1 .0
.331	.0649					.0005	.00	.71	.32	.21	.013	.00	.00	PIPE
2297.227	654.743	.683	655.426	1.30	1.37	.03	655.46	.00	.39	1.90	2.000	.000	.00	1 .0
.086	.0649					.0006	.00	.68	.34	.21	.013	.00	.00	PIPE

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:11- 2-2024 Time: 9: 7:52

LINE_X1
Q100
OBR

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
2297.313	654.749	.659	655.408	1.30	1.44	.03	655.44	.00	.39	1.88	2.000	.000	.00	1 .0
HYDRAULIC JUMP														
2297.313	654.749	.207	654.956	1.30	7.54	.88	655.84	.00	.39	1.22	2.000	.000	.00	1 .0
86.952	.0649					.0650	5.65	.21	3.53	.21	.013	.00	.00	PIPE
2384.266	660.396	.207	660.604	1.30	7.54	.88	661.49	.00	.39	1.22	2.000	.000	.00	1 .0
17.915	.0649					.0631	1.13	.21	3.53	.21	.013	.00	.00	PIPE
2402.181	661.560	.210	661.770	1.30	7.38	.85	662.62	.00	.39	1.23	2.000	.000	.00	1 .0
9.153	.0649					.0573	.52	.21	3.43	.21	.013	.00	.00	PIPE
2411.334	662.154	.217	662.371	1.30	7.04	.77	663.14	.00	.39	1.24	2.000	.000	.00	1 .0
4.209	.0649					.0500	.21	.22	3.22	.21	.013	.00	.00	PIPE
2415.543	662.427	.224	662.652	1.30	6.71	.70	663.35	.00	.39	1.26	2.000	.000	.00	1 .0
2.649	.0649					.0436	.12	.22	3.02	.21	.013	.00	.00	PIPE
2418.192	662.600	.231	662.831	1.30	6.40	.64	663.47	.00	.39	1.28	2.000	.000	.00	1 .0
1.850	.0649					.0380	.07	.23	2.83	.21	.013	.00	.00	PIPE
2420.042	662.720	.239	662.959	1.30	6.10	.58	663.54	.00	.39	1.30	2.000	.000	.00	1 .0
1.404	.0649					.0332	.05	.24	2.65	.21	.013	.00	.00	PIPE
2421.446	662.811	.247	663.058	1.30	5.82	.53	663.58	.00	.39	1.32	2.000	.000	.00	1 .0
1.106	.0649					.0290	.03	.25	2.49	.21	.013	.00	.00	PIPE

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:11- 2-2024 Time: 9: 7:52

LINE_X1
Q100
OBR

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width / "N"	Height/Dia.-FT / X-Fall	Base Wt or I.D. / ZR	ZL	No Wth Prs/Pip / Type Ch
2422.552	662.883	.255	663.138	1.30	5.55	.48	663.62	.00	.39	1.33	2.000	.000	.00	1 .0
.868	.0649				.0253	.02	.26	2.33	.21	.013	.00	.00		PIPE
2423.420	662.939	.264	663.203	1.30	5.29	.43	663.64	.00	.39	1.35	2.000	.000	.00	1 .0
.711	.0649				.0221	.02	.26	2.19	.21	.013	.00	.00		PIPE
2424.132	662.985	.273	663.258	1.30	5.04	.39	663.65	.00	.39	1.37	2.000	.000	.00	1 .0
.589	.0649				.0193	.01	.27	2.05	.21	.013	.00	.00		PIPE
2424.721	663.024	.282	663.306	1.30	4.81	.36	663.66	.00	.39	1.39	2.000	.000	.00	1 .0
.491	.0649				.0168	.01	.28	1.92	.21	.013	.00	.00		PIPE
2425.212	663.056	.291	663.347	1.30	4.58	.33	663.67	.00	.39	1.41	2.000	.000	.00	1 .0
.391	.0649				.0147	.01	.29	1.80	.21	.013	.00	.00		PIPE
2425.603	663.081	.301	663.382	1.30	4.37	.30	663.68	.00	.39	1.43	2.000	.000	.00	1 .0
.325	.0649				.0128	.00	.30	1.69	.21	.013	.00	.00		PIPE
2425.929	663.102	.311	663.413	1.30	4.17	.27	663.68	.00	.39	1.45	2.000	.000	.00	1 .0
.270	.0649				.0112	.00	.31	1.58	.21	.013	.00	.00		PIPE
2426.199	663.120	.321	663.441	1.30	3.97	.25	663.69	.00	.39	1.47	2.000	.000	.00	1 .0
.205	.0649				.0098	.00	.32	1.48	.21	.013	.00	.00		PIPE
2426.403	663.133	.332	663.465	1.30	3.79	.22	663.69	.00	.39	1.49	2.000	.000	.00	1 .0
.164	.0649				.0085	.00	.33	1.39	.21	.013	.00	.00		PIPE

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:11- 2-2024 Time: 9: 7:52

LINE_X1
Q100
OBR

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width / "N"	Height/Dia.-FT / X-Fall	Base Wt or I.D. / ZR	ZL	No Wth Prs/Pip / Type Ch
2426.567	663.144	.343	663.487	1.30	3.61	.20	663.69	.00	.39	1.51	2.000	.000	.00	1 .0
.112	.0649					.0075	.00	.34	1.30	.21	.013	.00	.00	PIPE
2426.679	663.151	.355	663.506	1.30	3.44	.18	663.69	.00	.39	1.53	2.000	.000	.00	1 .0
.081	.0649					.0065	.00	.36	1.22	.21	.013	.00	.00	PIPE
2426.760	663.156	.367	663.523	1.30	3.28	.17	663.69	.00	.39	1.55	2.000	.000	.00	1 .0
.054	.0649					.0057	.00	.37	1.14	.21	.013	.00	.00	PIPE
2426.814	663.160	.379	663.539	1.30	3.13	.15	663.69	.00	.39	1.57	2.000	.000	.00	1 .0
.006	.0649					.0050	.00	.38	1.07	.21	.013	.00	.00	PIPE
2426.820	663.160	.394	663.554	1.30	2.97	.14	663.69	.17	.39	1.59	2.000	.000	.00	1 .0
WALL	ENTRANCE													
2426.820	663.160	1.394	664.554	1.30	.23	.00	664.55	.00	.15	4.00	4.000	4.000	.00	0 .0
.997	.0650					.0000	.00	1.40	.03	.07	.013	.00	.00	BOX
2427.817	663.225	1.329	664.553	1.30	.24	.00	664.55	.00	.15	4.00	4.000	4.000	.00	0 .0
.950	.0650					.0000	.00	1.33	.04	.07	.013	.00	.00	BOX
2428.767	663.286	1.267	664.553	1.30	.26	.00	664.55	.00	.15	4.00	4.000	4.000	.00	0 .0
.906	.0650					.0000	.00	1.27	.04	.07	.013	.00	.00	BOX
2429.672	663.345	1.208	664.553	1.30	.27	.00	664.55	.00	.15	4.00	4.000	4.000	.00	0 .0
.863	.0650					.0000	.00	1.21	.04	.07	.013	.00	.00	BOX

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:11- 2-2024 Time: 9: 7:52

LINE_X1
Q100
OBR

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
2430.535	663.401	1.152	664.553	1.30	.28	.00	664.55	.00	.15	4.00	4.000	4.000	.00	0 .0
.285	.0650					.0000	.00	1.16	.05	.07	.013	.00	.00	BOX
2430.820	663.420	1.133	664.553	1.30	.29	.00	664.55	.00	.15	4.00	4.000	4.000	.00	0 .0
WALL	EXIT													
2430.820	663.420	1.134	664.554	1.30	.71	.01	664.56	.00	.39	1.98	2.000	.000	.00	1 .0
.657	.0651					.0001	.00	1.13	.13	.21	.013	.00	.00	PIPE
2431.478	663.463	1.090	664.553	1.30	.74	.01	664.56	.00	.39	1.99	2.000	.000	.00	1 .0
.618	.0651					.0001	.00	1.09	.14	.21	.013	.00	.00	PIPE
2432.095	663.503	1.049	664.552	1.30	.78	.01	664.56	.00	.39	2.00	2.000	.000	.00	1 .0
.586	.0651					.0001	.00	1.05	.15	.21	.013	.00	.00	PIPE
2432.681	663.541	1.010	664.551	1.30	.82	.01	664.56	.00	.39	2.00	2.000	.000	.00	1 .0
.554	.0651					.0001	.00	1.01	.16	.21	.013	.00	.00	PIPE
2433.235	663.577	.973	664.550	1.30	.86	.01	664.56	.00	.39	2.00	2.000	.000	.00	1 .0
.522	.0651					.0002	.00	.97	.17	.21	.013	.00	.00	PIPE
2433.757	663.611	.938	664.549	1.30	.90	.01	664.56	.00	.39	2.00	2.000	.000	.00	1 .0
.505	.0651					.0002	.00	.94	.19	.21	.013	.00	.00	PIPE
2434.262	663.644	.904	664.548	1.30	.94	.01	664.56	.00	.39	1.99	2.000	.000	.00	1 .0
.472	.0651					.0002	.00	.90	.20	.21	.013	.00	.00	PIPE

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:11- 2-2024 Time: 9: 7:52

LINE_X1
Q100
OBR

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT or "N"	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp		X-Fall	ZR	Type Ch
2434.734	663.675	.872	664.547	1.30	.99	.02	664.56	.00	.39	1.98	2.000	.000	.00	1 .0
.455	.0651					.0002	.00	.87	.21	.21	.013	.00	.00	PIPE
2435.189	663.704	.841	664.545	1.30	1.04	.02	664.56	.00	.39	1.97	2.000	.000	.00	1 .0
.437	.0651					.0003	.00	.84	.23	.21	.013	.00	.00	PIPE
2435.626	663.733	.811	664.544	1.30	1.09	.02	664.56	.00	.39	1.96	2.000	.000	.00	1 .0
.404	.0651					.0003	.00	.81	.25	.21	.013	.00	.00	PIPE
2436.030	663.759	.783	664.542	1.30	1.14	.02	664.56	.00	.39	1.95	2.000	.000	.00	1 .0
.401	.0651					.0003	.00	.78	.26	.21	.013	.00	.00	PIPE
2436.431	663.785	.755	664.540	1.30	1.20	.02	664.56	.00	.39	1.94	2.000	.000	.00	1 .0
.368	.0651					.0004	.00	.76	.28	.21	.013	.00	.00	PIPE
2436.799	663.809	.729	664.538	1.30	1.25	.02	664.56	.00	.39	1.93	2.000	.000	.00	1 .0
.349	.0651					.0004	.00	.73	.30	.21	.013	.00	.00	PIPE
2437.148	663.832	.704	664.536	1.30	1.31	.03	664.56	.00	.39	1.91	2.000	.000	.00	1 .0
.330	.0651					.0005	.00	.70	.32	.21	.013	.00	.00	PIPE
2437.478	663.853	.680	664.533	1.30	1.38	.03	664.56	.00	.39	1.89	2.000	.000	.00	1 .0
.180	.0651					.0006	.00	.68	.34	.21	.013	.00	.00	PIPE
2437.658	663.865	.657	664.522	1.30	1.45	.03	664.55	.00	.39	1.88	2.000	.000	.00	1 .0

HYDRAULIC JUMP

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:11- 2-2024 Time: 9: 7:52

LINE_X1
Q100
OBR

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
2437.658	663.865	.210	664.075	1.30	7.40	.85	664.92	.00	.39	1.23	2.000	.000	.00	1 .0
6.952	.0651					.0575	.40	.21	3.44	.21	.013	.00	.00	PIPE
2444.610	664.317	.217	664.534	1.30	7.04	.77	665.30	.00	.39	1.24	2.000	.000	.00	1 .0
4.176	.0651					.0500	.21	.22	3.22	.21	.013	.00	.00	PIPE
2448.786	664.589	.224	664.813	1.30	6.71	.70	665.51	.00	.39	1.26	2.000	.000	.00	1 .0
2.634	.0651					.0436	.11	.22	3.02	.21	.013	.00	.00	PIPE
2451.421	664.760	.231	664.992	1.30	6.40	.64	665.63	.00	.39	1.28	2.000	.000	.00	1 .0
1.842	.0651					.0380	.07	.23	2.83	.21	.013	.00	.00	PIPE
2453.262	664.880	.239	665.119	1.30	6.10	.58	665.70	.00	.39	1.30	2.000	.000	.00	1 .0
1.398	.0651					.0332	.05	.24	2.65	.21	.013	.00	.00	PIPE
2454.661	664.971	.247	665.218	1.30	5.82	.53	665.74	.00	.39	1.32	2.000	.000	.00	1 .0
1.102	.0651					.0290	.03	.25	2.49	.21	.013	.00	.00	PIPE
2455.763	665.043	.255	665.298	1.30	5.55	.48	665.78	.00	.39	1.33	2.000	.000	.00	1 .0
.866	.0651					.0253	.02	.26	2.33	.21	.013	.00	.00	PIPE
2456.628	665.099	.264	665.363	1.30	5.29	.43	665.80	.00	.39	1.35	2.000	.000	.00	1 .0
.709	.0651					.0221	.02	.26	2.19	.21	.013	.00	.00	PIPE
2457.338	665.146	.273	665.419	1.30	5.04	.39	665.81	.00	.39	1.37	2.000	.000	.00	1 .0
.587	.0651					.0193	.01	.27	2.05	.21	.013	.00	.00	PIPE

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:11- 2-2024 Time: 9: 7:52

LINE_X1
Q100
OBR

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width / "N"	Height/ Dia.-FT / X-Fall	Base Wt or I.D. / ZR	ZL	No Wth Prs/Pip / Type Ch
2457.925	665.184	.282	665.466	1.30	4.81	.36	665.82	.00	.39	1.39	2.000	.000	.00	1 .0
.490	.0651				.0168	.01	.28	1.92	.21	.013	.00	.00		PIPE
2458.415	665.216	.291	665.507	1.30	4.58	.33	665.83	.00	.39	1.41	2.000	.000	.00	1 .0
.390	.0651				.0147	.01	.29	1.80	.21	.013	.00	.00		PIPE
2458.806	665.241	.301	665.542	1.30	4.37	.30	665.84	.00	.39	1.43	2.000	.000	.00	1 .0
.325	.0651				.0128	.00	.30	1.69	.21	.013	.00	.00		PIPE
2459.130	665.262	.311	665.573	1.30	4.17	.27	665.84	.00	.39	1.45	2.000	.000	.00	1 .0
.270	.0651				.0112	.00	.31	1.58	.21	.013	.00	.00		PIPE
2459.400	665.280	.321	665.601	1.30	3.97	.25	665.85	.00	.39	1.47	2.000	.000	.00	1 .0
.204	.0651				.0098	.00	.32	1.48	.21	.013	.00	.00		PIPE
2459.604	665.293	.332	665.625	1.30	3.79	.22	665.85	.00	.39	1.49	2.000	.000	.00	1 .0
.164	.0651				.0085	.00	.33	1.39	.21	.013	.00	.00		PIPE
2459.768	665.304	.343	665.647	1.30	3.61	.20	665.85	.00	.39	1.51	2.000	.000	.00	1 .0
.111	.0651				.0075	.00	.34	1.30	.21	.013	.00	.00		PIPE
2459.879	665.311	.355	665.666	1.30	3.44	.18	665.85	.00	.39	1.53	2.000	.000	.00	1 .0
.081	.0651				.0065	.00	.36	1.22	.21	.013	.00	.00		PIPE
2459.960	665.316	.367	665.683	1.30	3.28	.17	665.85	.00	.39	1.55	2.000	.000	.00	1 .0
.054	.0651				.0057	.00	.37	1.14	.21	.013	.00	.00		PIPE

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:11- 2-2024 Time: 9: 7:52

LINE_X1
Q100
OBR

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT or "N"	Base Wt or I.D.	ZL	ZR	No Wth Prs/Pip	Type Ch
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp		X-Fall				
2460.014	665.320	.379	665.699	1.30	3.13	.15	665.85	.00	.39	1.57	2.000	.000	.00	1	.0	
.006	.0651					.0050	.00	.38	1.07	.21	.013	.00	.00	PIPE		
2460.020	665.320	.394	665.714	1.30	2.97	.14	665.85	.00	.39	1.59	2.000	.000	.00	1	.0	
WALL	ENTRANCE															
2460.020	665.320	1.394	666.714	1.30	.23	.00	666.71	.00	.15	4.00	4.000	4.000	.00	0	.0	

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		2.000														
CD	2	3	0	.000	4.000	4.000	.000	.000	.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -

SD-X1-1

HEADING LINE NO 2 IS -

Q100 OBR

HEADING LINE NO 3 IS -

SD-X1-1 Q100

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	982.540	607.750	1	609.960

ELEMENT NO 2 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1041.510	608.750	1	.013	.000	.000	.000	0

ELEMENT NO 3 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1041.510	608.750	2	.500

ELEMENT NO 4 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1041.510	608.750	2	608.750

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 4-2024 Time: 9:23: 6

SD-X1-1
Q100 OBR
SD-X1-1 Q100

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
982.540	607.750	2.210	609.960	19.50	6.21	.60	610.56	.00	1.59	.00	2.000	.000	.00	1 .0
22.043	.0170					.0074	.16	2.21	.00	1.19	.013	.00	.00	PIPE
1004.583	608.124	2.000	610.124	19.50	6.21	.60	610.72	.00	1.59	.00	2.000	.000	.00	1 .0
5.499	.0170					.0069	.04	2.00	.00	1.19	.013	.00	.00	PIPE
1010.083	608.217	1.931	610.148	19.50	6.27	.61	610.76	.00	1.59	.73	2.000	.000	.00	1 .0
HYDRAULIC JUMP														
1010.083	608.217	1.270	609.487	19.50	9.27	1.33	610.82	.00	1.59	1.93	2.000	.000	.00	1 .0
11.805	.0170					.0131	.15	1.27	1.56	1.19	.013	.00	.00	PIPE
1021.888	608.417	1.324	609.741	19.50	8.83	1.21	610.95	.00	1.59	1.89	2.000	.000	.00	1 .0
9.801	.0170					.0116	.11	1.32	1.44	1.19	.013	.00	.00	PIPE
1031.688	608.583	1.382	609.966	19.50	8.42	1.10	611.07	.00	1.59	1.85	2.000	.000	.00	1 .0
5.790	.0170					.0104	.06	1.38	1.33	1.19	.013	.00	.00	PIPE
1037.478	608.682	1.444	610.126	19.50	8.03	1.00	611.13	.00	1.59	1.79	2.000	.000	.00	1 .0
3.126	.0170					.0093	.03	1.44	1.22	1.19	.013	.00	.00	PIPE
1040.604	608.735	1.511	610.246	19.50	7.65	.91	611.16	.00	1.59	1.72	2.000	.000	.00	1 .0
.906	.0170					.0083	.01	1.51	1.11	1.19	.013	.00	.00	PIPE
1041.510	608.750	1.587	610.337	19.50	7.29	.83	611.16	.00	1.59	1.62	2.000	.000	.00	1 .0
WALL ENTRANCE														

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 4-2024 Time: 9:23: 6

SD-X1-1
Q100
SD-X1-1 OBR
Q100

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1041.510	608.750	3.587	612.337	19.50	1.36	.03	612.37	.00	.90	4.00	4.000	4.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.500														
CD	2	3	0	.000	4.000	4.000	.000	.000	.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
SD-X1-2

HEADING LINE NO 2 IS -
Q100 OBR

HEADING LINE NO 3 IS -
SD-X1-2 Q100

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1002.000	614.910	1	617.730

ELEMENT NO 2 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1047.880	617.900	1	.013	.000	.000	.000	0

ELEMENT NO 3 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1047.880	617.900	2	.500

ELEMENT NO 4 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1047.880	617.900	2	617.900

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 4-2024 Time: 9:23:21

SD-X1-2
Q100 OBR
SD-X1-2 Q100

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1002.000	614.910	2.820	617.730	8.80	4.98	.39	618.12	.00	1.15	.00	1.500	.000	.00	1 .0
15.601	.0652					.0070	.11	2.82	.00	.59	.013	.00	.00	PIPE
1017.601	615.927	1.912	617.839	8.80	4.98	.39	618.22	.00	1.15	.00	1.500	.000	.00	1 .0
HYDRAULIC JUMP														
1017.601	615.927	.656	616.583	8.80	11.84	2.18	618.76	.00	1.15	1.49	1.500	.000	.00	1 .0
6.002	.0652					.0420	.25	.66	2.95	.59	.013	.00	.00	PIPE
1023.603	616.318	.681	616.999	8.80	11.28	1.97	618.97	.00	1.15	1.49	1.500	.000	.00	1 .0
5.448	.0652					.0368	.20	.68	2.75	.59	.013	.00	.00	PIPE
1029.052	616.673	.706	617.379	8.80	10.75	1.80	619.17	.00	1.15	1.50	1.500	.000	.00	1 .0
4.153	.0652					.0324	.13	.71	2.56	.59	.013	.00	.00	PIPE
1033.205	616.944	.733	617.677	8.80	10.25	1.63	619.31	.00	1.15	1.50	1.500	.000	.00	1 .0
3.283	.0652					.0285	.09	.73	2.39	.59	.013	.00	.00	PIPE
1036.488	617.158	.761	617.919	8.80	9.77	1.48	619.40	.00	1.15	1.50	1.500	.000	.00	1 .0
2.643	.0652					.0251	.07	.76	2.22	.59	.013	.00	.00	PIPE
1039.130	617.330	.790	618.120	8.80	9.32	1.35	619.47	.00	1.15	1.50	1.500	.000	.00	1 .0
2.129	.0652					.0221	.05	.79	2.07	.59	.013	.00	.00	PIPE
1041.259	617.469	.821	618.290	8.80	8.89	1.23	619.52	.00	1.15	1.49	1.500	.000	.00	1 .0
1.741	.0652					.0195	.03	.82	1.92	.59	.013	.00	.00	PIPE

SD-X1-2
Q100 OBR
SD-X1-2 Q100

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1043.000	617.582	.853	618.435	8.80	8.47	1.11	619.55	.00	1.15	1.49	1.500	.000	.00	1 .0
1.405	.0652					.0173	.02	.85	1.79	.59	.013	.00	.00	PIPE
1044.405	617.674	.887	618.561	8.80	8.08	1.01	619.57	.00	1.15	1.47	1.500	.000	.00	1 .0
1.104	.0652					.0153	.02	.89	1.66	.59	.013	.00	.00	PIPE
1045.510	617.746	.924	618.670	8.80	7.70	.92	619.59	.00	1.15	1.46	1.500	.000	.00	1 .0
.886	.0652					.0135	.01	.92	1.53	.59	.013	.00	.00	PIPE
1046.396	617.803	.962	618.765	8.80	7.34	.84	619.60	.00	1.15	1.44	1.500	.000	.00	1 .0
.661	.0652					.0120	.01	.96	1.42	.59	.013	.00	.00	PIPE
1047.056	617.846	1.003	618.849	8.80	7.00	.76	619.61	.00	1.15	1.41	1.500	.000	.00	1 .0
.463	.0652					.0107	.00	1.00	1.31	.59	.013	.00	.00	PIPE
1047.519	617.876	1.047	618.924	8.80	6.68	.69	619.62	.00	1.15	1.38	1.500	.000	.00	1 .0
.268	.0652					.0095	.00	1.05	1.20	.59	.013	.00	.00	PIPE
1047.787	617.894	1.095	618.989	8.80	6.37	.63	619.62	.00	1.15	1.33	1.500	.000	.00	1 .0
.093	.0652					.0085	.00	1.10	1.10	.59	.013	.00	.00	PIPE
1047.880	617.900	1.148	619.048	8.80	6.06	.57	619.62	.00	1.15	1.27	1.500	.000	.00	1 .0
WALL	ENTRANCE													
1047.880	617.900	2.148	620.048	8.80	1.02	.02	620.06	.00	.53	4.00	4.000	4.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.500														
CD	2	3	0	.000	4.000	4.000	.000	.000	.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
SD-X1-4

HEADING LINE NO 2 IS -
Q100 OBR

HEADING LINE NO 3 IS -
SD-X1-4 Q100

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1002.500	605.420	1	608.870

ELEMENT NO 2 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1060.580	605.890	1	.013	.000	.000	.000	0

ELEMENT NO 3 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1060.580	605.890	2	.500

ELEMENT NO 4 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1060.580	605.890	2	605.890

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 4-2024 Time: 9: 7:39

SD-X1-4
Q100 OBR
SD-X1-4 Q100

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1002.500	605.420	3.450	608.870	7.70	4.36	.29	609.16	.00	1.08	.00	1.500	.000	.00	1 .0
58.080	.0081					.0054	.31	3.45	.00	1.03	.013	.00	.00	PIPE
1060.580	605.890	3.292	609.182	7.70	4.36	.29	609.48	.00	1.08	.00	1.500	.000	.00	1 .0
WALL	ENTRANCE													
1060.580	605.890	3.729	609.619	7.70	.52	.00	609.62	.00	.49	4.00	4.000	4.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.500														
CD	2	3	0	.000	4.000	4.000	.000	.000	.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -

SD-X2

HEADING LINE NO 2 IS -

Q100 OBR

HEADING LINE NO 3 IS -

SD-X2 Q100

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	979.600	609.520	1	611.990

ELEMENT NO 2 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	998.000	609.650	1	.013	.000	.000	.000	0

ELEMENT NO 3 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	998.000	609.650	2	.500

ELEMENT NO 4 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	998.000	609.650	2	609.650

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 4-2024 Time: 8:52:51

SD-X2
Q100 OBR
SD-X2 Q100

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
979.600	609.520	2.470	611.990	6.50	3.68	.21	612.20	.00	.99	.00	1.500	.000	.00	1 .0
18.400	.0071					.0038	.07	2.47	.00	.96	.013	.00	.00	PIPE
998.000	609.650	2.410	612.060	6.50	3.68	.21	612.27	.00	.99	.00	1.500	.000	.00	1 .0
WALL	ENTRANCE													
998.000	609.650	2.717	612.367	6.50	.60	.01	612.37	.00	.43	4.00	4.000	4.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		2.000														
CD	2	4	1		1.500														
CD	3	3	0	.000	6.000	4.000	.000	.000	.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -

LINE SD_W1

HEADING LINE NO 2 IS -

Q100

HEADING LINE NO 3 IS -

OBR

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1087.300	194.550	1	199.030

ELEMENT NO 2 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1212.210	200.550	1	.013	1012.279	7.070	.000	0

ELEMENT NO 3 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1212.210	200.550	3	.200

ELEMENT NO 4 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1216.210	200.880	3	.013	.000	.000	.000	0

ELEMENT NO 5 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1216.210	200.880	1

ELEMENT NO 6 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1481.960	213.630	1	.013	.000	.000	.000	0

ELEMENT NO 7 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1481.960	213.630	3	.200

ELEMENT NO 8 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1485.960	213.960	3	.013	.000	.000	.000	0

ELEMENT NO 9 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1485.960	213.960	1

ELEMENT NO 10 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1548.440	216.960	1	.013	1014.119	3.530	.000	0

ELEMENT NO 11 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1712.970	224.860	1	.013	.000	.000	.000	0

ELEMENT NO 12 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1712.970	224.860	3	.200

ELEMENT NO 13 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1716.970	225.190	3	.013	.000	.000	.000	0

ELEMENT NO 14 IS A WALL EXIT *

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                  U/S DATA   STATION    INVERT  SECT
                             1716.970  225.190    1
                                          W S P G W                                                                    PAGE NO   3
                        WATER SURFACE PROFILE - ELEMENT CARD LISTING
ELEMENT NO  15 IS A REACH            *         *     *
                  U/S DATA   STATION    INVERT  SECT              N                        RADIUS    ANGLE     ANG PT  MAN H
                             1786.970  228.130    1              .013                     990.297   -4.050      .000     0
ELEMENT NO  16 IS A REACH            *         *     *
                  U/S DATA   STATION    INVERT  SECT              N                        RADIUS    ANGLE     ANG PT  MAN H
                             1926.420  233.990    1              .013                       .000     .000  -354.760     7
ELEMENT NO  17 IS A  WALL  ENTRANCE                 *
                  U/S DATA   STATION    INVERT  SECT             FP
                             1926.420  233.990    3              .200
ELEMENT NO  18 IS A JUNCTION         *         *     *     *               *                  *                *
                  U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3        Q4     INVERT-3 INVERT-4  PHI 3  PHI 4
                             1930.420  234.320    3     2     0   .013     4.400      .000   234.820      .000    .000     .000
                                                                                          RADIUS    ANGLE
                                                                                            .000    .000
ELEMENT NO  19 IS A  WALL  EXIT                     *
                  U/S DATA   STATION    INVERT  SECT
                             1930.420  234.320    1
ELEMENT NO  20 IS A REACH            *         *     *
                  U/S DATA   STATION    INVERT  SECT              N                        RADIUS    ANGLE     ANG PT  MAN H
                             2155.780  237.660    1              .013                    6979.554   -1.850      .000     0
ELEMENT NO  21 IS A  WALL  ENTRANCE                 *
                  U/S DATA   STATION    INVERT  SECT             FP
                             2155.780  237.660    3              .200
ELEMENT NO  22 IS A JUNCTION         *         *     *     *               *                  *                *
                  U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3        Q4     INVERT-3 INVERT-4  PHI 3  PHI 4
                             2159.780  237.990    3     2     0   .013     4.200      .000   237.990      .000    .000     .000
                                                                                          RADIUS    ANGLE
                                                                                            .000    .000
ELEMENT NO  23 IS A  WALL  EXIT                     *
                  U/S DATA   STATION    INVERT  SECT
                             2159.780  237.990    1
ELEMENT NO  24 IS A REACH            *         *     *
                  U/S DATA   STATION    INVERT  SECT              N                        RADIUS    ANGLE     ANG PT  MAN H
                             2228.710  238.680    1              .013                       .000     .000      .000     0
                                          W S P G W                                                                    PAGE NO   4
                        WATER SURFACE PROFILE - ELEMENT CARD LISTING
ELEMENT NO  25 IS A  WALL  ENTRANCE                 *
                  U/S DATA   STATION    INVERT  SECT             FP
                             2228.710  238.680    3              .200
ELEMENT NO  26 IS A JUNCTION         *         *     *     *               *                  *                *
                  U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3        Q4     INVERT-3 INVERT-4  PHI 3  PHI 4
                             2232.710  239.010    3     2     0   .013     5.000      .000   239.510      .000    .000     .000
                                                                                          RADIUS    ANGLE
                                                                                            .000    .000
ELEMENT NO  27 IS A  WALL  EXIT                     *
                  U/S DATA   STATION    INVERT  SECT
                             2232.710  239.010    2
ELEMENT NO  28 IS A REACH            *         *     *
                  U/S DATA   STATION    INVERT  SECT              N                        RADIUS    ANGLE     ANG PT  MAN H
                             2308.400  240.520    2              .013                     909.164   -4.770      .000     0
ELEMENT NO  29 IS A  WALL  ENTRANCE                 *
                  U/S DATA   STATION    INVERT  SECT             FP
                             2308.400  240.520    3              .200
ELEMENT NO  30 IS A JUNCTION         *         *     *     *               *                  *                *
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                  U/S DATA   STATION    INVERT  SECT LAT-1 LAT-2   N      Q3        Q4     INVERT-3 INVERT-4  PHI 3  PHI 4
                             2312.400  241.020    3     2     0   .013     3.700      .000   241.020      .000 -88.000     .200
                                                                                             RADIUS    ANGLE
                                                                                               .000    .000
ELEMENT NO  31 IS A  WALL  EXIT                        *
                  U/S DATA   STATION    INVERT  SECT
                             2312.400  241.020    2
ELEMENT NO  32 IS A REACH             *         *     *
                  U/S DATA   STATION    INVERT  SECT               N                        RADIUS    ANGLE     ANG PT  MAN H
                             2363.130  242.040    2              .013                      878.131   -3.310      .000     0
ELEMENT NO  33 IS A  WALL  ENTRANCE                    *
                  U/S DATA   STATION    INVERT  SECT              FP
                             2363.130  242.040    3              .200
ELEMENT NO  34 IS A REACH             *         *     *
                  U/S DATA   STATION    INVERT  SECT               N                        RADIUS    ANGLE     ANG PT  MAN H
                             2367.130  242.370    3              .013                        .000     .000      .000     0
                                                  W S P G W                                                            PAGE NO   5
                          WATER SURFACE PROFILE - ELEMENT CARD LISTING
ELEMENT NO  35 IS A  WALL  EXIT                        *
                  U/S DATA   STATION    INVERT  SECT
                             2367.130  242.370    2
ELEMENT NO  36 IS A REACH             *         *     *
                  U/S DATA   STATION    INVERT  SECT               N                        RADIUS    ANGLE     ANG PT  MAN H
                             2593.300  246.890    2              .013                      877.954  -14.760      .000     0
ELEMENT NO  37 IS A  WALL  ENTRANCE                    *
                  U/S DATA   STATION    INVERT  SECT              FP
                             2593.300  246.890    3              .200
ELEMENT NO  38 IS A REACH             *         *     *
                  U/S DATA   STATION    INVERT  SECT               N                        RADIUS    ANGLE     ANG PT  MAN H
                             2597.300  247.220    3              .013                        .000     .000      .000     0
ELEMENT NO  39 IS A  WALL  EXIT                        *
                  U/S DATA   STATION    INVERT  SECT
                             2597.300  247.220    2
ELEMENT NO  40 IS A REACH             *         *     *
                  U/S DATA   STATION    INVERT  SECT               N                        RADIUS    ANGLE     ANG PT  MAN H
                             2811.080  251.500    2              .013                        .000     .000      .000     0
ELEMENT NO  41 IS A  WALL  ENTRANCE                    *
                  U/S DATA   STATION    INVERT  SECT              FP
                             2811.080  251.500    3              .200
ELEMENT NO  42 IS A SYSTEM HEADWORKS                   *                        *
                  U/S DATA   STATION    INVERT  SECT                                    W S ELEV
                             2811.080  251.500    3                                    251.510
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Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 5-30-2024 Time: 7:51: 5

LINE SD_W1
Q100
OBR

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1087.300	194.550	4.480	199.030	24.60	7.83	.95	199.98	.00	1.75	.00	2.000	.000	.00	1 .0
44.679	.0480					.0118	.53	.00	.00	1.00	.013	.00	.00	PIPE
1131.979	196.696	2.886	199.582	24.60	7.83	.95	200.53	.00	1.75	.00	2.000	.000	.00	1 .0
HYDRAULIC JUMP														
1131.979	196.696	1.058	197.754	24.60	14.59	3.31	201.06	.01	1.75	2.00	2.000	.000	.00	1 .0
15.238	.0480					.0380	.58	1.07	2.80	1.00	.013	.00	.00	PIPE
1147.217	197.428	1.077	198.505	24.60	14.25	3.15	201.66	.01	1.75	1.99	2.000	.000	.00	1 .0
18.237	.0480					.0347	.63	1.09	2.70	1.00	.013	.00	.00	PIPE
1165.454	198.304	1.120	199.424	24.60	13.59	2.87	202.29	.01	1.75	1.99	2.000	.000	.00	1 .0
12.440	.0480					.0306	.38	1.13	2.51	1.00	.013	.00	.00	PIPE
1177.894	198.902	1.164	200.066	24.60	12.96	2.61	202.67	.01	1.75	1.97	2.000	.000	.00	1 .0
9.057	.0480					.0271	.25	1.17	2.33	1.00	.013	.00	.00	PIPE
1186.951	199.337	1.211	200.548	24.60	12.35	2.37	202.92	.01	1.75	1.95	2.000	.000	.00	1 .0
6.870	.0480					.0240	.16	1.22	2.16	1.00	.013	.00	.00	PIPE
1193.822	199.667	1.261	200.928	24.60	11.78	2.15	203.08	.01	1.75	1.93	2.000	.000	.00	1 .0
5.296	.0480					.0213	.11	1.27	2.00	1.00	.013	.00	.00	PIPE
1199.118	199.921	1.315	201.236	24.60	11.23	1.96	203.19	.01	1.75	1.90	2.000	.000	.00	1 .0
4.153	.0480					.0189	.08	1.32	1.84	1.00	.013	.00	.00	PIPE

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 5-30-2024 Time: 7:51: 5

LINE SD_W1
Q100
OBR

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1203.271	200.121	1.372	201.493	24.60	10.71	1.78	203.27	.01	1.75	1.86	2.000	.000	.00	1 .0
3.232	.0480					.0168	.05	1.38	1.70	1.00	.013	.00	.00	PIPE
1206.503	200.276	1.433	201.709	24.60	10.21	1.62	203.33	.01	1.75	1.80	2.000	.000	.00	1 .0
2.459	.0480					.0150	.04	1.44	1.56	1.00	.013	.00	.00	PIPE
1208.962	200.394	1.499	201.893	24.60	9.73	1.47	203.36	.01	1.75	1.73	2.000	.000	.00	1 .0
1.760	.0480					.0135	.02	1.50	1.42	1.00	.013	.00	.00	PIPE
1210.722	200.479	1.572	202.051	24.60	9.28	1.34	203.39	.00	1.75	1.64	2.000	.000	.00	1 .0
1.078	.0480					.0122	.01	1.58	1.29	1.00	.013	.00	.00	PIPE
1211.800	200.530	1.655	202.185	24.60	8.85	1.22	203.40	.00	1.75	1.51	2.000	.000	.00	1 .0
.410	.0480					.0112	.00	1.66	1.15	1.00	.013	.00	.00	PIPE
1212.210	200.550	1.752	202.302	24.60	8.43	1.10	203.41	.00	1.75	1.32	2.000	.000	.00	1 .0
WALL ENTRANCE														
1212.210	200.550	3.752	204.302	24.60	1.64	.04	204.34	.00	1.06	4.00	6.000	4.000	.00	0 .0
2.069	.0825					.0002	.00	3.75	.15	.39	.013	.00	.00	BOX
1214.279	200.721	3.577	204.298	24.60	1.72	.05	204.34	.00	1.06	4.00	6.000	4.000	.00	0 .0
1.931	.0825					.0002	.00	3.58	.16	.39	.013	.00	.00	BOX
1216.210	200.880	3.414	204.294	24.60	1.80	.05	204.34	.00	1.06	4.00	6.000	4.000	.00	0 .0
WALL EXIT														

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 5-30-2024 Time: 7:51: 5

LINE SD_W1
Q100
OBR

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1216.210	200.880	3.415	204.295	24.60	7.83	.95	205.25	.00	1.75	.00	2.000	.000	.00	1 .0
7.851	.0480					.0118	.09	3.41	.00	1.00	.013	.00	.00	PIPE
1224.061	201.257	3.130	204.387	24.60	7.83	.95	205.34	.00	1.75	.00	2.000	.000	.00	1 .0
HYDRAULIC JUMP														
1224.061	201.257	.996	202.253	24.60	15.73	3.84	206.10	.00	1.75	2.00	2.000	.000	.00	1 .0
69.606	.0480					.0476	3.32	1.00	3.14	1.00	.013	.00	.00	PIPE
1293.667	204.596	.999	205.595	24.60	15.68	3.82	209.41	.00	1.75	2.00	2.000	.000	.00	1 .0
91.380	.0480					.0446	4.08	1.00	3.12	1.00	.013	.00	.00	PIPE
1385.048	208.980	1.037	210.018	24.60	14.95	3.47	213.49	.00	1.75	2.00	2.000	.000	.00	1 .0
31.724	.0480					.0393	1.25	1.04	2.90	1.00	.013	.00	.00	PIPE
1416.772	210.502	1.077	211.580	24.60	14.25	3.15	214.73	.00	1.75	1.99	2.000	.000	.00	1 .0
18.316	.0480					.0347	.64	1.08	2.70	1.00	.013	.00	.00	PIPE
1435.087	211.381	1.120	212.501	24.60	13.59	2.87	215.37	.00	1.75	1.99	2.000	.000	.00	1 .0
12.481	.0480					.0306	.38	1.12	2.51	1.00	.013	.00	.00	PIPE
1447.568	211.980	1.164	213.144	24.60	12.96	2.61	215.75	.00	1.75	1.97	2.000	.000	.00	1 .0
9.082	.0480					.0271	.25	1.16	2.33	1.00	.013	.00	.00	PIPE
1456.650	212.416	1.211	213.627	24.60	12.35	2.37	216.00	.00	1.75	1.95	2.000	.000	.00	1 .0
6.887	.0480					.0240	.16	1.21	2.16	1.00	.013	.00	.00	PIPE

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 5-30-2024 Time: 7:51: 5

LINE SD_W1
Q100
OBR

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1463.537	212.746	1.261	214.007	24.60	11.78	2.15	216.16	.00	1.75	1.93	2.000	.000	.00	1 .0
5.307	.0480					.0213	.11	1.26	2.00	1.00	.013	.00	.00	PIPE
1468.844	213.001	1.315	214.316	24.60	11.23	1.96	216.27	.00	1.75	1.90	2.000	.000	.00	1 .0
4.161	.0480					.0189	.08	1.32	1.84	1.00	.013	.00	.00	PIPE
1473.006	213.200	1.372	214.573	24.60	10.71	1.78	216.35	.00	1.75	1.86	2.000	.000	.00	1 .0
3.238	.0480					.0168	.05	1.37	1.70	1.00	.013	.00	.00	PIPE
1476.244	213.356	1.433	214.789	24.60	10.21	1.62	216.41	.00	1.75	1.80	2.000	.000	.00	1 .0
2.464	.0480					.0150	.04	1.43	1.56	1.00	.013	.00	.00	PIPE
1478.707	213.474	1.499	214.973	24.60	9.73	1.47	216.44	.00	1.75	1.73	2.000	.000	.00	1 .0
1.763	.0480					.0135	.02	1.50	1.42	1.00	.013	.00	.00	PIPE
1480.470	213.559	1.572	215.131	24.60	9.28	1.34	216.47	.00	1.75	1.64	2.000	.000	.00	1 .0
1.079	.0480					.0122	.01	1.57	1.29	1.00	.013	.00	.00	PIPE
1481.549	213.610	1.655	215.265	24.60	8.85	1.22	216.48	.00	1.75	1.51	2.000	.000	.00	1 .0
.411	.0480					.0112	.00	1.66	1.15	1.00	.013	.00	.00	PIPE
1481.960	213.630	1.752	215.382	24.60	8.43	1.10	216.49	.00	1.75	1.32	2.000	.000	.00	1 .0
WALL	ENTRANCE													
1481.960	213.630	3.752	217.382	24.60	1.64	.04	217.42	.00	1.06	4.00	6.000	4.000	.00	0 .0
2.069	.0825					.0002	.00	3.75	.15	.39	.013	.00	.00	BOX

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 5-30-2024 Time: 7:51: 5

LINE SD_W1
Q100
OBR

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1484.029	213.801	3.577	217.378	24.60	1.72	.05	217.42	.00	1.06	4.00	6.000	4.000	.00	0 .0
1.931	.0825					.0002	.00	3.58	.16	.39	.013	.00	.00	BOX
1485.960	213.960	3.414	217.374	24.60	1.80	.05	217.42	.00	1.06	4.00	6.000	4.000	.00	0 .0
WALL EXIT														
1485.960	213.960	3.415	217.375	24.60	7.83	.95	218.33	.00	1.75	.00	2.000	.000	.00	1 .0
8.304	.0480					.0118	.10	.00	.00	1.00	.013	.00	.00	PIPE
1494.264	214.359	3.119	217.478	24.60	7.83	.95	218.43	.00	1.75	.00	2.000	.000	.00	1 .0
HYDRAULIC JUMP														
1494.264	214.359	.998	215.357	24.60	15.70	3.83	219.18	.02	1.75	2.00	2.000	.000	.00	1 .0
54.176	.0480					.0471	2.55	1.01	3.12	1.00	.013	.00	.00	PIPE
1548.440	216.960	1.005	217.965	24.60	15.57	3.76	221.73	.00	1.75	2.00	2.000	.000	.00	1 .0
67.887	.0480					.0442	3.00	1.00	3.09	1.00	.013	.00	.00	PIPE
1616.327	220.220	1.037	221.257	24.60	14.95	3.47	224.73	.00	1.75	2.00	2.000	.000	.00	1 .0
31.585	.0480					.0393	1.24	1.04	2.90	1.00	.013	.00	.00	PIPE
1647.912	221.736	1.077	222.813	24.60	14.25	3.15	225.97	.00	1.75	1.99	2.000	.000	.00	1 .0
18.263	.0480					.0347	.63	1.08	2.70	1.00	.013	.00	.00	PIPE
1666.175	222.613	1.120	223.733	24.60	13.59	2.87	226.60	.00	1.75	1.99	2.000	.000	.00	1 .0
12.453	.0480					.0306	.38	1.12	2.51	1.00	.013	.00	.00	PIPE

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 5-30-2024 Time: 7:51: 5

LINE SD_W1
Q100
OBR

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1678.628	223.211	1.164	224.375	24.60	12.96	2.61	226.98	.00	1.75	1.97	2.000	.000	.00	1 .0
9.066	.0480					.0271	.25	1.16	2.33	1.00	.013	.00	.00	PIPE
1687.694	223.646	1.211	224.857	24.60	12.35	2.37	227.23	.00	1.75	1.95	2.000	.000	.00	1 .0
6.876	.0480					.0240	.16	1.21	2.16	1.00	.013	.00	.00	PIPE
1694.570	223.977	1.261	225.238	24.60	11.78	2.15	227.39	.00	1.75	1.93	2.000	.000	.00	1 .0
5.300	.0480					.0213	.11	1.26	2.00	1.00	.013	.00	.00	PIPE
1699.870	224.231	1.315	225.546	24.60	11.23	1.96	227.50	.00	1.75	1.90	2.000	.000	.00	1 .0
4.156	.0480					.0189	.08	1.32	1.84	1.00	.013	.00	.00	PIPE
1704.026	224.431	1.372	225.803	24.60	10.71	1.78	227.58	.00	1.75	1.86	2.000	.000	.00	1 .0
3.234	.0480					.0168	.05	1.37	1.70	1.00	.013	.00	.00	PIPE
1707.260	224.586	1.433	226.019	24.60	10.21	1.62	227.64	.00	1.75	1.80	2.000	.000	.00	1 .0
2.461	.0480					.0150	.04	1.43	1.56	1.00	.013	.00	.00	PIPE
1709.721	224.704	1.499	226.203	24.60	9.73	1.47	227.67	.00	1.75	1.73	2.000	.000	.00	1 .0
1.761	.0480					.0135	.02	1.50	1.42	1.00	.013	.00	.00	PIPE
1711.481	224.789	1.572	226.361	24.60	9.28	1.34	227.70	.00	1.75	1.64	2.000	.000	.00	1 .0
1.078	.0480					.0122	.01	1.57	1.29	1.00	.013	.00	.00	PIPE
1712.559	224.840	1.655	226.495	24.60	8.85	1.22	227.71	.00	1.75	1.51	2.000	.000	.00	1 .0
.411	.0480					.0112	.00	1.66	1.15	1.00	.013	.00	.00	PIPE

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 5-30-2024 Time: 7:51: 5

LINE SD_W1
Q100
OBR

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1712.970	224.860	1.752	226.612	24.60	8.43	1.10	227.72	.00	1.75	1.32	2.000	.000	.00	1 .0
WALL ENTRANCE														
1712.970	224.860	3.752	228.612	24.60	1.64	.04	228.65	.00	1.06	4.00	6.000	4.000	.00	0 .0
2.069	.0825					.0002	.00	3.75	.15	.39	.013	.00	.00	BOX
1715.039	225.031	3.577	228.608	24.60	1.72	.05	228.65	.00	1.06	4.00	6.000	4.000	.00	0 .0
1.931	.0825					.0002	.00	3.58	.16	.39	.013	.00	.00	BOX
1716.970	225.190	3.414	228.604	24.60	1.80	.05	228.65	.00	1.06	4.00	6.000	4.000	.00	0 .0
WALL EXIT														
1716.970	225.190	3.415	228.605	24.60	7.83	.95	229.56	.00	1.75	.00	2.000	.000	.00	1 .0
16.064	.0420					.0118	.19	.00	.00	1.04	.013	.00	.00	PIPE
1733.034	225.865	2.941	228.805	24.60	7.83	.95	229.76	.00	1.75	.00	2.000	.000	.00	1 .0
HYDRAULIC JUMP														
1733.034	225.865	1.040	226.905	24.60	14.90	3.45	230.35	.01	1.75	2.00	2.000	.000	.00	1 .0
53.936	.0420					.0406	2.19	1.05	2.89	1.04	.013	.00	.00	PIPE
1786.970	228.130	1.054	229.184	24.60	14.66	3.34	232.52	.00	1.75	2.00	2.000	.000	.00	1 .0
42.455	.0420					.0383	1.62	1.05	2.82	1.04	.013	.00	.00	PIPE
1829.425	229.914	1.077	230.991	24.60	14.25	3.15	234.15	.00	1.75	1.99	2.000	.000	.00	1 .0
33.153	.0420					.0347	1.15	1.08	2.70	1.04	.013	.00	.00	PIPE

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 5-30-2024 Time: 7:51: 5

LINE SD_W1
Q100
OBR

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1862.578	231.307	1.120	232.427	24.60	13.59	2.87	235.29	.00	1.75	1.99	2.000	.000	.00	1 .0
18.998	.0420					.0306	.58	1.12	2.51	1.04	.013	.00	.00	PIPE
1881.576	232.106	1.164	233.270	24.60	12.96	2.61	235.88	.00	1.75	1.97	2.000	.000	.00	1 .0
12.697	.0420					.0271	.34	1.16	2.33	1.04	.013	.00	.00	PIPE
1894.274	232.639	1.211	233.850	24.60	12.35	2.37	236.22	.00	1.75	1.95	2.000	.000	.00	1 .0
9.157	.0420					.0240	.22	1.21	2.16	1.04	.013	.00	.00	PIPE
1903.431	233.024	1.261	234.285	24.60	11.78	2.15	236.44	.00	1.75	1.93	2.000	.000	.00	1 .0
6.829	.0420					.0213	.15	1.26	2.00	1.04	.013	.00	.00	PIPE
1910.260	233.311	1.315	234.626	24.60	11.23	1.96	236.58	.00	1.75	1.90	2.000	.000	.00	1 .0
5.233	.0420					.0189	.10	1.32	1.84	1.04	.013	.00	.00	PIPE
1915.493	233.531	1.372	234.903	24.60	10.71	1.78	236.68	.00	1.75	1.86	2.000	.000	.00	1 .0
4.004	.0420					.0168	.07	1.37	1.70	1.04	.013	.00	.00	PIPE
1919.497	233.699	1.433	235.132	24.60	10.21	1.62	236.75	.00	1.75	1.80	2.000	.000	.00	1 .0
3.007	.0420					.0150	.05	1.43	1.56	1.04	.013	.00	.00	PIPE
1922.504	233.825	1.499	235.325	24.60	9.73	1.47	236.80	.00	1.75	1.73	2.000	.000	.00	1 .0
2.131	.0420					.0135	.03	1.50	1.42	1.04	.013	.00	.00	PIPE
1924.635	233.915	1.572	235.487	24.60	9.28	1.34	236.82	.00	1.75	1.64	2.000	.000	.00	1 .0
1.295	.0420					.0122	.02	1.57	1.29	1.04	.013	.00	.00	PIPE

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 5-30-2024 Time: 7:51: 5

LINE SD_W1
Q100
OBR

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT) / SF Ave	Water Elev / HF	Q (CFS) / SE Dpth	Vel (FPS) / Froude N	Vel Head / Norm Dp	Energy Grd.El. / "N"	Super Elev / X-Fall	Critical Depth / ZR	Flow Top Width / Type Ch	Height/ Dia.-FT /	Base Wt or I.D. /	ZL /	No Wth Prs/Pip /
1925.930	233.969	1.655	235.624	24.60	8.85	1.22	236.84	.00	1.75	1.51	2.000	.000	.00	1 .0
.490	.0420					.0112	.01	1.66	1.15	1.04	.013	.00	.00	PIPE
1926.420	233.990	1.752	235.742	24.60	8.43	1.10	236.85	.00	1.75	1.32	2.000	.000	.00	1 .0
WALL	ENTRANCE													
1926.420	233.990	3.752	237.742	24.60	1.64	.04	237.78	.00	1.06	4.00	6.000	4.000	.00	0 .0
JUNCT STR	.0825					.0001	.00	3.75	.15		.013	.00	.00	BOX
1930.420	234.320	3.421	237.741	20.20	1.48	.03	237.77	.00	.93	4.00	6.000	4.000	.00	0 .0
WALL	EXIT													
1930.420	234.320	3.421	237.741	20.20	6.43	.64	238.38	.00	1.61	.00	2.000	.000	.00	1 .0
210.143	.0148					.0079	1.66	.00	.00	1.27	.013	.00	.00	PIPE
2140.563	237.434	2.000	239.434	20.20	6.43	.64	240.08	2.00	1.61	.00	2.000	.000	.00	1 .0
15.217	.0148					.0074	.11	2.00	.00	1.27	.013	.00	.00	PIPE
2155.780	237.660	1.830	239.490	20.20	6.71	.70	240.19	.00	1.61	1.12	2.000	.000	.00	1 .0
WALL	ENTRANCE													
2155.780	237.660	3.830	241.490	20.20	1.32	.03	241.52	.00	.93	4.00	6.000	4.000	.00	0 .0
JUNCT STR	.0825					.0001	.00	3.83	.12		.013	.00	.00	BOX
2159.780	237.990	3.496	241.486	16.00	1.14	.02	241.51	.00	.79	4.00	6.000	4.000	.00	0 .0
WALL	EXIT													

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 5-30-2024 Time: 7:51: 5

LINE SD_W1
Q100
OBR

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT) / SF Ave	Water Elev / HF	Q (CFS) / SE Dpth	Vel (FPS) / Froude N	Vel Head / Norm Dp	Energy Grd.El. / "N"	Super Elev / X-Fall	Critical Depth / ZR	Flow Top Width	Height/ Dia.-FT /	Base Wt or I.D. /	ZL	No Wth Prs/Pip / Type Ch
2159.780	237.990	3.497	241.487	16.00	5.09	.40	241.89	.00	1.44	.00	2.000	.000	.00	1 .0
68.930	.0100					.0050	.34	3.50	.00	1.24	.013	.00	.00	PIPE
2228.710	238.680	3.152	241.832	16.00	5.09	.40	242.23	.00	1.44	.00	2.000	.000	.00	1 .0
WALL	ENTRANCE													
2228.710	238.680	3.613	242.293	16.00	1.11	.02	242.31	.00	.79	4.00	6.000	4.000	.00	0 .0
JUNCT STR	.0825					.0001	.00	3.61	.10		.013	.00	.00	BOX
2232.710	239.010	3.270	242.280	11.00	.84	.01	242.29	.00	.62	4.00	6.000	4.000	.00	0 .0
WALL	EXIT													
2232.710	239.010	3.270	242.280	11.00	6.22	.60	242.88	.00	1.27	.00	1.500	.000	.00	1 .0
75.690	.0199					.0110	.83	.00	.00	.96	.013	.00	.00	PIPE
2308.400	240.520	2.618	243.138	11.00	6.22	.60	243.74	.00	1.27	.00	1.500	.000	.00	1 .0
WALL	ENTRANCE													
2308.400	240.520	3.326	243.846	11.00	.83	.01	243.86	.00	.62	4.00	6.000	4.000	.00	0 .0
JUNCT STR	.1250					.0000	.00	3.33	.08		.013	.00	.00	BOX
2312.400	241.020	2.837	243.857	7.30	.64	.01	243.86	.00	.47	4.00	6.000	4.000	.00	0 .0
WALL	EXIT													
2312.400	241.020	2.837	243.857	7.30	4.13	.26	244.12	.00	1.05	.00	1.500	.000	.00	1 .0
50.730	.0201					.0048	.25	.00	.00	.74	.013	.00	.00	PIPE

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 5-30-2024 Time: 7:51: 5

LINE SD_W1
Q100
OBR

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
2363.130	242.040	2.073	244.113	7.30	4.13	.26	244.38	.00	1.05	.00	1.500	.000	.00	1 .0
WALL ENTRANCE														
2363.130	242.040	2.381	244.421	7.30	.77	.01	244.43	.00	.47	4.00	6.000	4.000	.00	0 .0
1.333	.0825					.0000	.00	2.38	.09	.18	.013	.00	.00	BOX
2364.462	242.150	2.270	244.420	7.30	.80	.01	244.43	.00	.47	4.00	6.000	4.000	.00	0 .0
1.269	.0825					.0000	.00	2.27	.09	.18	.013	.00	.00	BOX
2365.731	242.255	2.164	244.419	7.30	.84	.01	244.43	.00	.47	4.00	6.000	4.000	.00	0 .0
1.208	.0825					.0001	.00	2.16	.10	.18	.013	.00	.00	BOX
2366.940	242.354	2.063	244.418	7.30	.88	.01	244.43	.00	.47	4.00	6.000	4.000	.00	0 .0
.190	.0825					.0001	.00	2.06	.11	.18	.013	.00	.00	BOX
2367.130	242.370	2.048	244.418	7.30	.89	.01	244.43	.00	.47	4.00	6.000	4.000	.00	0 .0
WALL EXIT														
2367.130	242.370	2.048	244.418	7.30	4.13	.26	244.68	.00	1.05	.00	1.500	.000	.00	1 .0
36.762	.0200					.0048	.18	.00	.00	.74	.013	.00	.00	PIPE
2403.892	243.105	1.500	244.605	7.30	4.13	.26	244.87	1.50	1.05	.00	1.500	.000	.00	1 .0
3.324	.0200					.0045	.01	1.50	.00	.74	.013	.00	.00	PIPE
2407.216	243.171	1.441	244.612	7.30	4.19	.27	244.88	.00	1.05	.58	1.500	.000	.00	1 .0
HYDRAULIC JUMP														

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 5-30-2024 Time: 7:51: 5

LINE SD_W1
Q100
OBR

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
2407.216	243.171	.743	243.914	7.30	8.37	1.09	245.00	.00	1.05	1.50	1.500	.000	.00	1 .0
72.581	.0200					.0200	1.45	.75	1.93	.74	.013	.00	.00	PIPE
2479.797	244.622	.743	245.364	7.30	8.37	1.09	246.45	.00	1.05	1.50	1.500	.000	.00	1 .0
59.924	.0200					.0192	1.15	.75	1.93	.74	.013	.00	.00	PIPE
2539.721	245.819	.759	246.578	7.30	8.13	1.03	247.60	.00	1.05	1.50	1.500	.000	.00	1 .0
24.650	.0200					.0174	.43	.76	1.85	.74	.013	.00	.00	PIPE
2564.371	246.312	.788	247.100	7.30	7.75	.93	248.03	.00	1.05	1.50	1.500	.000	.00	1 .0
11.530	.0200					.0153	.18	.79	1.72	.74	.013	.00	.00	PIPE
2575.901	246.542	.819	247.361	7.30	7.39	.85	248.21	.00	1.05	1.49	1.500	.000	.00	1 .0
6.823	.0200					.0135	.09	.82	1.60	.74	.013	.00	.00	PIPE
2582.724	246.679	.852	247.531	7.30	7.04	.77	248.30	.00	1.05	1.49	1.500	.000	.00	1 .0
4.490	.0200					.0120	.05	.85	1.49	.74	.013	.00	.00	PIPE
2587.214	246.768	.886	247.654	7.30	6.72	.70	248.36	.00	1.05	1.48	1.500	.000	.00	1 .0
2.942	.0200					.0106	.03	.89	1.38	.74	.013	.00	.00	PIPE
2590.156	246.827	.922	247.749	7.30	6.40	.64	248.39	.00	1.05	1.46	1.500	.000	.00	1 .0
1.873	.0200					.0094	.02	.92	1.28	.74	.013	.00	.00	PIPE
2592.029	246.865	.960	247.825	7.30	6.11	.58	248.40	.00	1.05	1.44	1.500	.000	.00	1 .0
.996	.0200					.0083	.01	.96	1.18	.74	.013	.00	.00	PIPE

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 5-30-2024 Time: 7:51: 5

LINE SD_W1
Q100
OBR

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
2593.025	246.885	1.001	247.886	7.30	5.82	.53	248.41	.00	1.05	1.41	1.500	.000	.00	1 .0
.275	.0200					.0074	.00	1.00	1.09	.74	.013	.00	.00	PIPE
2593.300	246.890	1.046	247.936	7.30	5.55	.48	248.41	.00	1.05	1.38	1.500	.000	.00	1 .0
WALL	ENTRANCE													
2593.300	246.890	2.046	248.936	7.30	.89	.01	248.95	.00	.47	4.00	6.000	4.000	.00	0 .0
1.140	.0825					.0001	.00	2.05	.11	.18	.013	.00	.00	BOX
2594.440	246.984	1.951	248.935	7.30	.94	.01	248.95	.00	.47	4.00	6.000	4.000	.00	0 .0
1.085	.0825					.0001	.00	1.95	.12	.18	.013	.00	.00	BOX
2595.526	247.074	1.860	248.934	7.30	.98	.01	248.95	.00	.47	4.00	6.000	4.000	.00	0 .0
1.032	.0825					.0001	.00	1.86	.13	.18	.013	.00	.00	BOX
2596.558	247.159	1.774	248.933	7.30	1.03	.02	248.95	.00	.47	4.00	6.000	4.000	.00	0 .0
.742	.0825					.0001	.00	1.77	.14	.18	.013	.00	.00	BOX
2597.300	247.220	1.712	248.932	7.30	1.07	.02	248.95	.00	.47	4.00	6.000	4.000	.00	0 .0
WALL	EXIT													
2597.300	247.220	1.712	248.932	7.30	4.13	.26	249.20	.00	1.05	.00	1.500	.000	.00	1 .0
13.988	.0200					.0048	.07	1.71	.00	.74	.013	.00	.00	PIPE
2611.288	247.500	1.500	249.000	7.30	4.13	.26	249.27	.00	1.05	.00	1.500	.000	.00	1 .0
3.281	.0200					.0045	.01	1.50	.00	.74	.013	.00	.00	PIPE

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 5-30-2024 Time: 7:51: 5

LINE SD_W1
Q100
OBR

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
2614.569	247.566	1.441	249.007	7.30	4.19	.27	249.28	.00	1.05	.58	1.500	.000	.00	1 .0
HYDRAULIC JUMP														
2614.569	247.566	.742	248.308	7.30	8.37	1.09	249.40	.00	1.05	1.50	1.500	.000	.00	1 .0
83.421	.0200					.0200	1.67	.74	1.94	.74	.013	.00	.00	PIPE
2697.990	249.236	.742	249.978	7.30	8.37	1.09	251.07	.00	1.05	1.50	1.500	.000	.00	1 .0
60.009	.0200					.0193	1.16	.74	1.94	.74	.013	.00	.00	PIPE
2757.999	250.437	.759	251.196	7.30	8.13	1.03	252.22	.00	1.05	1.50	1.500	.000	.00	1 .0
24.318	.0200					.0174	.42	.76	1.85	.74	.013	.00	.00	PIPE
2782.317	250.924	.788	251.712	7.30	7.75	.93	252.64	.00	1.05	1.50	1.500	.000	.00	1 .0
11.443	.0200					.0153	.18	.79	1.72	.74	.013	.00	.00	PIPE
2793.760	251.153	.819	251.972	7.30	7.39	.85	252.82	.00	1.05	1.49	1.500	.000	.00	1 .0
6.786	.0200					.0135	.09	.82	1.60	.74	.013	.00	.00	PIPE
2800.545	251.289	.852	252.141	7.30	7.04	.77	252.91	.00	1.05	1.49	1.500	.000	.00	1 .0
4.470	.0200					.0120	.05	.85	1.49	.74	.013	.00	.00	PIPE
2805.015	251.379	.886	252.265	7.30	6.72	.70	252.97	.00	1.05	1.48	1.500	.000	.00	1 .0
2.930	.0200					.0106	.03	.89	1.38	.74	.013	.00	.00	PIPE
2807.946	251.437	.922	252.359	7.30	6.40	.64	253.00	.00	1.05	1.46	1.500	.000	.00	1 .0
1.867	.0200					.0094	.02	.92	1.28	.74	.013	.00	.00	PIPE

LINE SD_W1
Q100
OBR

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
2809.813	251.475	.960	252.435	7.30	6.11	.58	253.01	.00	1.05	1.44	1.500	.000	.00	1 .0
.993	.0200					.0083	.01	.96	1.18	.74	.013	.00	.00	PIPE
2810.806	251.495	1.001	252.496	7.30	5.82	.53	253.02	.00	1.05	1.41	1.500	.000	.00	1 .0
.274	.0200					.0074	.00	1.00	1.09	.74	.013	.00	.00	PIPE
2811.080	251.500	1.046	252.546	7.30	5.55	.48	253.02	.00	1.05	1.38	1.500	.000	.00	1 .0
WALL	ENTRANCE													
2811.080	251.500	2.046	253.546	7.30	.89	.01	253.56	.00	.47	4.00	6.000	4.000	.00	0 .0
2811.080	251.500	.010	251.510	7.30	182.60	517.75	769.26	.00	.47	4.00	6.000	4.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.500														
CD	2	2	0	.000	10.000	3.000			.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -

OCEAN BREEZE RANCH

HEADING LINE NO 2 IS -

Q100

HEADING LINE NO 3 IS -

LINE W1-1

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1002.000	239.510	2	242.300

ELEMENT NO 2 IS A WALL EXIT

U/S DATA	STATION	INVERT	SECT
	1002.000	239.510	1

ELEMENT NO 3 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1054.400	240.560	1	.013	.000	.000	.000	0

ELEMENT NO 4 IS A WALL ENTRANCE

U/S DATA	STATION	INVERT	SECT	FP
	1054.400	240.560	2	.200

ELEMENT NO 5 IS A JUNCTION

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	1058.400	240.890	2	1	1	.013	2.100	1.500	240.890	240.890	90.000	-90.000

RADIUS	ANGLE
.000	.000

ELEMENT NO 6 IS A WALL EXIT

U/S DATA	STATION	INVERT	SECT
	1058.400	240.890	1

ELEMENT NO 7 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1100.880	244.570	1	.013	486.785	-5.000	.000	0

ELEMENT NO 8 IS A WALL ENTRANCE

U/S DATA	STATION	INVERT	SECT	FP
	1100.880	244.570	2	.200

ELEMENT NO 9 IS A SYSTEM HEADWORKS

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1100.880	244.570	2	268.800

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 5-30-2024 Time: 4:18:53

OCEAN BREEZE RANCH
Q100
LINE W1-1

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1002.000	239.510	2.790	242.300	5.90	.70	.01	242.31	.00	.49	3.00	10.000	3.000	.00	0 .0
WALL EXIT														
1002.000	239.510	2.791	242.301	5.90	3.34	.17	242.47	.00	.94	.00	1.500	.000	.00	1 .0
52.400	.0200					.0032	.17	2.79	.00	.66	.013	.00	.00	PIPE
1054.400	240.560	1.906	242.466	5.90	3.34	.17	242.64	.00	.94	.00	1.500	.000	.00	1 .0
WALL ENTRANCE														
1054.400	240.560	2.097	242.657	5.90	.94	.01	242.67	.00	.49	3.00	10.000	3.000	.00	0 .0
JUNCT STR	.0825					.0000	.00	2.10	.11		.013	.00	.00	RECTANG
1058.400	240.890	1.791	242.681	2.30	.43	.00	242.68	.00	.26	3.00	10.000	3.000	.00	0 .0
WALL EXIT														
1058.400	240.890	1.791	242.681	2.30	1.30	.03	242.71	.00	.57	.00	1.500	.000	.00	1 .0
3.385	.0866					.0005	.00	.00	.00	.28	.013	.00	.00	PIPE
1061.786	241.183	1.500	242.683	2.30	1.30	.03	242.71	1.50	.57	.00	1.500	.000	.00	1 .0
1.581	.0866					.0004	.00	1.50	.00	.28	.013	.00	.00	PIPE
1063.367	241.320	1.360	242.680	2.30	1.37	.03	242.71	.00	.57	.87	1.500	.000	.00	1 .0
.895	.0866					.0004	.00	1.36	.17	.28	.013	.00	.00	PIPE
1064.261	241.398	1.280	242.678	2.30	1.43	.03	242.71	.00	.57	1.06	1.500	.000	.00	1 .0
.741	.0866					.0005	.00	1.28	.21	.28	.013	.00	.00	PIPE

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 5-30-2024 Time: 4:18:53

OCEAN BREEZE RANCH
Q100
LINE W1-1

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1065.002	241.462	1.213	242.675	2.30	1.50	.04	242.71	.00	.57	1.18	1.500	.000	.00	1 .0
.633	.0866					.0005	.00	1.21	.23	.28	.013	.00	.00	PIPE
1065.635	241.517	1.155	242.672	2.30	1.57	.04	242.71	.00	.57	1.26	1.500	.000	.00	1 .0
.571	.0866					.0006	.00	1.16	.26	.28	.013	.00	.00	PIPE
1066.206	241.566	1.102	242.668	2.30	1.65	.04	242.71	.00	.57	1.32	1.500	.000	.00	1 .0
.509	.0866					.0006	.00	1.10	.28	.28	.013	.00	.00	PIPE
1066.715	241.610	1.054	242.664	2.30	1.73	.05	242.71	.00	.57	1.37	1.500	.000	.00	1 .0
.026	.0866					.0007	.00	1.05	.31	.28	.013	.00	.00	PIPE
1066.740	241.613	1.010	242.623	2.30	1.82	.05	242.67	.00	.57	1.41	1.500	.000	.00	1 .0
HYDRAULIC JUMP														
1066.740	241.613	.279	241.892	2.30	10.14	1.60	243.49	.01	.57	1.17	1.500	.000	.00	1 .0
10.057	.0866					.0781	.79	.29	4.05	.28	.013	.00	.00	PIPE
1076.797	242.484	.289	242.773	2.30	9.63	1.44	244.21	.01	.57	1.18	1.500	.000	.00	1 .0
6.432	.0866					.0678	.44	.30	3.78	.28	.013	.00	.00	PIPE
1083.229	243.041	.299	243.340	2.30	9.18	1.31	244.65	.01	.57	1.20	1.500	.000	.00	1 .0
3.985	.0866					.0593	.24	.31	3.54	.28	.013	.00	.00	PIPE
1087.215	243.386	.309	243.695	2.30	8.75	1.19	244.89	.01	.57	1.21	1.500	.000	.00	1 .0
2.816	.0866					.0518	.15	.32	3.32	.28	.013	.00	.00	PIPE

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 5-30-2024 Time: 4:18:53

OCEAN BREEZE RANCH
Q100
LINE W1-1

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1090.031	243.630	.319	243.949	2.30	8.35	1.08	245.03	.01	.57	1.23	1.500	.000	.00	1 .0
2.109	.0866					.0452	.10	.32	3.10	.28	.013	.00	.00	PIPE
1092.140	243.813	.330	244.143	2.30	7.96	.98	245.13	.01	.57	1.24	1.500	.000	.00	1 .0
1.664	.0866					.0395	.07	.34	2.91	.28	.013	.00	.00	PIPE
1093.804	243.957	.341	244.298	2.30	7.59	.89	245.19	.00	.57	1.26	1.500	.000	.00	1 .0
1.330	.0866					.0346	.05	.35	2.72	.28	.013	.00	.00	PIPE
1095.134	244.072	.353	244.425	2.30	7.23	.81	245.24	.00	.57	1.27	1.500	.000	.00	1 .0
1.097	.0866					.0302	.03	.36	2.55	.28	.013	.00	.00	PIPE
1096.231	244.167	.365	244.532	2.30	6.90	.74	245.27	.00	.57	1.29	1.500	.000	.00	1 .0
.900	.0866					.0264	.02	.37	2.39	.28	.013	.00	.00	PIPE
1097.131	244.245	.378	244.623	2.30	6.58	.67	245.29	.00	.57	1.30	1.500	.000	.00	1 .0
.757	.0866					.0231	.02	.38	2.24	.28	.013	.00	.00	PIPE
1097.888	244.311	.391	244.702	2.30	6.27	.61	245.31	.00	.57	1.32	1.500	.000	.00	1 .0
.640	.0866					.0202	.01	.39	2.09	.28	.013	.00	.00	PIPE
1098.528	244.366	.404	244.770	2.30	5.98	.56	245.33	.00	.57	1.33	1.500	.000	.00	1 .0
.529	.0866					.0177	.01	.41	1.96	.28	.013	.00	.00	PIPE
1099.057	244.412	.418	244.830	2.30	5.70	.50	245.33	.00	.57	1.35	1.500	.000	.00	1 .0
.434	.0866					.0155	.01	.42	1.83	.28	.013	.00	.00	PIPE

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 5-30-2024 Time: 4:18:53

OCEAN BREEZE RANCH
Q100
LINE W1-1

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1099.491	244.450	.433	244.883	2.30	5.44	.46	245.34	.00	.57	1.36	1.500	.000	.00	1 .0
.365	.0866					.0136	.00	.44	1.72	.28	.013	.00	.00	PIPE
1099.856	244.481	.448	244.929	2.30	5.18	.42	245.35	.00	.57	1.37	1.500	.000	.00	1 .0
.293	.0866					.0119	.00	.45	1.61	.28	.013	.00	.00	PIPE
1100.150	244.507	.464	244.971	2.30	4.94	.38	245.35	.00	.57	1.39	1.500	.000	.00	1 .0
.242	.0866					.0104	.00	.47	1.50	.28	.013	.00	.00	PIPE
1100.392	244.528	.480	245.008	2.30	4.71	.34	245.35	.00	.57	1.40	1.500	.000	.00	1 .0
.185	.0866					.0091	.00	.48	1.41	.28	.013	.00	.00	PIPE
1100.577	244.544	.497	245.041	2.30	4.49	.31	245.35	.00	.57	1.41	1.500	.000	.00	1 .0
.133	.0866					.0080	.00	.50	1.31	.28	.013	.00	.00	PIPE
1100.710	244.555	.515	245.070	2.30	4.28	.28	245.36	.00	.57	1.42	1.500	.000	.00	1 .0
.099	.0866					.0070	.00	.52	1.23	.28	.013	.00	.00	PIPE
1100.809	244.564	.533	245.097	2.30	4.08	.26	245.36	.00	.57	1.44	1.500	.000	.00	1 .0
.056	.0866					.0061	.00	.53	1.15	.28	.013	.00	.00	PIPE
1100.865	244.569	.552	245.121	2.30	3.89	.24	245.36	.00	.57	1.45	1.500	.000	.00	1 .0
.015	.0866					.0054	.00	.55	1.07	.28	.013	.00	.00	PIPE
1100.880	244.570	.573	245.143	2.30	3.70	.21	245.36	.00	.57	1.46	1.500	.000	.00	1 .0
WALL	ENTRANCE													

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 5-30-2024 Time: 4:18:53

OCEAN BREEZE RANCH
Q100
LINE W1-1

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1100.880	244.570	1.573	246.143	2.30	.49	.00	246.15	.00	.26	3.00	10.000	3.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.500														
CD	2	2	0	.000	10.000	3.000			.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
OCEAN BREEZE RANCH
HEADING LINE NO 2 IS -
Q100
HEADING LINE NO 3 IS -
LINE W1-2

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1002.000	241.020	2	243.860

ELEMENT NO 2 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1002.000	241.020	1

ELEMENT NO 3 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1010.250	243.000	1	.013	.000	.000	.000	0

ELEMENT NO 4 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1010.250	243.000	2	.200

ELEMENT NO 5 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1010.250	243.000	2	243.000

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 5-30-2024 Time: 4:25: 8

OCEAN BREEZE RANCH
Q100
LINE W1-2

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1002.000	241.020	2.840	243.860	3.80	.45	.00	243.86	.00	.37	3.00	10.000	3.000	.00	0 .0
WALL EXIT														
1002.000	241.020	2.840	243.860	3.80	2.15	.07	243.93	.00	.75	.00	1.500	.000	.00	1 .0
5.615	.2400					.0013	.01	2.84	.00	.28	.013	.00	.00	PIPE
1007.615	242.368	1.500	243.868	3.80	2.15	.07	243.94	.00	.75	.00	1.500	.000	.00	1 .0
.552	.2400					.0012	.00	1.50	.00	.28	.013	.00	.00	PIPE
1008.167	242.500	1.360	243.860	3.80	2.26	.08	243.94	.00	.75	.87	1.500	.000	.00	1 .0
.302	.2400					.0012	.00	1.36	.29	.28	.013	.00	.00	PIPE
1008.469	242.572	1.280	243.853	3.80	2.37	.09	243.94	.00	.75	1.06	1.500	.000	.00	1 .0
.244	.2400					.0013	.00	1.28	.34	.28	.013	.00	.00	PIPE
1008.713	242.631	1.213	243.844	3.80	2.48	.10	243.94	.00	.75	1.18	1.500	.000	.00	1 .0
.203	.2400					.0014	.00	1.21	.38	.28	.013	.00	.00	PIPE
1008.916	242.680	1.155	243.835	3.80	2.60	.11	243.94	.00	.75	1.26	1.500	.000	.00	1 .0
.178	.2400					.0016	.00	1.16	.43	.28	.013	.00	.00	PIPE
1009.094	242.723	1.102	243.825	3.80	2.73	.12	243.94	.00	.75	1.32	1.500	.000	.00	1 .0
.153	.2400					.0017	.00	1.10	.47	.28	.013	.00	.00	PIPE
1009.247	242.759	1.054	243.813	3.80	2.86	.13	243.94	.00	.75	1.37	1.500	.000	.00	1 .0
.110	.2400					.0020	.00	1.05	.51	.28	.013	.00	.00	PIPE

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 5-30-2024 Time: 4:25: 8

OCEAN BREEZE RANCH
Q100
LINE W1-2

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT) / SF Ave	Water Elev / HF	Q (CFS) / SE Dpth	Vel (FPS) / Froude N	Vel Head / Norm Dp	Energy Grd.El. / "N"	Super Elev / X-Fall	Critical Depth / ZR	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip / Type Ch
1009.357	242.786	1.010	243.796	3.80	3.00	.14	243.94	.00	.75	1.41	1.500	.000	.00	1 .0
HYDRAULIC JUMP														
1009.357	242.786	.519	243.305	3.80	7.00	.76	244.07	.00	.75	1.43	1.500	.000	.00	1 .0
.056	.2400					.0185	.00	.52	2.00	.28	.013	.00	.00	PIPE
1009.413	242.799	.537	243.336	3.80	6.67	.69	244.03	.00	.75	1.44	1.500	.000	.00	1 .0
.191	.2400					.0162	.00	.54	1.87	.28	.013	.00	.00	PIPE
1009.604	242.845	.557	243.402	3.80	6.36	.63	244.03	.00	.75	1.45	1.500	.000	.00	1 .0
.164	.2400					.0142	.00	.56	1.75	.28	.013	.00	.00	PIPE
1009.768	242.884	.577	243.462	3.80	6.06	.57	244.03	.00	.75	1.46	1.500	.000	.00	1 .0
.136	.2400					.0125	.00	.58	1.63	.28	.013	.00	.00	PIPE
1009.904	242.917	.598	243.515	3.80	5.78	.52	244.03	.00	.75	1.47	1.500	.000	.00	1 .0
.114	.2400					.0109	.00	.60	1.52	.28	.013	.00	.00	PIPE
1010.018	242.944	.619	243.563	3.80	5.51	.47	244.04	.00	.75	1.48	1.500	.000	.00	1 .0
.086	.2400					.0096	.00	.62	1.42	.28	.013	.00	.00	PIPE
1010.105	242.965	.642	243.607	3.80	5.26	.43	244.04	.00	.75	1.48	1.500	.000	.00	1 .0
.065	.2400					.0084	.00	.64	1.33	.28	.013	.00	.00	PIPE
1010.169	242.981	.666	243.647	3.80	5.01	.39	244.04	.00	.75	1.49	1.500	.000	.00	1 .0
.045	.2400					.0074	.00	.67	1.24	.28	.013	.00	.00	PIPE

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 5-30-2024 Time: 4:25: 8

OCEAN BREEZE RANCH
Q100
LINE W1-2

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1010.214	242.991	.691	243.683	3.80	4.78	.35	244.04	.00	.75	1.50	1.500	.000	.00	1 .0
.027	.2400					.0065	.00	.69	1.15	.28	.013	.00	.00	PIPE
1010.241	242.998	.717	243.715	3.80	4.56	.32	244.04	.00	.75	1.50	1.500	.000	.00	1 .0
.009	.2400					.0057	.00	.72	1.08	.28	.013	.00	.00	PIPE
1010.250	243.000	.745	243.745	3.80	4.34	.29	244.04	.00	.75	1.50	1.500	.000	.00	1 .0
WALL	ENTRANCE													
1010.250	243.000	1.745	244.745	3.80	.73	.01	244.75	.00	.37	3.00	10.000	3.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.500														
CD	2	2	0	.000	10.000	3.000			.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -

OCEAN BREEZE RANCH

HEADING LINE NO 2 IS -

Q100

HEADING LINE NO 3 IS -

LINE W1-3

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1002.000	252.380	2	253.550

ELEMENT NO 2 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1002.000	252.380	1

ELEMENT NO 3 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1010.250	254.000	1	.013	.000	.000	.000	0

ELEMENT NO 4 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1010.250	254.000	2	.200

ELEMENT NO 5 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1010.250	254.000	2	254.000

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 5-30-2024 Time: 4:27:58

OCEAN BREEZE RANCH
Q100
LINE W1-3

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1002.000	252.380	.192	252.572	7.30	12.66	2.49	255.06	.00	.57	3.00	10.000	3.000	.00	0 .0
WALL EXIT														
1002.000	252.380	.558	252.938	7.30	12.20	2.31	255.25	.00	1.05	1.45	1.500	.000	.00	1 .0
.715	.1964					.0538	.04	.56	3.35	.40	.013	.00	.00	PIPE
1002.715	252.520	.568	253.089	7.30	11.90	2.20	255.29	.00	1.05	1.46	1.500	.000	.00	1 .0
1.219	.1964					.0488	.06	.57	3.23	.40	.013	.00	.00	PIPE
1003.934	252.760	.588	253.348	7.30	11.35	2.00	255.35	.00	1.05	1.46	1.500	.000	.00	1 .0
1.040	.1964					.0428	.04	.59	3.02	.40	.013	.00	.00	PIPE
1004.974	252.964	.610	253.574	7.30	10.82	1.82	255.39	.00	1.05	1.47	1.500	.000	.00	1 .0
.902	.1964					.0376	.03	.61	2.82	.40	.013	.00	.00	PIPE
1005.876	253.141	.632	253.773	7.30	10.31	1.65	255.43	.00	1.05	1.48	1.500	.000	.00	1 .0
.778	.1964					.0330	.03	.63	2.63	.40	.013	.00	.00	PIPE
1006.654	253.294	.655	253.949	7.30	9.83	1.50	255.45	.00	1.05	1.49	1.500	.000	.00	1 .0
.672	.1964					.0290	.02	.66	2.45	.40	.013	.00	.00	PIPE
1007.326	253.426	.679	254.105	7.30	9.38	1.37	255.47	.00	1.05	1.49	1.500	.000	.00	1 .0
.574	.1964					.0255	.01	.68	2.29	.40	.013	.00	.00	PIPE
1007.901	253.539	.705	254.244	7.30	8.94	1.24	255.48	.00	1.05	1.50	1.500	.000	.00	1 .0
.499	.1964					.0224	.01	.71	2.13	.40	.013	.00	.00	PIPE

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 5-30-2024 Time: 4:27:58

OCEAN BREEZE RANCH
Q100
LINE W1-3

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1008.400	253.637	.731	254.368	7.30	8.52	1.13	255.50	.00	1.05	1.50	1.500	.000	.00	1 .0
.422	.1964					.0197	.01	.73	1.99	.40	.013	.00	.00	PIPE
1008.822	253.720	.759	254.479	7.30	8.13	1.03	255.50	.00	1.05	1.50	1.500	.000	.00	1 .0
.359	.1964					.0174	.01	.76	1.85	.40	.013	.00	.00	PIPE
1009.181	253.790	.788	254.578	7.30	7.75	.93	255.51	.00	1.05	1.50	1.500	.000	.00	1 .0
.297	.1964					.0153	.00	.79	1.72	.40	.013	.00	.00	PIPE
1009.478	253.848	.819	254.667	7.30	7.39	.85	255.52	.00	1.05	1.49	1.500	.000	.00	1 .0
.241	.1964					.0135	.00	.82	1.60	.40	.013	.00	.00	PIPE
1009.719	253.896	.852	254.748	7.30	7.04	.77	255.52	.00	1.05	1.49	1.500	.000	.00	1 .0
.195	.1964					.0120	.00	.85	1.49	.40	.013	.00	.00	PIPE
1009.914	253.934	.886	254.820	7.30	6.72	.70	255.52	.00	1.05	1.48	1.500	.000	.00	1 .0
.149	.1964					.0106	.00	.89	1.38	.40	.013	.00	.00	PIPE
1010.063	253.963	.922	254.885	7.30	6.40	.64	255.52	.00	1.05	1.46	1.500	.000	.00	1 .0
.106	.1964					.0094	.00	.92	1.28	.40	.013	.00	.00	PIPE
1010.170	253.984	.960	254.944	7.30	6.11	.58	255.52	.00	1.05	1.44	1.500	.000	.00	1 .0
.062	.1964					.0083	.00	.96	1.18	.40	.013	.00	.00	PIPE
1010.232	253.996	1.001	254.997	7.30	5.82	.53	255.52	.00	1.05	1.41	1.500	.000	.00	1 .0
.018	.1964					.0074	.00	1.00	1.09	.40	.013	.00	.00	PIPE

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 5-30-2024 Time: 4:27:58

OCEAN BREEZE RANCH
Q100
LINE W1-3

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1010.250	254.000	1.046	255.046	7.30	5.55	.48	255.52	.00	1.05	1.38	1.500	.000	.00	1 .0
WALL	ENTRANCE													
1010.250	254.000	2.046	256.046	7.30	1.19	.02	256.07	.00	.57	3.00	10.000	3.000	.00	0 .0

FILE: LINE_W1-4_EAST.WSW W S P G W - EDIT LISTING - Version 14.11 Date: 5-30-2024 Time: 4:16:49

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING PAGE 1

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.500														
CD	2	2	0	.000	10.000	3.000			.00										

W S P G W PAGE NO 1

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -

OCEAN BREEZE RANCH

HEADING LINE NO 2 IS -

Q100

HEADING LINE NO 3 IS -

LINE W1-4 EAST

W S P G W PAGE NO 2

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1000.000	240.890	2	242.680

ELEMENT NO 2 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1000.000	240.890	1

ELEMENT NO 3 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1031.200	242.000	1	.013	.000	.000	.000	0

ELEMENT NO 4 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1031.200	242.000	2	.200

ELEMENT NO 5 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1031.200	242.000	2	242.000

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 5-30-2024 Time: 4:16:52

OCEAN BREEZE RANCH
Q100
LINE W1-4 EAST

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1000.000	240.890	1.790	242.680	2.70	.50	.00	242.68	.00	.29	3.00	10.000	3.000	.00	0 .0
WALL EXIT														
1000.000	240.890	1.790	242.680	2.70	1.53	.04	242.72	.00	.62	.00	1.500	.000	.00	1 .0
8.312	.0356					.0007	.01	1.79	.00	.37	.013	.00	.00	PIPE
1008.312	241.186	1.500	242.686	2.70	1.53	.04	242.72	.00	.62	.00	1.500	.000	.00	1 .0
3.869	.0356					.0006	.00	1.50	.00	.37	.013	.00	.00	PIPE
1012.180	241.323	1.360	242.683	2.70	1.60	.04	242.72	.00	.62	.87	1.500	.000	.00	1 .0
2.173	.0356					.0006	.00	1.36	.20	.37	.013	.00	.00	PIPE
1014.354	241.401	1.280	242.681	2.70	1.68	.04	242.72	.00	.62	1.06	1.500	.000	.00	1 .0
1.793	.0356					.0006	.00	1.28	.24	.37	.013	.00	.00	PIPE
1016.146	241.464	1.213	242.678	2.70	1.76	.05	242.73	.00	.62	1.18	1.500	.000	.00	1 .0
1.525	.0356					.0007	.00	1.21	.27	.37	.013	.00	.00	PIPE
1017.671	241.519	1.155	242.674	2.70	1.85	.05	242.73	.00	.62	1.26	1.500	.000	.00	1 .0
1.371	.0356					.0008	.00	1.16	.30	.37	.013	.00	.00	PIPE
1019.042	241.567	1.102	242.670	2.70	1.94	.06	242.73	.00	.62	1.32	1.500	.000	.00	1 .0
1.215	.0356					.0009	.00	1.10	.33	.37	.013	.00	.00	PIPE
1020.258	241.611	1.054	242.665	2.70	2.03	.06	242.73	.00	.62	1.37	1.500	.000	.00	1 .0
1.086	.0356					.0010	.00	1.05	.36	.37	.013	.00	.00	PIPE

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 5-30-2024 Time: 4:16:52

OCEAN BREEZE RANCH
Q100
LINE W1-4 EAST

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1021.344	241.649	1.010	242.659	2.70	2.13	.07	242.73	.00	.62	1.41	1.500	.000	.00	1 .0
1.014	.0356					.0011	.00	1.01	.40	.37	.013	.00	.00	PIPE
1022.358	241.685	.968	242.654	2.70	2.24	.08	242.73	.00	.62	1.44	1.500	.000	.00	1 .0
.910	.0356					.0013	.00	.97	.43	.37	.013	.00	.00	PIPE
1023.267	241.718	.929	242.647	2.70	2.35	.09	242.73	.00	.62	1.46	1.500	.000	.00	1 .0
.803	.0356					.0014	.00	.93	.47	.37	.013	.00	.00	PIPE
1024.071	241.746	.893	242.639	2.70	2.46	.09	242.73	.00	.62	1.47	1.500	.000	.00	1 .0
.753	.0356					.0016	.00	.89	.50	.37	.013	.00	.00	PIPE
1024.824	241.773	.858	242.631	2.70	2.58	.10	242.73	.00	.62	1.48	1.500	.000	.00	1 .0
.620	.0356					.0018	.00	.86	.54	.37	.013	.00	.00	PIPE
1025.444	241.795	.826	242.621	2.70	2.71	.11	242.74	.00	.62	1.49	1.500	.000	.00	1 .0
HYDRAULIC JUMP														
1025.444	241.795	.453	242.248	2.70	6.00	.56	242.81	.00	.62	1.38	1.500	.000	.00	1 .0
1.028	.0356					.0157	.02	.45	1.85	.37	.013	.00	.00	PIPE
1026.473	241.832	.469	242.301	2.70	5.71	.51	242.81	.00	.62	1.39	1.500	.000	.00	1 .0
1.322	.0356					.0137	.02	.47	1.72	.37	.013	.00	.00	PIPE
1027.795	241.879	.486	242.365	2.70	5.44	.46	242.82	.00	.62	1.40	1.500	.000	.00	1 .0
1.050	.0356					.0120	.01	.49	1.61	.37	.013	.00	.00	PIPE

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 5-30-2024 Time: 4:16:52

OCEAN BREEZE RANCH
Q100
LINE W1-4 EAST

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1028.846	241.916	.503	242.419	2.70	5.19	.42	242.84	.00	.62	1.42	1.500	.000	.00	1 .0
.797	.0356					.0105	.01	.50	1.51	.37	.013	.00	.00	PIPE
1029.642	241.945	.521	242.466	2.70	4.95	.38	242.85	.00	.62	1.43	1.500	.000	.00	1 .0
.627	.0356					.0092	.01	.52	1.41	.37	.013	.00	.00	PIPE
1030.269	241.967	.539	242.506	2.70	4.72	.35	242.85	.00	.62	1.44	1.500	.000	.00	1 .0
.414	.0356					.0081	.00	.54	1.32	.37	.013	.00	.00	PIPE
1030.683	241.982	.559	242.541	2.70	4.50	.31	242.85	.00	.62	1.45	1.500	.000	.00	1 .0
.300	.0356					.0071	.00	.56	1.23	.37	.013	.00	.00	PIPE
1030.983	241.992	.579	242.571	2.70	4.29	.29	242.86	.00	.62	1.46	1.500	.000	.00	1 .0
.168	.0356					.0062	.00	.58	1.15	.37	.013	.00	.00	PIPE
1031.151	241.998	.600	242.598	2.70	4.09	.26	242.86	.00	.62	1.47	1.500	.000	.00	1 .0
.049	.0356					.0054	.00	.60	1.07	.37	.013	.00	.00	PIPE
1031.200	242.000	.623	242.623	2.70	3.89	.23	242.86	.00	.62	1.48	1.500	.000	.00	1 .0
WALL	ENTRANCE													
1031.200	242.000	1.623	243.623	2.70	.55	.00	243.63	.00	.29	3.00	10.000	3.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.500														
CD	2	2	0	.000	10.000	3.000			.00										

W S P G W

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -

OCEAN BREEZE RANCH

HEADING LINE NO 2 IS -

Q100

HEADING LINE NO 3 IS -

LINE W1-4 WEST

W S P G W

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1000.000	240.890	2	240.890

ELEMENT NO 2 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1000.000	240.890	1

ELEMENT NO 3 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1005.300	242.000	1	.013	.000	.000	.000	0

ELEMENT NO 4 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1005.300	242.000	2	.200

ELEMENT NO 5 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1005.300	242.000	2	242.000

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 5-26-2024 Time:10: 6:47

OCEAN BREEZE RANCH
Q100
LINE W1-4 WEST

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1000.000	240.890	.066	240.956	1.90	9.57	1.42	242.38	.00	.23	3.00	10.000	3.000	.00	0 .0
WALL EXIT														
1000.000	240.890	.260	241.150	1.90	9.27	1.33	242.48	.00	.52	1.14	1.500	.000	.00	1 .0
.316	.2094					.0743	.02	.26	3.84	.20	.013	.00	.00	PIPE
1000.316	240.956	.263	241.219	1.90	9.10	1.29	242.51	.00	.52	1.14	1.500	.000	.00	1 .0
.762	.2094					.0678	.05	.26	3.75	.20	.013	.00	.00	PIPE
1001.078	241.116	.272	241.388	1.90	8.68	1.17	242.56	.00	.52	1.16	1.500	.000	.00	1 .0
.648	.2094					.0592	.04	.27	3.51	.20	.013	.00	.00	PIPE
1001.725	241.251	.281	241.532	1.90	8.27	1.06	242.60	.00	.52	1.17	1.500	.000	.00	1 .0
.549	.2094					.0517	.03	.28	3.29	.20	.013	.00	.00	PIPE
1002.274	241.366	.291	241.657	1.90	7.89	.97	242.62	.00	.52	1.19	1.500	.000	.00	1 .0
.480	.2094					.0452	.02	.29	3.09	.20	.013	.00	.00	PIPE
1002.754	241.467	.300	241.767	1.90	7.52	.88	242.65	.00	.52	1.20	1.500	.000	.00	1 .0
.405	.2094					.0395	.02	.30	2.89	.20	.013	.00	.00	PIPE
1003.160	241.552	.311	241.863	1.90	7.17	.80	242.66	.00	.52	1.22	1.500	.000	.00	1 .0
.358	.2094					.0345	.01	.31	2.71	.20	.013	.00	.00	PIPE
1003.517	241.627	.321	241.948	1.90	6.84	.73	242.67	.00	.52	1.23	1.500	.000	.00	1 .0
.307	.2094					.0302	.01	.32	2.54	.20	.013	.00	.00	PIPE

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 5-26-2024 Time:10: 6:47

OCEAN BREEZE RANCH
Q100
LINE W1-4 WEST

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1003.824	241.691	.332	242.023	1.90	6.52	.66	242.68	.00	.52	1.25	1.500	.000	.00	1 .0
.268	.2094					.0263	.01	.33	2.38	.20	.013	.00	.00	PIPE
1004.092	241.747	.343	242.090	1.90	6.22	.60	242.69	.00	.52	1.26	1.500	.000	.00	1 .0
.228	.2094					.0230	.01	.34	2.22	.20	.013	.00	.00	PIPE
1004.320	241.795	.355	242.150	1.90	5.93	.55	242.70	.00	.52	1.28	1.500	.000	.00	1 .0
.199	.2094					.0201	.00	.36	2.08	.20	.013	.00	.00	PIPE
1004.519	241.836	.367	242.203	1.90	5.65	.50	242.70	.00	.52	1.29	1.500	.000	.00	1 .0
.167	.2094					.0176	.00	.37	1.95	.20	.013	.00	.00	PIPE
1004.686	241.871	.380	242.251	1.90	5.39	.45	242.70	.00	.52	1.30	1.500	.000	.00	1 .0
.144	.2094					.0154	.00	.38	1.83	.20	.013	.00	.00	PIPE
1004.830	241.902	.393	242.295	1.90	5.14	.41	242.70	.00	.52	1.32	1.500	.000	.00	1 .0
.119	.2094					.0135	.00	.39	1.71	.20	.013	.00	.00	PIPE
1004.949	241.926	.407	242.334	1.90	4.90	.37	242.71	.00	.52	1.33	1.500	.000	.00	1 .0
.101	.2094					.0118	.00	.41	1.60	.20	.013	.00	.00	PIPE
1005.049	241.947	.421	242.369	1.90	4.67	.34	242.71	.00	.52	1.35	1.500	.000	.00	1 .0
.084	.2094					.0103	.00	.42	1.50	.20	.013	.00	.00	PIPE
1005.133	241.965	.435	242.400	1.90	4.45	.31	242.71	.00	.52	1.36	1.500	.000	.00	1 .0
.060	.2094					.0090	.00	.44	1.40	.20	.013	.00	.00	PIPE

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 5-26-2024 Time:10: 6:47

OCEAN BREEZE RANCH
Q100
LINE W1-4 WEST

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1005.193	241.978	.451	242.429	1.90	4.25	.28	242.71	.00	.52	1.38	1.500	.000	.00	1 .0
.047	.2094					.0079	.00	.45	1.31	.20	.013	.00	.00	PIPE
1005.240	241.987	.467	242.455	1.90	4.05	.25	242.71	.00	.52	1.39	1.500	.000	.00	1 .0
.035	.2094					.0069	.00	.47	1.23	.20	.013	.00	.00	PIPE
1005.275	241.995	.483	242.478	1.90	3.86	.23	242.71	.00	.52	1.40	1.500	.000	.00	1 .0
.020	.2094					.0061	.00	.48	1.15	.20	.013	.00	.00	PIPE
1005.295	241.999	.500	242.499	1.90	3.68	.21	242.71	.00	.52	1.41	1.500	.000	.00	1 .0
.005	.2094					.0053	.00	.50	1.07	.20	.013	.00	.00	PIPE
1005.300	242.000	.519	242.519	1.90	3.50	.19	242.71	.00	.52	1.43	1.500	.000	.00	1 .0
WALL	ENTRANCE													
1005.300	242.000	1.519	243.519	1.90	.42	.00	243.52	.00	.23	3.00	10.000	3.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.500														
CD	2	2	0	.000	10.000	3.000			.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -

OCEAN BREEZE RANCH

HEADING LINE NO 2 IS -

Q100

HEADING LINE NO 3 IS -

LINE W1-5

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1002.000	234.820	2	235.740

ELEMENT NO 2 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1002.000	234.820	1

ELEMENT NO 3 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1019.050	234.990	1	.013	.000	.000	.000	0

ELEMENT NO 4 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1019.050	234.990	2	.200

ELEMENT NO 5 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1019.050	234.990	2	234.990

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 5-30-2024 Time: 4:30: 8

OCEAN BREEZE RANCH
Q100
LINE W1-5

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1002.000	234.820	.920	235.740	5.70	2.07	.07	235.81	.00	.48	3.00	10.000	3.000	.00	0 .0
1002.000	234.820	.264	235.085	5.70	7.18	.80	235.89	.00	.48	3.00	10.000	3.000	.00	0 .0
WALL	EXIT													
1002.000	234.820	.810	235.630	5.70	5.85	.53	236.16	.00	.92	1.50	1.500	.000	.00	1 .0
4.169	.0100					.0090	.04	.81	1.28	.79	.013	.00	.00	PIPE
1006.169	234.862	.817	235.679	5.70	5.79	.52	236.20	.00	.92	1.49	1.500	.000	.00	1 .0
8.591	.0100					.0083	.07	.82	1.26	.79	.013	.00	.00	PIPE
1014.760	234.947	.850	235.797	5.70	5.52	.47	236.27	.00	.92	1.49	1.500	.000	.00	1 .0
3.413	.0100					.0073	.03	.85	1.17	.79	.013	.00	.00	PIPE
1018.173	234.981	.884	235.865	5.70	5.26	.43	236.29	.00	.92	1.48	1.500	.000	.00	1 .0
.877	.0100					.0065	.01	.88	1.08	.79	.013	.00	.00	PIPE
1019.050	234.990	.921	235.911	5.70	5.01	.39	236.30	.00	.92	1.46	1.500	.000	.00	1 .0
WALL	ENTRANCE													
1019.050	234.990	1.921	236.911	5.70	.99	.02	236.93	.00	.48	3.00	10.000	3.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.500														
CD	2	2	0	.000	10.000	3.000			.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -

OCEAN BREEZE RANCH

HEADING LINE NO 2 IS -

Q100

HEADING LINE NO 3 IS -

LINE W1-6

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1002.000	238.490	2	238.490

ELEMENT NO 2 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1002.000	238.490	1

ELEMENT NO 3 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1037.900	243.000	1	.013	.000	.000	.000	0

ELEMENT NO 4 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1037.900	243.000	2	.200

ELEMENT NO 5 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1037.900	243.000	2	243.000

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 5-26-2024 Time:10: 9:28

OCEAN BREEZE RANCH
Q100
LINE W1-6

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1002.000	238.490	.125	238.615	5.30	14.15	3.11	241.72	.00	.46	3.00	10.000	3.000	.00	0 .0
WALL EXIT														
1002.000	238.490	.402	238.892	5.30	13.91	3.01	241.90	.00	.89	1.33	1.500	.000	.00	1 .0
8.812	.1256					.0967	.85	.40	4.58	.38	.013	.00	.00	PIPE
1010.812	239.597	.415	240.012	5.30	13.27	2.74	242.75	.00	.89	1.34	1.500	.000	.00	1 .0
5.709	.1256					.0847	.48	.42	4.29	.38	.013	.00	.00	PIPE
1016.521	240.314	.430	240.744	5.30	12.66	2.49	243.23	.00	.89	1.36	1.500	.000	.00	1 .0
4.102	.1256					.0742	.30	.43	4.01	.38	.013	.00	.00	PIPE
1020.624	240.830	.445	241.275	5.30	12.07	2.26	243.54	.00	.89	1.37	1.500	.000	.00	1 .0
3.138	.1256					.0649	.20	.45	3.76	.38	.013	.00	.00	PIPE
1023.761	241.224	.460	241.684	5.30	11.51	2.06	243.74	.00	.89	1.38	1.500	.000	.00	1 .0
2.482	.1256					.0568	.14	.46	3.51	.38	.013	.00	.00	PIPE
1026.244	241.536	.476	242.012	5.30	10.97	1.87	243.88	.00	.89	1.40	1.500	.000	.00	1 .0
2.015	.1256					.0497	.10	.48	3.29	.38	.013	.00	.00	PIPE
1028.258	241.789	.493	242.282	5.30	10.46	1.70	243.98	.00	.89	1.41	1.500	.000	.00	1 .0
1.663	.1256					.0436	.07	.49	3.07	.38	.013	.00	.00	PIPE
1029.921	241.998	.511	242.509	5.30	9.97	1.54	244.05	.00	.89	1.42	1.500	.000	.00	1 .0
1.400	.1256					.0382	.05	.51	2.87	.38	.013	.00	.00	PIPE

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 5-26-2024 Time:10: 9:28

OCEAN BREEZE RANCH
Q100
LINE W1-6

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1031.322	242.174	.529	242.703	5.30	9.51	1.40	244.11	.00	.89	1.43	1.500	.000	.00	1 .0
1.179	.1256					.0335	.04	.53	2.69	.38	.013	.00	.00	PIPE
1032.501	242.322	.548	242.870	5.30	9.07	1.28	244.15	.00	.89	1.44	1.500	.000	.00	1 .0
1.008	.1256					.0294	.03	.55	2.51	.38	.013	.00	.00	PIPE
1033.509	242.448	.567	243.015	5.30	8.64	1.16	244.18	.00	.89	1.45	1.500	.000	.00	1 .0
.846	.1256					.0257	.02	.57	2.35	.38	.013	.00	.00	PIPE
1034.355	242.555	.588	243.143	5.30	8.24	1.05	244.20	.00	.89	1.46	1.500	.000	.00	1 .0
.727	.1256					.0226	.02	.59	2.19	.38	.013	.00	.00	PIPE
1035.082	242.646	.609	243.255	5.30	7.86	.96	244.21	.00	.89	1.47	1.500	.000	.00	1 .0
.607	.1256					.0198	.01	.61	2.05	.38	.013	.00	.00	PIPE
1035.688	242.722	.632	243.354	5.30	7.49	.87	244.23	.00	.89	1.48	1.500	.000	.00	1 .0
.520	.1256					.0174	.01	.63	1.91	.38	.013	.00	.00	PIPE
1036.208	242.787	.655	243.443	5.30	7.14	.79	244.24	.00	.89	1.49	1.500	.000	.00	1 .0
.436	.1256					.0153	.01	.66	1.78	.38	.013	.00	.00	PIPE
1036.644	242.842	.679	243.521	5.30	6.81	.72	244.24	.00	.89	1.49	1.500	.000	.00	1 .0
.361	.1256					.0135	.00	.68	1.66	.38	.013	.00	.00	PIPE
1037.005	242.888	.704	243.592	5.30	6.49	.65	244.25	.00	.89	1.50	1.500	.000	.00	1 .0
.286	.1256					.0118	.00	.70	1.55	.38	.013	.00	.00	PIPE

OCEAN BREEZE RANCH
Q100
LINE W1-6

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1037.291	242.923	.731	243.655	5.30	6.19	.60	244.25	.00	.89	1.50	1.500	.000	.00	1 .0
.227	.1256					.0104	.00	.73	1.44	.38	.013	.00	.00	PIPE
1037.518	242.952	.759	243.711	5.30	5.90	.54	244.25	.00	.89	1.50	1.500	.000	.00	1 .0
.174	.1256					.0092	.00	.76	1.34	.38	.013	.00	.00	PIPE
1037.691	242.974	.788	243.762	5.30	5.63	.49	244.25	.00	.89	1.50	1.500	.000	.00	1 .0
.117	.1256					.0081	.00	.79	1.25	.38	.013	.00	.00	PIPE
1037.808	242.988	.819	243.808	5.30	5.37	.45	244.25	.00	.89	1.49	1.500	.000	.00	1 .0
.073	.1256					.0071	.00	.82	1.16	.38	.013	.00	.00	PIPE
1037.881	242.998	.851	243.849	5.30	5.12	.41	244.26	.00	.89	1.49	1.500	.000	.00	1 .0
.019	.1256					.0063	.00	.85	1.08	.38	.013	.00	.00	PIPE
1037.900	243.000	.887	243.887	5.30	4.87	.37	244.26	.00	.89	1.47	1.500	.000	.00	1 .0
WALL	ENTRANCE													
1037.900	243.000	1.887	244.887	5.30	.94	.01	244.90	.00	.46	3.00	10.000	3.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.500														
CD	2	2	0	.000	10.000	3.000			.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
OCEAN BREEZE RANCH
HEADING LINE NO 2 IS -
Q100
HEADING LINE NO 3 IS -
LINE W1-7

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1002.000	244.900	2	245.140

ELEMENT NO 2 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1002.000	244.900	1

ELEMENT NO 3 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1054.480	245.420	1	.013	.000	.000	.000	0

ELEMENT NO 4 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1054.480	245.420	2	.200

ELEMENT NO 5 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1054.480	245.420	2	245.420

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 5-30-2024 Time: 4:21:28

OCEAN BREEZE RANCH
Q100
LINE W1-7

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1002.000	244.900	.133	245.033	2.30	5.77	.52	245.55	.00	.26	3.00	10.000	3.000	.00	0 .0
WALL EXIT														
1002.000	244.900	.478	245.378	2.30	4.74	.35	245.73	.00	.57	1.40	1.500	.000	.00	1 .0
25.090	.0099					.0098	.25	.48	1.42	.48	.013	.00	.00	PIPE
1027.090	245.149	.480	245.629	2.30	4.71	.34	245.97	.00	.57	1.40	1.500	.000	.00	1 .0
17.791	.0099					.0091	.16	.48	1.41	.48	.013	.00	.00	PIPE
1044.881	245.325	.497	245.822	2.30	4.49	.31	246.14	.00	.57	1.41	1.500	.000	.00	1 .0
5.429	.0099					.0080	.04	.50	1.31	.48	.013	.00	.00	PIPE
1050.310	245.379	.515	245.894	2.30	4.28	.28	246.18	.00	.57	1.42	1.500	.000	.00	1 .0
2.706	.0099					.0070	.02	.52	1.23	.48	.013	.00	.00	PIPE
1053.017	245.406	.533	245.939	2.30	4.08	.26	246.20	.00	.57	1.44	1.500	.000	.00	1 .0
1.201	.0099					.0061	.01	.53	1.15	.48	.013	.00	.00	PIPE
1054.218	245.417	.552	245.969	2.30	3.89	.24	246.20	.00	.57	1.45	1.500	.000	.00	1 .0
.262	.0099					.0054	.00	.55	1.07	.48	.013	.00	.00	PIPE
1054.480	245.420	.573	245.993	2.30	3.70	.21	246.21	.00	.57	1.46	1.500	.000	.00	1 .0
WALL ENTRANCE														
1054.480	245.420	1.573	246.993	2.30	.49	.00	247.00	.00	.26	3.00	10.000	3.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		2.500														

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
SD-W2

HEADING LINE NO 2 IS -
Q100 05/21/2024

HEADING LINE NO 3 IS -
SD-W1 Q100 DOWNSTREAM

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	934.110	191.030	1	192.870

ELEMENT NO 2 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	934.110	191.030	1

ELEMENT NO 3 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	966.500	193.200	1	.013	.000	.000	.000	0

ELEMENT NO 4 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	966.500	193.300	1	193.300

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 5-22-2024 Time: 1:48: 7

SD-W2
Q100 05/21/2024
SD-W1 Q100 DOWNSTREAM

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
934.110	191.030	1.088	192.118	28.90	14.09	3.08	195.20	.00	1.83	2.48	2.500	.000	.00	0 .0
WALL EXIT														
934.110	191.030	1.086	192.116	28.90	14.13	3.10	195.21	.00	1.83	2.48	2.500	.000	.00	1 .0
1.998	.0670					.0318	.06	1.09	2.74	.89	.013	.00	.00	PIPE
936.108	191.164	1.097	192.261	28.90	13.93	3.01	195.27	.00	1.83	2.48	2.500	.000	.00	1 .0
6.183	.0670					.0293	.18	1.10	2.68	.89	.013	.00	.00	PIPE
942.291	191.578	1.138	192.716	28.90	13.28	2.74	195.46	.00	1.83	2.49	2.500	.000	.00	1 .0
5.000	.0670					.0258	.13	1.14	2.50	.89	.013	.00	.00	PIPE
947.291	191.913	1.181	193.094	28.90	12.66	2.49	195.58	.00	1.83	2.50	2.500	.000	.00	1 .0
4.116	.0670					.0227	.09	1.18	2.33	.89	.013	.00	.00	PIPE
951.407	192.189	1.225	193.414	28.90	12.08	2.26	195.68	.00	1.83	2.50	2.500	.000	.00	1 .0
3.377	.0670					.0200	.07	1.23	2.17	.89	.013	.00	.00	PIPE
954.785	192.415	1.272	193.687	28.90	11.51	2.06	195.75	.00	1.83	2.50	2.500	.000	.00	1 .0
2.796	.0670					.0176	.05	1.27	2.02	.89	.013	.00	.00	PIPE
957.580	192.602	1.321	193.923	28.90	10.98	1.87	195.79	.00	1.83	2.50	2.500	.000	.00	1 .0
2.313	.0670					.0155	.04	1.32	1.88	.89	.013	.00	.00	PIPE
959.893	192.757	1.372	194.129	28.90	10.47	1.70	195.83	.00	1.83	2.49	2.500	.000	.00	1 .0
1.869	.0670					.0137	.03	1.37	1.75	.89	.013	.00	.00	PIPE

SD-W2
Q100 05/21/2024
SD-W1 Q100 DOWNSTREAM

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
961.763	192.883	1.427	194.310	28.90	9.98	1.55	195.86	.00	1.83	2.47	2.500	.000	.00	1 .0
1.522	.0670					.0121	.02	1.43	1.63	.89	.013	.00	.00	PIPE
963.285	192.985	1.484	194.469	28.90	9.52	1.41	195.87	.00	1.83	2.46	2.500	.000	.00	1 .0
1.187	.0670					.0107	.01	1.48	1.51	.89	.013	.00	.00	PIPE
964.472	193.064	1.545	194.609	28.90	9.07	1.28	195.89	.00	1.83	2.43	2.500	.000	.00	1 .0
.907	.0670					.0095	.01	1.55	1.40	.89	.013	.00	.00	PIPE
965.379	193.125	1.609	194.734	28.90	8.65	1.16	195.90	.00	1.83	2.39	2.500	.000	.00	1 .0
.625	.0670					.0084	.01	1.61	1.29	.89	.013	.00	.00	PIPE
966.004	193.167	1.678	194.845	28.90	8.25	1.06	195.90	.00	1.83	2.35	2.500	.000	.00	1 .0
.370	.0670					.0075	.00	1.68	1.19	.89	.013	.00	.00	PIPE
966.374	193.192	1.752	194.944	28.90	7.86	.96	195.90	.00	1.83	2.29	2.500	.000	.00	1 .0
.126	.0670					.0067	.00	1.75	1.09	.89	.013	.00	.00	PIPE
966.500	193.200	1.833	195.033	28.90	7.49	.87	195.90	.00	1.83	2.21	2.500	.000	.00	1 .0

Oldcastle Infrastructure
A CRH COMPANY

Nutrient Separating Baffle Box® (NSBB™) Head Loss Calculator

V2020.01; *5/28/2024*

Project Information

Project Name:	**Ocean Breeze Ranch**
Location:	**Basin 2H-1**
Design Basis:	**80% of 150µm**
Screen Basket Capacity (% Full):	**0% (Empty)**
Treatment Flow Rate (cfs):	**0.90**
Peak Flow Rate (cfs):	**29.60**
NSBB Model:	**NSBB-612**

Inlet & Outlet Pipe Information

Inlet Pipe Diameter (in):	**30**
Inlet Invert Elevation (ft):	**193.53**
Outlet Pipe Diameter (in):	**30**
Outlet Invert Elevation (ft):	**193.20**
Outlet Slope %:	**6.69%**
Manning's Roughness Coefficient (n):	**0.012**
Tailwater Present?	**Yes**
Tailwater Elevation:	195.20

Outlet Pipe Flow Characteristics

	Treatment	*Peak*
Normal Depth During Design Flow (ft):	**0.157**	**0.86**
Flow Area (sq ft):	**0.13**	**1.51**
Velocity (ft/s):	**6.99**	**19.66**
Wetted Perimeter (ft):	**1.27**	**3.14**
Downstream Depth of Flow (ft):	**0.309**	**2.066**

NSBB Discharge Coefficients

Screen Orifice Coefficient, Co:	**0.60**
Outlet Pipe Entrance Coefficient, K:	**0.20**

System Design Summary

Rim Elevation (ft):	**203.98**
Rim to Invert Out Depth (ft):	**10.78**
Upstream WSE during Treatment (ft):	**193.508**
Upstream WSE during Peak Flow (ft):	**196.108**

Disclaimer: Calculations are best estimate based on information available and are intended only for use by the party to whom they were transmitted and for the project referenced.

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		2.000														
CD	2	3	0	.000	6.000	4.000	.000	.000	.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -

LINE_W2

HEADING LINE NO 2 IS -

Q100 05/28/2024

HEADING LINE NO 3 IS -

LINE_W2_100.WSW

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET

U/S DATA	STATION	INVERT	SECT	W S ELEV
	975.500	193.530	1	196.110

ELEMENT NO 2 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	986.750	193.640	1	.013	.000	.000	.000	0

ELEMENT NO 3 IS A WALL ENTRANCE

U/S DATA	STATION	INVERT	SECT	FP
	986.750	193.640	2	.200

ELEMENT NO 4 IS A JUNCTION

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	990.750	194.140	2	1	0	.013	4.300	.000	194.140	.000	.000	.000

RADIUS	ANGLE
.000	.000

ELEMENT NO 5 IS A WALL EXIT

U/S DATA	STATION	INVERT	SECT
	990.750	194.140	1

ELEMENT NO 6 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	999.000	194.220	1	.013	.000	.000	.000	0

ELEMENT NO 7 IS A WALL ENTRANCE

U/S DATA	STATION	INVERT	SECT	FP
	999.000	194.220	2	.200

ELEMENT NO 8 IS A SYSTEM HEADWORKS

U/S DATA	STATION	INVERT	SECT	W S ELEV
	999.000	194.220	2	193.640

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 5-29-2024 Time:11:21:34

LINE_W2
Q100 05/28/2024
LINE_W2_100.WSW

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
975.500	193.530	2.580	196.110	28.90	9.20	1.31	197.42	.00	1.84	.00	2.000	.000	.00	1 .0
11.250	.0098					.0163	.18	2.58	.00	2.00	.013	.00	.00	PIPE
986.750	193.640	2.654	196.294	28.90	9.20	1.31	197.61	.00	1.84	.00	2.000	.000	.00	1 .0
WALL	ENTRANCE													
986.750	193.640	4.175	197.815	28.90	1.73	.05	197.86	.00	1.17	4.00	6.000	4.000	.00	0 .0
JUNCT STR	.1250					.0002	.00	4.18	.15		.013	.00	.00	BOX
990.750	194.140	3.682	197.822	24.60	1.67	.04	197.87	.00	1.06	4.00	6.000	4.000	.00	0 .0
WALL	EXIT													
990.750	194.140	3.683	197.823	24.60	7.83	.95	198.77	.00	1.75	.00	2.000	.000	.00	1 .0
8.250	.0097					.0118	.10	3.68	.00	2.00	.013	.00	.00	PIPE
999.000	194.220	3.700	197.920	24.60	7.83	.95	198.87	.00	1.75	.00	2.000	.000	.00	1 .0
WALL	ENTRANCE													
999.000	194.220	4.812	199.032	24.60	1.28	.03	199.06	.00	1.06	4.00	6.000	4.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	3	0	.000	4.000	4.000	.000	.000	.00										
CD	2	4	1		2.500														
CD	3	4	1		2.000														
CD	4	3	0	.000	.900	10.000	20.000	20.000	.00										
CD	5	3	0	.000	.500	12.000	20.000	20.000	.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -

OBR

HEADING LINE NO 2 IS -

LINE W-3

HEADING LINE NO 3 IS -

100 YEAR

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	951.460	183.600	4	183.600

ELEMENT NO 2 IS A TRANSITION * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE
	956.460	184.000	5	.040	.000	.000

WARNING - ADJACENT SECTIONS ARE NOT IDENTICAL - SEE SECTION NUMBERS AND CHANNEL DEFINITIONS

ELEMENT NO 3 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	976.460	185.790	2	.013	.000	.000	26.000	0

ELEMENT NO 4 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	976.460	185.790	1	.200

ELEMENT NO 5 IS A JUNCTION * * * * * *

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	1000.000	186.120	1	3	0	.013	8.600	.000	186.620	.000	64.000	.000

RADIUS	ANGLE
.000	.000

ELEMENT NO 6 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1000.000	186.120	2

ELEMENT NO 7 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1040.060	187.000	2	.013	.000	.000	.000	0

ELEMENT NO 8 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1040.060	187.000	1	.200

ELEMENT NO 9 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1040.060	187.000	1	187.000

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:11- 7-2024 Time: 4:29:52

OBR
LINE W-3
100 YEAR

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width	Height/Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
951.460	183.600	.349	183.949	24.80	4.18	.27	184.22	.00	.43	23.96	.900	10.000	****	0 .0
TRANS STR	.0800					.0587	.29	.35	1.48		.040	.00	****	BOX
956.460	184.000	.405	184.405	24.80	3.06	.15	184.55	.00	.40	28.15	.500	12.000	****	0 .0
956.460	184.000	1.001	185.001	24.80	13.50	2.83	187.83	.00	1.70	2.45	2.500	.000	.00	1 .0
3.027	.0895					.0305	.09	1.00	2.75	.76	.013	.00	.00	PIPE
959.487	184.271	1.030	185.301	24.80	13.00	2.62	187.93	.00	1.70	2.46	2.500	.000	.00	1 .0
3.232	.0895					.0271	.09	1.03	2.60	.76	.013	.00	.00	PIPE
962.719	184.560	1.067	185.627	24.80	12.40	2.39	188.01	.00	1.70	2.47	2.500	.000	.00	1 .0
2.694	.0895					.0238	.06	1.07	2.43	.76	.013	.00	.00	PIPE
965.413	184.801	1.107	185.908	24.80	11.82	2.17	188.08	.00	1.70	2.48	2.500	.000	.00	1 .0
2.278	.0895					.0209	.05	1.11	2.27	.76	.013	.00	.00	PIPE
967.691	185.005	1.148	186.153	24.80	11.27	1.97	188.13	.00	1.70	2.49	2.500	.000	.00	1 .0
1.917	.0895					.0184	.04	1.15	2.11	.76	.013	.00	.00	PIPE
969.608	185.177	1.191	186.368	24.80	10.74	1.79	188.16	.00	1.70	2.50	2.500	.000	.00	1 .0
1.609	.0895					.0162	.03	1.19	1.97	.76	.013	.00	.00	PIPE
971.217	185.321	1.236	186.557	24.80	10.24	1.63	188.19	.00	1.70	2.50	2.500	.000	.00	1 .0
1.344	.0895					.0143	.02	1.24	1.83	.76	.013	.00	.00	PIPE
972.562	185.441	1.283	186.724	24.80	9.77	1.48	188.21	.00	1.70	2.50	2.500	.000	.00	1 .0
1.101	.0895					.0126	.01	1.28	1.71	.76	.013	.00	.00	PIPE

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:11- 7-2024 Time: 4:29:52

OBR
LINE W-3
100 YEAR

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS) / SF Ave	Vel Head / HF	Energy Grd.El. / SE Dpth	Super Elev / Froude N	Critical Depth / Norm Dp	Flow Top Width	Height/Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
973.663	185.540	1.333	186.873	24.80	9.31	1.35	188.22	.00	1.70	2.49	2.500	.000	.00	1 .0
.898	.0895					.0111	.01	1.33	1.59	.76	.013	.00	.00	PIPE
974.561	185.620	1.385	187.005	24.80	8.88	1.22	188.23	.00	1.70	2.49	2.500	.000	.00	1 .0
.706	.0895					.0098	.01	1.39	1.48	.76	.013	.00	.00	PIPE
975.268	185.683	1.440	187.123	24.80	8.47	1.11	188.24	.00	1.70	2.47	2.500	.000	.00	1 .0
.534	.0895					.0086	.00	1.44	1.37	.76	.013	.00	.00	PIPE
975.802	185.731	1.498	187.229	24.80	8.07	1.01	188.24	.00	1.70	2.45	2.500	.000	.00	1 .0
.366	.0895					.0077	.00	1.50	1.27	.76	.013	.00	.00	PIPE
976.168	185.764	1.560	187.324	24.80	7.70	.92	188.24	.00	1.70	2.42	2.500	.000	.00	1 .0
.225	.0895					.0068	.00	1.56	1.18	.76	.013	.00	.00	PIPE
976.393	185.784	1.625	187.409	24.80	7.34	.84	188.25	.00	1.70	2.38	2.500	.000	.00	1 .0
.067	.0895					.0060	.00	1.63	1.09	.76	.013	.00	.00	PIPE
976.460	185.790	1.697	187.487	24.80	6.99	.76	188.25	.00	1.70	2.34	2.500	.000	.00	1 .0
WALL	ENTRANCE													
976.460	185.790	3.697	189.487	24.80	1.68	.04	189.53	.00	1.06	4.00	4.000	4.000	.00	0 .0
JUNCT STR	.0140					.0002	.00	3.70	.15		.013	.00	.00	BOX

---------- WARNING - Flow depth near top of box conduit ----------

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date:11- 7-2024 Time: 4:29:52

OBR
LINE W-3
100 YEAR

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1000.000	186.120	3.395	189.515	16.20	1.19	.02	189.54	.00	.80	4.00	4.000	4.000	.00	0 .0
WALL	EXIT													
1000.000	186.120	3.396	189.516	16.20	3.30	.17	189.68	.00	1.36	.00	2.500	.000	.00	1 .0
40.060	.0220					.0016	.06	3.40	.00	.88	.013	.00	.00	PIPE
1040.060	187.000	2.578	189.578	16.20	3.30	.17	189.75	.00	1.36	.00	2.500	.000	.00	1 .0
WALL	ENTRANCE													
1040.060	187.000	2.740	189.740	16.20	1.48	.03	189.77	.00	.80	4.00	4.000	4.000	.00	0 .0

FILE: LINE_W3-1.WSW W S P G W - EDIT LISTING - Version 14.11 Date: 6- 3-2024 Time: 9: 7:24

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING PAGE 1

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	3	0	.000	4.000	4.000	.000	.000	.00										
CD	2	4	1		2.500														
CD	3	4	1		2.000														

W S P G W PAGE NO 1

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -

OBR

HEADING LINE NO 2 IS -

LINE W-3-1

HEADING LINE NO 3 IS -

100 YEAR

W S P G W PAGE NO 2

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1002.000	186.620	1	188.489

ELEMENT NO 2 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1002.000	186.620	2

ELEMENT NO 3 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1081.340	193.000	2	.013	.000	.000	.000	0

ELEMENT NO 4 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1081.340	193.000	1	.200

ELEMENT NO 5 IS A JUNCTION * * * * * * *

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	1085.340	194.000	1	1	0	.013	2.500	.000	194.000	.000	.000	.000

RADIUS	ANGLE
.000	.000

ELEMENT NO 6 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1085.340	194.000	2

ELEMENT NO 7 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1086.840	194.030	2	.013	.000	.000	.000	0

ELEMENT NO 8 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1086.840	194.030	1	.200

ELEMENT NO 9 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1086.840	194.030	1	194.030

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 3-2024 Time: 9: 7:25

OBR
LINE W-3-1
100 YEAR

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1002.000	186.620	1.869	188.489	10.00	1.34	.03	188.52	.00	.58	4.00	4.000	4.000	.00	0 .0
HYDRAULIC JUMP														
1002.000	186.620	.503	187.123	10.00	14.18	3.12	190.25	.00	1.06	2.00	2.500	.000	.00	1 .0
19.872	.0804					.0728	1.45	.50	4.21	.50	.013	.00	.00	PIPE
1021.872	188.218	.512	188.730	10.00	13.81	2.96	191.69	.00	1.06	2.02	2.500	.000	.00	1 .0
17.057	.0804					.0656	1.12	.51	4.06	.50	.013	.00	.00	PIPE
1038.929	189.590	.529	190.119	10.00	13.17	2.69	192.81	.00	1.06	2.04	2.500	.000	.00	1 .0
9.827	.0804					.0573	.56	.53	3.81	.50	.013	.00	.00	PIPE
1048.755	190.380	.547	190.927	10.00	12.55	2.45	193.37	.00	1.06	2.07	2.500	.000	.00	1 .0
6.719	.0804					.0501	.34	.55	3.56	.50	.013	.00	.00	PIPE
1055.475	190.920	.566	191.486	10.00	11.97	2.22	193.71	.00	1.06	2.09	2.500	.000	.00	1 .0
4.985	.0804					.0439	.22	.57	3.34	.50	.013	.00	.00	PIPE
1060.460	191.321	.586	191.907	10.00	11.41	2.02	193.93	.00	1.06	2.12	2.500	.000	.00	1 .0
3.896	.0804					.0384	.15	.59	3.13	.50	.013	.00	.00	PIPE
1064.356	191.634	.606	192.240	10.00	10.88	1.84	194.08	.00	1.06	2.14	2.500	.000	.00	1 .0
3.138	.0804					.0335	.11	.61	2.93	.50	.013	.00	.00	PIPE
1067.494	191.887	.626	192.513	10.00	10.38	1.67	194.18	.00	1.06	2.17	2.500	.000	.00	1 .0
2.543	.0804					.0293	.07	.63	2.74	.50	.013	.00	.00	PIPE

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 3-2024 Time: 9: 7:25

OBR

LINE W-3-1

100 YEAR

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1070.037	192.091	.648	192.739	10.00	9.89	1.52	194.26	.00	1.06	2.19	2.500	.000	.00	1 .0
2.120	.0804					.0256	.05	.65	2.57	.50	.013	.00	.00	PIPE
1072.158	192.262	.670	192.932	10.00	9.43	1.38	194.31	.00	1.06	2.21	2.500	.000	.00	1 .0
1.752	.0804					.0224	.04	.67	2.40	.50	.013	.00	.00	PIPE
1073.910	192.403	.694	193.097	10.00	8.99	1.26	194.35	.00	1.06	2.24	2.500	.000	.00	1 .0
1.484	.0804					.0196	.03	.69	2.25	.50	.013	.00	.00	PIPE
1075.394	192.522	.718	193.240	10.00	8.57	1.14	194.38	.00	1.06	2.26	2.500	.000	.00	1 .0
1.246	.0804					.0172	.02	.72	2.10	.50	.013	.00	.00	PIPE
1076.640	192.622	.743	193.365	10.00	8.18	1.04	194.40	.00	1.06	2.29	2.500	.000	.00	1 .0
1.046	.0804					.0150	.02	.74	1.97	.50	.013	.00	.00	PIPE
1077.686	192.706	.769	193.475	10.00	7.80	.94	194.42	.00	1.06	2.31	2.500	.000	.00	1 .0
.874	.0804					.0132	.01	.77	1.84	.50	.013	.00	.00	PIPE
1078.560	192.776	.796	193.573	10.00	7.43	.86	194.43	.00	1.06	2.33	2.500	.000	.00	1 .0
.726	.0804					.0115	.01	.80	1.72	.50	.013	.00	.00	PIPE
1079.286	192.835	.824	193.659	10.00	7.09	.78	194.44	.00	1.06	2.35	2.500	.000	.00	1 .0
.596	.0804					.0101	.01	.82	1.61	.50	.013	.00	.00	PIPE
1079.881	192.883	.853	193.736	10.00	6.76	.71	194.44	.00	1.06	2.37	2.500	.000	.00	1 .0
.481	.0804					.0089	.00	.85	1.51	.50	.013	.00	.00	PIPE

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 3-2024 Time: 9: 7:25

OBR
LINE W-3-1
100 YEAR

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1080.363	192.921	.883	193.805	10.00	6.44	.64	194.45	.00	1.06	2.39	2.500	.000	.00	1 .0
.366	.0804					.0078	.00	.88	1.41	.50	.013	.00	.00	PIPE
1080.729	192.951	.915	193.866	10.00	6.14	.59	194.45	.00	1.06	2.41	2.500	.000	.00	1 .0
.275	.0804					.0068	.00	.92	1.32	.50	.013	.00	.00	PIPE
1081.004	192.973	.948	193.921	10.00	5.86	.53	194.45	.00	1.06	2.43	2.500	.000	.00	1 .0
.194	.0804					.0060	.00	.95	1.23	.50	.013	.00	.00	PIPE
1081.198	192.989	.982	193.971	10.00	5.58	.48	194.45	.00	1.06	2.44	2.500	.000	.00	1 .0
.107	.0804					.0052	.00	.98	1.15	.50	.013	.00	.00	PIPE
1081.304	192.997	1.018	194.015	10.00	5.32	.44	194.46	.00	1.06	2.46	2.500	.000	.00	1 .0
.036	.0804					.0046	.00	1.02	1.07	.50	.013	.00	.00	PIPE
1081.340	193.000	1.056	194.056	10.00	5.07	.40	194.46	.00	1.06	2.47	2.500	.000	.00	1 .0
WALL	ENTRANCE													
1081.340	193.000	2.056	195.056	10.00	1.22	.02	195.08	.00	.58	4.00	4.000	4.000	.00	0 .0
JUNCT STR	.2500					.0003	.00	2.06	.15		.013	.00	.00	BOX
1085.340	194.000	1.043	195.043	7.50	1.80	.05	195.09	.00	.48	4.00	4.000	4.000	.00	0 .0
WALL	EXIT													
1085.340	194.000	1.044	195.044	7.50	3.86	.23	195.28	.00	.91	2.47	2.500	.000	.00	1 .0
.822	.0200					.0027	.00	1.04	.77	.61	.013	.00	.00	PIPE

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 3-2024 Time: 9: 7:25

OBR
LINE W-3-1
100 YEAR

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1086.161	194.016	1.006	195.023	7.50	4.05	.26	195.28	.00	.91	2.45	2.500	.000	.00	1 .0
.560	.0200					.0031	.00	1.01	.82	.61	.013	.00	.00	PIPE
1086.722	194.028	.971	194.999	7.50	4.25	.28	195.28	.00	.91	2.44	2.500	.000	.00	1 .0
.118	.0200					.0033	.00	.97	.88	.61	.013	.00	.00	PIPE
1086.840	194.030	.962	194.992	7.50	4.31	.29	195.28	.00	.91	2.43	2.500	.000	.00	1 .0
WALL	ENTRANCE													
1086.840	194.030	1.962	195.992	7.50	.96	.01	196.01	.00	.48	4.00	4.000	4.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	2	0	.000	4.000	4.000			.00										
CD	2	4	1		2.000														

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
SD-W4
HEADING LINE NO 2 IS -
Q100 05/21/2024
HEADING LINE NO 3 IS -
SD-W4 Q100 DOWNSTREAM

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	984.150	301.520	2	303.440

ELEMENT NO 2 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	984.150	301.520	2

ELEMENT NO 3 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1010.660	303.260	2	.013	.000	.000	.000	0

ELEMENT NO 4 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1010.660	303.260	1	.500

ELEMENT NO 5 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1010.660	303.260	1	303.260

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 5-21-2024 Time: 5: 9:22

SD-W4
Q100 05/21/2024
SD-W4 Q100 DOWNSTREAM

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
984.150	301.520	.773	302.293	13.50	12.04	2.25	304.55	.00	1.32	1.95	2.000	.000	.00	0 .0
WALL EXIT														
984.150	301.520	.772	302.292	13.50	12.06	2.26	304.55	.00	1.32	1.95	2.000	.000	.00	1 .0
1.112	.0656					.0352	.04	.77	2.80	.66	.013	.00	.00	PIPE
985.262	301.593	.777	302.370	13.50	11.94	2.22	304.59	.00	1.32	1.95	2.000	.000	.00	1 .0
5.222	.0656					.0326	.17	.78	2.76	.66	.013	.00	.00	PIPE
990.484	301.936	.806	302.742	13.50	11.39	2.01	304.76	.00	1.32	1.96	2.000	.000	.00	1 .0
4.165	.0656					.0286	.12	.81	2.58	.66	.013	.00	.00	PIPE
994.649	302.209	.835	303.044	13.50	10.86	1.83	304.88	.00	1.32	1.97	2.000	.000	.00	1 .0
3.346	.0656					.0251	.08	.84	2.41	.66	.013	.00	.00	PIPE
997.995	302.429	.866	303.295	13.50	10.35	1.66	304.96	.00	1.32	1.98	2.000	.000	.00	1 .0
2.741	.0656					.0221	.06	.87	2.25	.66	.013	.00	.00	PIPE
1000.736	302.609	.898	303.507	13.50	9.87	1.51	305.02	.00	1.32	1.99	2.000	.000	.00	1 .0
2.262	.0656					.0194	.04	.90	2.10	.66	.013	.00	.00	PIPE
1002.998	302.757	.931	303.688	13.50	9.41	1.38	305.06	.00	1.32	2.00	2.000	.000	.00	1 .0
1.855	.0656					.0171	.03	.93	1.96	.66	.013	.00	.00	PIPE
1004.853	302.879	.966	303.845	13.50	8.97	1.25	305.10	.00	1.32	2.00	2.000	.000	.00	1 .0
1.515	.0656					.0150	.02	.97	1.82	.66	.013	.00	.00	PIPE

SD-W4
Q100 05/21/2024
SD-W4 Q100 DOWNSTREAM

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1006.368	302.978	1.003	303.981	13.50	8.56	1.14	305.12	.00	1.32	2.00	2.000	.000	.00	1 .0
1.247	.0656					.0132	.02	1.00	1.70	.66	.013	.00	.00	PIPE
1007.615	303.060	1.041	304.101	13.50	8.16	1.03	305.13	.00	1.32	2.00	2.000	.000	.00	1 .0
.981	.0656					.0117	.01	1.04	1.58	.66	.013	.00	.00	PIPE
1008.596	303.125	1.082	304.207	13.50	7.78	.94	305.15	.00	1.32	1.99	2.000	.000	.00	1 .0
.766	.0656					.0103	.01	1.08	1.47	.66	.013	.00	.00	PIPE
1009.363	303.175	1.125	304.300	13.50	7.42	.85	305.15	.00	1.32	1.98	2.000	.000	.00	1 .0
.595	.0656					.0091	.01	1.13	1.36	.66	.013	.00	.00	PIPE
1009.958	303.214	1.169	304.383	13.50	7.07	.78	305.16	.00	1.32	1.97	2.000	.000	.00	1 .0
.392	.0656					.0080	.00	1.17	1.27	.66	.013	.00	.00	PIPE
1010.350	303.240	1.217	304.457	13.50	6.74	.71	305.16	.00	1.32	1.95	2.000	.000	.00	1 .0
.242	.0656					.0071	.00	1.22	1.17	.66	.013	.00	.00	PIPE
1010.593	303.256	1.267	304.523	13.50	6.43	.64	305.16	.00	1.32	1.93	2.000	.000	.00	1 .0
.067	.0656					.0063	.00	1.27	1.09	.66	.013	.00	.00	PIPE
1010.660	303.260	1.322	304.582	13.50	6.12	.58	305.16	.00	1.32	1.89	2.000	.000	.00	1 .0
WALL	ENTRANCE													
1010.660	303.260	2.322	305.582	13.50	1.45	.03	305.62	.00	.71	4.00	4.000	4.000	.00	0 .0

Oldcastle Infrastructure
A CRH COMPANY

Nutrient Separating Baffle Box® (NSBB™) Head Loss Calculator

V2020.01; *5/28/2024*

Project Information

Project Name:	**Ocean Breeze Ranch**
Location:	**Basin 1B-1**
Design Basis:	**80% of 150µm**
Screen Basket Capacity (% Full):	**0% (Empty)**
Treatment Flow Rate (cfs):	**0.52**
Peak Flow Rate (cfs):	**13.50**
NSBB Model:	**NSBB-48**

Inlet & Outlet Pipe Information

Inlet Pipe Diameter (in):	**24**
Inlet Invert Elevation (ft):	**303.36**
Outlet Pipe Diameter (in):	**24**
Outlet Invert Elevation (ft):	**303.26**
Outlet Slope %:	**6.56%**
Manning's Roughness Coefficient (n):	**0.012**
Tailwater Present?	**Yes**
Tailwater Elevation:	305.16

Outlet Pipe Flow Characteristics

	Treatment	*Peak*
Normal Depth During Design Flow (ft):	**0.129**	**0.63**
Flow Area (sq ft):	**0.09**	**0.85**
Velocity (ft/s):	**6.07**	**15.95**
Wetted Perimeter (ft):	**1.03**	**2.38**
Downstream Depth of Flow (ft):	**0.243**	**1.900**

NSBB Discharge Coefficients

Screen Orifice Coefficient, Co:	**0.60**
Outlet Pipe Entrance Coefficient, K:	**0.20**

System Design Summary

Rim Elevation (ft):	**311.04**
Rim to Invert Out Depth (ft):	**7.78**
Upstream WSE during Treatment (ft):	**303.502**
Upstream WSE during Peak Flow (ft):	**305.527**

Disclaimer: Calculations are best estimate based on information available and are intended only for use by the party to whom they were transmitted and for the project referenced.

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		2.000														
CD	2	4	1		1.500														
CD	3	3	0	.000	6.000	4.000	.000	.000	.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -

LINE_W4

HEADING LINE NO 2 IS -

Q100 05/29/2024

HEADING LINE NO 3 IS -

LINE_W4.WSW_100.WSW

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1018.660	303.360	1	305.530

ELEMENT NO 2 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1018.660	303.360	1

ELEMENT NO 3 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1042.420	305.260	1	.013	.000	.000	-307.910	7

ELEMENT NO 4 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1042.420	305.260	3	.200

ELEMENT NO 5 IS A JUNCTION * * * * * * *

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	1046.420	306.090	3	1	0	.013	7.100	.000	305.590	.000	49.000	.400

RADIUS	ANGLE
.000	.000

ELEMENT NO 6 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1046.420	306.090	2

ELEMENT NO 7 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1143.790	307.060	2	.013	.000	.000	-322.500	0

ELEMENT NO 8 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1143.790	307.060	2	.200

ELEMENT NO 9 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1143.790	307.060	2	.000

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 5-29-2024 Time: 9:55:43

LINE_W4
Q100 05/29/2024
LINE_W4.WSW_100.WSW

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1018.660	303.360	.754	304.114	13.60	12.55	2.44	306.56	.00	1.33	1.94	2.000	.000	.00	0 .0
WALL EXIT														
1018.660	303.360	.753	304.113	13.60	12.58	2.46	306.57	.00	1.33	1.94	2.000	.000	.00	1 .0
.101	.0800					.0398	.00	.75	2.97	.63	.013	.00	.00	PIPE
1018.761	303.368	.753	304.121	13.60	12.56	2.45	306.57	.00	1.33	1.94	2.000	.000	.00	1 .0
4.588	.0800					.0373	.17	.75	2.96	.63	.013	.00	.00	PIPE
1023.350	303.735	.780	304.515	13.60	11.98	2.23	306.74	.00	1.33	1.95	2.000	.000	.00	1 .0
3.694	.0800					.0327	.12	.78	2.77	.63	.013	.00	.00	PIPE
1027.044	304.030	.808	304.839	13.60	11.42	2.03	306.86	.00	1.33	1.96	2.000	.000	.00	1 .0
3.008	.0800					.0287	.09	.81	2.58	.63	.013	.00	.00	PIPE
1030.052	304.271	.838	305.109	13.60	10.89	1.84	306.95	.00	1.33	1.97	2.000	.000	.00	1 .0
2.492	.0800					.0252	.06	.84	2.41	.63	.013	.00	.00	PIPE
1032.544	304.470	.869	305.339	13.60	10.38	1.67	307.01	.00	1.33	1.98	2.000	.000	.00	1 .0
2.079	.0800					.0222	.05	.87	2.25	.63	.013	.00	.00	PIPE
1034.623	304.637	.901	305.538	13.60	9.90	1.52	307.06	.00	1.33	1.99	2.000	.000	.00	1 .0
1.742	.0800					.0195	.03	.90	2.10	.63	.013	.00	.00	PIPE
1036.365	304.776	.934	305.710	13.60	9.44	1.38	307.09	.00	1.33	2.00	2.000	.000	.00	1 .0
1.429	.0800					.0171	.02	.93	1.96	.63	.013	.00	.00	PIPE

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 5-29-2024 Time: 9:55:43

LINE_W4
Q100 05/29/2024
LINE_W4.WSW_100.WSW

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1037.794	304.890	.970	305.860	13.60	9.00	1.26	307.12	.00	1.33	2.00	2.000	.000	.00	1 .0
1.208	.0800					.0151	.02	.97	1.82	.63	.013	.00	.00	PIPE
1039.002	304.987	1.006	305.993	13.60	8.58	1.14	307.14	.00	1.33	2.00	2.000	.000	.00	1 .0
.974	.0800					.0133	.01	1.01	1.70	.63	.013	.00	.00	PIPE
1039.976	305.065	1.045	306.110	13.60	8.18	1.04	307.15	.00	1.33	2.00	2.000	.000	.00	1 .0
.784	.0800					.0117	.01	1.05	1.58	.63	.013	.00	.00	PIPE
1040.760	305.127	1.086	306.213	13.60	7.80	.95	307.16	.00	1.33	1.99	2.000	.000	.00	1 .0
.616	.0800					.0103	.01	1.09	1.47	.63	.013	.00	.00	PIPE
1041.376	305.177	1.129	306.306	13.60	7.44	.86	307.16	.00	1.33	1.98	2.000	.000	.00	1 .0
.467	.0800					.0091	.00	1.13	1.37	.63	.013	.00	.00	PIPE
1041.843	305.214	1.174	306.388	13.60	7.09	.78	307.17	.00	1.33	1.97	2.000	.000	.00	1 .0
.334	.0800					.0081	.00	1.17	1.27	.63	.013	.00	.00	PIPE
1042.177	305.241	1.221	306.462	13.60	6.76	.71	307.17	.00	1.33	1.95	2.000	.000	.00	1 .0
.186	.0800					.0071	.00	1.22	1.17	.63	.013	.00	.00	PIPE
1042.364	305.255	1.272	306.528	13.60	6.45	.65	307.17	.00	1.33	1.92	2.000	.000	.00	1 .0
.057	.0800					.0063	.00	1.27	1.09	.63	.013	.00	.00	PIPE
1042.420	305.260	1.328	306.588	13.60	6.14	.59	307.17	.00	1.33	1.89	2.000	.000	.00	1 .0
WALL	ENTRANCE													

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 5-29-2024 Time: 9:55:43

LINE_W4
Q100 05/29/2024
LINE_W4.WSW_100.WSW

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1042.420	305.260	2.328	307.588	13.60	1.46	.03	307.62	.00	.71	4.00	6.000	4.000	.00	0 .0
JUNCT STR	.2075					.0001	.00	2.33	.17		.013	.00	.00	BOX
1046.420	306.090	1.507	307.597	6.50	1.08	.02	307.62	.00	.43	4.00	6.000	4.000	.00	0 .0
WALL EXIT														
1046.420	306.090	1.508	307.598	6.50	3.68	.21	307.81	.00	.99	.00	1.500	.000	.00	1 .0
37.767	.0100					.0038	.14	1.51	.00	.85	.013	.00	.00	PIPE
1084.187	306.466	1.500	307.966	6.50	3.68	.21	308.18	.00	.99	.00	1.500	.000	.00	1 .0
18.375	.0100					.0035	.07	1.50	.00	.85	.013	.00	.00	PIPE
1102.562	306.649	1.360	308.009	6.50	3.86	.23	308.24	.00	.99	.87	1.500	.000	.00	1 .0
8.757	.0100					.0035	.03	1.36	.49	.85	.013	.00	.00	PIPE
1111.320	306.737	1.280	308.017	6.50	4.05	.25	308.27	.00	.99	1.06	1.500	.000	.00	1 .0
6.695	.0100					.0038	.03	1.28	.58	.85	.013	.00	.00	PIPE
1118.015	306.803	1.213	308.016	6.50	4.24	.28	308.30	.00	.99	1.18	1.500	.000	.00	1 .0
5.149	.0100					.0041	.02	1.21	.66	.85	.013	.00	.00	PIPE
1123.164	306.855	1.155	308.010	6.50	4.45	.31	308.32	.00	.99	1.26	1.500	.000	.00	1 .0
4.133	.0100					.0046	.02	1.16	.73	.85	.013	.00	.00	PIPE
1127.297	306.896	1.102	307.998	6.50	4.67	.34	308.34	.00	.99	1.32	1.500	.000	.00	1 .0
.045	.0100					.0051	.00	1.10	.80	.85	.013	.00	.00	PIPE

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 5-29-2024 Time: 9:55:43

LINE_W4
Q100 05/29/2024
LINE_W4.WSW_100.WSW

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1127.342	306.896	1.054	307.950	6.50	4.90	.37	308.32	.00	.99	1.37	1.500	.000	.00	1 .0
HYDRAULIC JUMP														
1127.342	306.896	.872	307.768	6.50	6.10	.58	308.35	.00	.99	1.48	1.500	.000	.00	1 .0
10.875	.0100					.0088	.10	.87	1.27	.85	.013	.00	.00	PIPE
1138.217	307.004	.907	307.912	6.50	5.81	.52	308.44	.00	.99	1.47	1.500	.000	.00	1 .0
4.457	.0100					.0078	.03	.91	1.17	.85	.013	.00	.00	PIPE
1142.674	307.049	.945	307.994	6.50	5.54	.48	308.47	.00	.99	1.45	1.500	.000	.00	1 .0
1.116	.0100					.0069	.01	.95	1.09	.85	.013	.00	.00	PIPE
1143.790	307.060	.986	308.046	6.50	5.28	.43	308.48	.00	.99	1.42	1.500	.000	.00	1 .0
WALL ENTRANCE														
1143.790	307.060	1.089	308.149	6.50	4.73	.35	308.50	.00	.99	1.34	1.500	.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		2.000														
CD	2	2	0	.000	10.000	3.000			.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
OCEAN BREEZE RANCH
HEADING LINE NO 2 IS -
Q100
HEADING LINE NO 3 IS -
LINE W4-1

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1000.000	292.480	2	292.480

ELEMENT NO 2 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1000.000	292.480	1

ELEMENT NO 3 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1058.050	298.000	1	.013	.000	.000	.000	0

ELEMENT NO 4 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1058.050	298.000	2	.200

ELEMENT NO 5 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1058.050	298.000	2	303.440

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 5-30-2024 Time: 2:30:31

OCEAN BREEZE RANCH
Q100
LINE W4-1

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1000.000	292.480	.277	292.758	13.50	16.22	4.08	296.84	.00	.86	3.00	10.000	3.000	.00	0 .0
WALL EXIT														
1000.000	292.480	.631	293.111	13.50	15.89	3.92	297.03	.00	1.32	1.86	2.000	.000	.00	1 .0
14.276	.0951					.0718	1.02	.63	4.14	.60	.013	.00	.00	PIPE
1014.276	293.837	.652	294.490	13.50	15.16	3.57	298.06	.00	1.32	1.88	2.000	.000	.00	1 .0
9.371	.0951					.0629	.59	.65	3.88	.60	.013	.00	.00	PIPE
1023.647	294.729	.675	295.404	13.50	14.45	3.24	298.65	.00	1.32	1.89	2.000	.000	.00	1 .0
6.781	.0951					.0551	.37	.68	3.62	.60	.013	.00	.00	PIPE
1030.428	295.373	.699	296.072	13.50	13.78	2.95	299.02	.00	1.32	1.91	2.000	.000	.00	1 .0
5.199	.0951					.0483	.25	.70	3.39	.60	.013	.00	.00	PIPE
1035.626	295.868	.724	296.592	13.50	13.14	2.68	299.27	.00	1.32	1.92	2.000	.000	.00	1 .0
4.130	.0951					.0424	.18	.72	3.17	.60	.013	.00	.00	PIPE
1039.756	296.260	.750	297.010	13.50	12.53	2.44	299.45	.00	1.32	1.94	2.000	.000	.00	1 .0
3.359	.0951					.0372	.12	.75	2.96	.60	.013	.00	.00	PIPE
1043.115	296.580	.777	297.357	13.50	11.94	2.22	299.57	.00	1.32	1.95	2.000	.000	.00	1 .0
2.760	.0951					.0326	.09	.78	2.76	.60	.013	.00	.00	PIPE
1045.875	296.842	.806	297.648	13.50	11.39	2.01	299.66	.00	1.32	1.96	2.000	.000	.00	1 .0
2.319	.0951					.0286	.07	.81	2.58	.60	.013	.00	.00	PIPE

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 5-30-2024 Time: 2:30:31

OCEAN BREEZE RANCH
Q100
LINE W4-1

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1048.194	297.063	.835	297.898	13.50	10.86	1.83	299.73	.00	1.32	1.97	2.000	.000	.00	1 .0
1.937	.0951					.0251	.05	.84	2.41	.60	.013	.00	.00	PIPE
1050.131	297.247	.866	298.113	13.50	10.35	1.66	299.78	.00	1.32	1.98	2.000	.000	.00	1 .0
1.635	.0951					.0221	.04	.87	2.25	.60	.013	.00	.00	PIPE
1051.765	297.402	.898	298.300	13.50	9.87	1.51	299.81	.00	1.32	1.99	2.000	.000	.00	1 .0
1.382	.0951					.0194	.03	.90	2.10	.60	.013	.00	.00	PIPE
1053.147	297.534	.931	298.465	13.50	9.41	1.38	299.84	.00	1.32	2.00	2.000	.000	.00	1 .0
1.154	.0951					.0171	.02	.93	1.96	.60	.013	.00	.00	PIPE
1054.302	297.644	.966	298.610	13.50	8.97	1.25	299.86	.00	1.32	2.00	2.000	.000	.00	1 .0
.958	.0951					.0150	.01	.97	1.82	.60	.013	.00	.00	PIPE
1055.260	297.735	1.003	298.738	13.50	8.56	1.14	299.87	.00	1.32	2.00	2.000	.000	.00	1 .0
.798	.0951					.0132	.01	1.00	1.70	.60	.013	.00	.00	PIPE
1056.058	297.811	1.041	298.852	13.50	8.16	1.03	299.89	.00	1.32	2.00	2.000	.000	.00	1 .0
.635	.0951					.0117	.01	1.04	1.58	.60	.013	.00	.00	PIPE
1056.693	297.871	1.082	298.953	13.50	7.78	.94	299.89	.00	1.32	1.99	2.000	.000	.00	1 .0
.500	.0951					.0103	.01	1.08	1.47	.60	.013	.00	.00	PIPE
1057.193	297.919	1.125	299.044	13.50	7.42	.85	299.90	.00	1.32	1.98	2.000	.000	.00	1 .0
.391	.0951					.0091	.00	1.13	1.36	.60	.013	.00	.00	PIPE

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 5-30-2024 Time: 2:30:31

OCEAN BREEZE RANCH
Q100
LINE W4-1

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1057.584	297.956	1.169	299.125	13.50	7.07	.78	299.90	.00	1.32	1.97	2.000	.000	.00	1 .0
.260	.0951					.0080	.00	1.17	1.27	.60	.013	.00	.00	PIPE
1057.844	297.980	1.217	299.198	13.50	6.74	.71	299.90	.00	1.32	1.95	2.000	.000	.00	1 .0
.161	.0951					.0071	.00	1.22	1.17	.60	.013	.00	.00	PIPE
1058.005	297.996	1.267	299.263	13.50	6.43	.64	299.90	.00	1.32	1.93	2.000	.000	.00	1 .0
.045	.0951					.0063	.00	1.27	1.09	.60	.013	.00	.00	PIPE
1058.050	298.000	1.322	299.322	13.50	6.12	.58	299.90	.00	1.32	1.89	2.000	.000	.00	1 .0
WALL	ENTRANCE													
1058.050	298.000	2.322	300.322	13										

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	18	4	1		1.500														
CD	2	3	0	.000	4.000	4.000	.000	.000	.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
SD W5-1

HEADING LINE NO 2 IS -
Q100 05/23/2024

HEADING LINE NO 3 IS -
OBR SD W5-1 SD W5-1_100.WSW

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	948.220	207.290	2	207.290

ELEMENT NO 2 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	948.220	207.290	18

ELEMENT NO 3 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	962.500	207.430	18	.010	.000	.000	.000	0

ELEMENT NO 4 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	962.500	207.430	2	.200

ELEMENT NO 5 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	966.500	207.760	2	.010	.000	.000	.000	0

ELEMENT NO 6 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	966.500	207.760	18

ELEMENT NO 7 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1014.270	208.240	18	.010	.000	.000	.000	0

ELEMENT NO 8 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1014.270	208.240	2	.200

ELEMENT NO 9 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1014.270	208.240	2	.000

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 5-23-2024 Time: 3:30: 9

SD W5-1
Q100 05/23/2024
OBR SD W5-1 SD W5-1_100.WSW

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
948.220	207.290	.152	207.442	4.30	7.05	.77	208.22	.00	.33	4.00	4.000	4.000	.00	0 .0
WALL	EXIT													
948.220	207.290	.655	207.945	4.30	5.80	.52	208.47	.00	.79	1.49	1.500	.000	.00	1 .0
1.375	.0098					.0063	.01	.66	1.45	.58	.010	.00	.00	PIPE
949.595	207.303	.659	207.963	4.30	5.75	.51	208.48	.00	.79	1.49	1.500	.000	.00	1 .0
5.692	.0098					.0058	.03	.66	1.43	.58	.010	.00	.00	PIPE
955.287	207.359	.683	208.042	4.30	5.48	.47	208.51	.00	.79	1.49	1.500	.000	.00	1 .0
3.503	.0098					.0051	.02	.68	1.33	.58	.010	.00	.00	PIPE
958.790	207.394	.709	208.103	4.30	5.23	.42	208.53	.00	.79	1.50	1.500	.000	.00	1 .0
2.180	.0098					.0045	.01	.71	1.24	.58	.010	.00	.00	PIPE
960.970	207.415	.736	208.151	4.30	4.98	.39	208.54	.00	.79	1.50	1.500	.000	.00	1 .0
1.206	.0098					.0040	.00	.74	1.16	.58	.010	.00	.00	PIPE
962.176	207.427	.764	208.191	4.30	4.75	.35	208.54	.00	.79	1.50	1.500	.000	.00	1 .0
.324	.0098					.0035	.00	.76	1.08	.58	.010	.00	.00	PIPE
962.500	207.430	.795	208.225	4.30	4.52	.32	208.54	.00	.79	1.50	1.500	.000	.00	1 .0
WALL	ENTRANCE													
962.500	207.430	1.795	209.225	4.30	.60	.01	209.23	.00	.33	4.00	4.000	4.000	.00	0 .0
1.006	.0825					.0000	.00	1.79	.08	.11	.010	.00	.00	BOX

SD W5-1
Q100 05/23/2024
OBR SD W5-1 SD W5-1_100.WSW

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
963.506	207.513	1.711	209.224	4.30	.63	.01	209.23	.00	.33	4.00	4.000	4.000	.00	0 .0
.958	.0825					.0000	.00	1.71	.08	.11	.010	.00	.00	BOX
964.464	207.592	1.632	209.224	4.30	.66	.01	209.23	.00	.33	4.00	4.000	4.000	.00	0 .0
.913	.0825					.0000	.00	1.63	.09	.11	.010	.00	.00	BOX
965.377	207.667	1.556	209.223	4.30	.69	.01	209.23	.00	.33	4.00	4.000	4.000	.00	0 .0
.869	.0825					.0000	.00	1.56	.10	.11	.010	.00	.00	BOX
966.246	207.739	1.483	209.222	4.30	.72	.01	209.23	.00	.33	4.00	4.000	4.000	.00	0 .0
.254	.0825					.0000	.00	1.48	.10	.11	.010	.00	.00	BOX
966.500	207.760	1.462	209.222	4.30	.74	.01	209.23	.00	.33	4.00	4.000	4.000	.00	0 .0
WALL	EXIT													
966.500	207.760	1.463	209.223	4.30	2.45	.09	209.32	.00	.79	.47	1.500	.000	.00	1 .0
11.502	.0100					.0009	.01	1.46	.22	.58	.010	.00	.00	PIPE
978.002	207.876	1.348	209.224	4.30	2.57	.10	209.33	.00	.79	.91	1.500	.000	.00	1 .0
7.411	.0100					.0009	.01	1.35	.33	.58	.010	.00	.00	PIPE
985.413	207.950	1.270	209.220	4.30	2.69	.11	209.33	.00	.79	1.08	1.500	.000	.00	1 .0
5.927	.0100					.0010	.01	1.27	.39	.58	.010	.00	.00	PIPE
991.340	208.010	1.205	209.215	4.30	2.83	.12	209.34	.00	.79	1.19	1.500	.000	.00	1 .0
5.087	.0100					.0011	.01	1.21	.44	.58	.010	.00	.00	PIPE

SD W5-1
Q100 05/23/2024
OBR SD W5-1 SD W5-1_100.WSW

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
996.427	208.061	1.147	209.208	4.30	2.96	.14	209.34	.00	.79	1.27	1.500	.000	.00	1 .0
4.337	.0100					.0012	.01	1.15	.49	.58	.010	.00	.00	PIPE
1000.764	208.104	1.095	209.199	4.30	3.11	.15	209.35	.00	.79	1.33	1.500	.000	.00	1 .0
3.676	.0100					.0013	.00	1.10	.54	.58	.010	.00	.00	PIPE
1004.440	208.141	1.048	209.189	4.30	3.26	.17	209.35	.00	.79	1.38	1.500	.000	.00	1 .0
3.219	.0100					.0015	.00	1.05	.59	.58	.010	.00	.00	PIPE
1007.660	208.174	1.004	209.178	4.30	3.42	.18	209.36	.00	.79	1.41	1.500	.000	.00	1 .0
2.735	.0100					.0017	.00	1.00	.64	.58	.010	.00	.00	PIPE
1010.394	208.201	.963	209.164	4.30	3.59	.20	209.36	.00	.79	1.44	1.500	.000	.00	1 .0
2.338	.0100					.0019	.00	.96	.69	.58	.010	.00	.00	PIPE
1012.732	208.225	.924	209.149	4.30	3.76	.22	209.37	.00	.79	1.46	1.500	.000	.00	1 .0
1.538	.0100					.0021	.00	.92	.75	.58	.010	.00	.00	PIPE
1014.270	208.240	.894	209.134	4.30	3.92	.24	209.37	.00	.79	1.47	1.500	.000	.00	1 .0
WALL	ENTRANCE													
1014.270	208.240	1.894	210.134	4.30	.57	.01	210.14	.00	.33	4.00	4.000	4.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.500														
CD	2	2	0	.000	3.000	4.000			.00										
CD	3	3	0	.000	4.000	4.000	.000	.000	.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
OCEAN BREEZE RANCH
HEADING LINE NO 2 IS -
100 YEAR
HEADING LINE NO 3 IS -
SD-W5-2

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	948.440	225.900	1	225.900

ELEMENT NO 2 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	948.440	225.900	1

ELEMENT NO 3 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	968.490	226.040	1	.013	.000	.000	.000	0

ELEMENT NO 4 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	968.490	226.040	2	.200

ELEMENT NO 5 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	971.900	226.140	2	.013	.000	.000	.000	0

ELEMENT NO 6 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	971.900	226.140	1

ELEMENT NO 7 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1021.350	226.490	1	.013	.000	.000	.000	0

ELEMENT NO 8 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1021.350	226.490	3	.200

ELEMENT NO 9 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1021.350	226.490	3	226.490

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 6-2024 Time: 2:18:46

OCEAN BREEZE RANCH
100 YEAR
SD-W5-2

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
948.440	225.900	.852	226.752	5.40	5.21	.42	227.17	.00	.90	1.49	1.500	.000	.00	0 .0
WALL EXIT														
948.440	225.900	.851	226.751	5.40	5.22	.42	227.17	.00	.90	1.49	1.500	.000	.00	1 .0
16.744	.0070					.0069	.11	.85	1.10	.85	.013	.00	.00	PIPE
965.184	226.017	.859	226.876	5.40	5.15	.41	227.29	.00	.90	1.48	1.500	.000	.00	1 .0
3.306	.0070					.0063	.02	.86	1.08	.85	.013	.00	.00	PIPE
968.490	226.040	.896	226.936	5.40	4.91	.37	227.31	.00	.90	1.47	1.500	.000	.00	1 .0
WALL ENTRANCE														
968.490	226.040	1.896	227.936	5.40	.71	.01	227.94	.00	.38	4.00	3.000	4.000	.00	0 .0
2.985	.0293					.0000	.00	1.90	.09	.21	.013	.00	.00	RECTANG
971.475	226.128	1.807	227.935	5.40	.75	.01	227.94	.00	.38	4.00	3.000	4.000	.00	0 .0
.425	.0293					.0000	.00	1.81	.10	.21	.013	.00	.00	RECTANG
971.900	226.140	1.795	227.935	5.40	.75	.01	227.94	.00	.38	4.00	3.000	4.000	.00	0 .0
WALL EXIT														
971.900	226.140	1.796	227.936	5.40	3.06	.14	228.08	.00	.90	.00	1.500	.000	.00	1 .0
49.450	.0071					.0026	.13	1.80	.00	.85	.013	.00	.00	PIPE
1021.350	226.490	1.576	228.066	5.40	3.06	.14	228.21	.00	.90	.00	1.500	.000	.00	1 .0
WALL ENTRANCE														

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 6- 6-2024 Time: 2:18:46

OCEAN BREEZE RANCH
100 YEAR
SD-W5-2

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1021.350	226.490	1.740	228.230	5.40	.78	.01	228.24	.00	.38	4.00	4.000	4.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.500														
CD	2	2	0	.000	10.000	3.000			.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -

OCEAN BREEZE RANCH

HEADING LINE NO 2 IS -

Q100

HEADING LINE NO 3 IS -

LINE W6

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	969.320	248.020	2	248.020

ELEMENT NO 2 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	969.320	248.020	1

ELEMENT NO 3 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1045.680	248.570	1	.013	.000	.000	.000	0

ELEMENT NO 4 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1045.680	248.570	2	.200

ELEMENT NO 5 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1045.680	248.570	2	248.570

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 5-28-2024 Time: 5: 4:43

OCEAN BREEZE RANCH
Q100
LINE W6

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
969.320	248.020	.249	248.269	5.00	6.68	.69	248.96	.00	.44	3.00	10.000	3.000	.00	0 .0
WALL EXIT														
969.320	248.020	.803	248.823	5.00	5.19	.42	249.24	.00	.86	1.50	1.500	.000	.00	1 .0
56.190	.0072					.0072	.40	.80	1.14	.80	.013	.00	.00	PIPE
1025.510	248.425	.803	249.228	5.00	5.19	.42	249.65	.00	.86	1.50	1.500	.000	.00	1 .0
17.903	.0072					.0069	.12	.80	1.14	.80	.013	.00	.00	PIPE
1043.413	248.554	.826	249.380	5.00	5.01	.39	249.77	.00	.86	1.49	1.500	.000	.00	1 .0
2.267	.0072					.0062	.01	.83	1.08	.80	.013	.00	.00	PIPE
1045.680	248.570	.860	249.430	5.00	4.77	.35	249.78	.00	.86	1.48	1.500	.000	.00	1 .0
WALL ENTRANCE														
1045.680	248.570	1.860	250.430	5.00	.90	.01	250.44	.00	.44	3.00	10.000	3.000	.00	0 .0

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.500														
CD	2	2	0	.000	10.000	3.000			.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -

OCEAN BREEZE RANCH

HEADING LINE NO 2 IS -

Q100

HEADING LINE NO 3 IS -

LINE W7

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	976.370	254.820	2	239.510

ELEMENT NO 2 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	976.370	254.820	1

ELEMENT NO 3 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1048.670	255.330	1	.013	.000	.000	.000	0

ELEMENT NO 4 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1048.670	255.330	2	.200

ELEMENT NO 5 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1052.670	255.660	2	.013	.000	.000	.000	0

ELEMENT NO 6 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1052.670	255.660	1

ELEMENT NO 7 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1068.790	260.000	1	.013	43.981	-21.000	.000	0

ELEMENT NO 8 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1068.790	260.000	2	.200

ELEMENT NO 9 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1068.790	260.000	2	260.000

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 5-30-2024 Time: 2: 2: 4

OCEAN BREEZE RANCH
Q100
LINE W7

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT) / SF Ave	Water Elev / HF	Q (CFS) / SE Dpth	Vel (FPS) / Froude N	Vel Head / Norm Dp	Energy Grd.El. / "N"	Super Elev / X-Fall	Critical Depth / ZR	Flow Top Width / Type Ch	Height/ Dia.-FT /	Base Wt or I.D. /	ZL /	No Wth Prs/Pip /
976.370	254.820	.363	255.183	8.40	7.71	.92	256.11	.00	.62	3.00	10.000	3.000	.00	0 .0
WALL EXIT														
976.370	254.820	1.122	255.942	8.40	5.92	.54	256.49	.00	1.12	1.30	1.500	.000	.00	1 .0
12.482	.0071					.0074	.09	1.12	1.00	1.17	.013	.00	.00	PIPE
988.852	254.908	1.170	256.078	8.40	5.68	.50	256.58	.00	1.12	1.24	1.500	.000	.00	1 .0
59.818	.0071					.0070	.42	1.17	.92	1.17	.013	.00	.00	PIPE
1048.670	255.330	1.170	256.500	8.40	5.68	.50	257.00	.00	1.12	1.24	1.500	.000	.00	1 .0
WALL ENTRANCE														
1048.670	255.330	2.170	257.500	8.40	1.29	.03	257.53	.00	.62	3.00	10.000	3.000	.00	0 .0
1.195	.0825					.0002	.00	2.17	.15	.24	.013	.00	.00	RECTANG
1049.865	255.429	2.069	257.497	8.40	1.35	.03	257.53	.00	.62	3.00	10.000	3.000	.00	0 .0
1.135	.0825					.0002	.00	2.07	.17	.24	.013	.00	.00	RECTANG
1051.000	255.522	1.972	257.495	8.40	1.42	.03	257.53	.00	.62	3.00	10.000	3.000	.00	0 .0
1.077	.0825					.0002	.00	1.97	.18	.24	.013	.00	.00	RECTANG
1052.077	255.611	1.881	257.492	8.40	1.49	.03	257.53	.00	.62	3.00	10.000	3.000	.00	0 .0
.593	.0825					.0002	.00	1.88	.19	.24	.013	.00	.00	RECTANG
1052.670	255.660	1.830	257.490	8.40	1.53	.04	257.53	.00	.62	3.00	10.000	3.000	.00	0 .0
HYDRAULIC JUMP														

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 5-30-2024 Time: 2: 2: 4

OCEAN BREEZE RANCH
Q100
LINE W7

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1052.670	255.660	.487	256.147	8.40	16.87	4.42	260.57	.28	1.12	1.41	1.500	.000	.00	1 .0
2.323	.2692					.1154	.27	.77	5.00	.40	.013	.00	.00	PIPE
1054.993	256.285	.503	256.789	8.40	16.13	4.04	260.83	.26	1.12	1.42	1.500	.000	.00	1 .0
2.080	.2692					.1014	.21	.76	4.69	.40	.013	.00	.00	PIPE
1057.073	256.845	.521	257.367	8.40	15.38	3.67	261.04	.24	1.12	1.43	1.500	.000	.00	1 .0
1.745	.2692					.0889	.16	.76	4.38	.40	.013	.00	.00	PIPE
1058.819	257.315	.540	257.855	8.40	14.66	3.34	261.19	.22	1.12	1.44	1.500	.000	.00	1 .0
1.487	.2692					.0780	.12	.76	4.10	.40	.013	.00	.00	PIPE
1060.306	257.716	.559	258.275	8.40	13.98	3.03	261.31	.20	1.12	1.45	1.500	.000	.00	1 .0
1.273	.2692					.0683	.09	.76	3.83	.40	.013	.00	.00	PIPE
1061.579	258.059	.579	258.638	8.40	13.33	2.76	261.40	.18	1.12	1.46	1.500	.000	.00	1 .0
1.098	.2692					.0600	.07	.76	3.58	.40	.013	.00	.00	PIPE
1062.677	258.354	.600	258.954	8.40	12.71	2.51	261.46	.17	1.12	1.47	1.500	.000	.00	1 .0
.951	.2692					.0526	.05	.77	3.34	.40	.013	.00	.00	PIPE
1063.628	258.610	.622	259.232	8.40	12.12	2.28	261.51	.15	1.12	1.48	1.500	.000	.00	1 .0
.826	.2692					.0462	.04	.78	3.12	.40	.013	.00	.00	PIPE
1064.454	258.832	.645	259.478	8.40	11.55	2.07	261.55	.14	1.12	1.49	1.500	.000	.00	1 .0
.719	.2692					.0406	.03	.79	2.91	.40	.013	.00	.00	PIPE

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 5-30-2024 Time: 2: 2: 4

OCEAN BREEZE RANCH
Q100
LINE W7

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1065.173	259.026	.669	259.695	8.40	11.01	1.88	261.58	.13	1.12	1.49	1.500	.000	.00	1 .0
.626	.2692					.0357	.02	.80	2.71	.40	.013	.00	.00	PIPE
1065.799	259.195	.694	259.889	8.40	10.50	1.71	261.60	.12	1.12	1.50	1.500	.000	.00	1 .0
.545	.2692					.0314	.02	.81	2.53	.40	.013	.00	.00	PIPE
1066.344	259.341	.720	260.062	8.40	10.01	1.56	261.62	.11	1.12	1.50	1.500	.000	.00	1 .0
.474	.2692					.0276	.01	.83	2.36	.40	.013	.00	.00	PIPE
1066.818	259.469	.747	260.216	8.40	9.55	1.42	261.63	.10	1.12	1.50	1.500	.000	.00	1 .0
.407	.2692					.0243	.01	.84	2.20	.40	.013	.00	.00	PIPE
1067.225	259.579	.776	260.355	8.40	9.10	1.29	261.64	.09	1.12	1.50	1.500	.000	.00	1 .0
.351	.2692					.0214	.01	.86	2.04	.40	.013	.00	.00	PIPE
1067.576	259.673	.806	260.479	8.40	8.68	1.17	261.65	.08	1.12	1.50	1.500	.000	.00	1 .0
.301	.2692					.0189	.01	.89	1.90	.40	.013	.00	.00	PIPE
1067.877	259.754	.837	260.591	8.40	8.28	1.06	261.65	.07	1.12	1.49	1.500	.000	.00	1 .0
.248	.2692					.0167	.00	.91	1.77	.40	.013	.00	.00	PIPE
1068.125	259.821	.871	260.692	8.40	7.89	.97	261.66	.07	1.12	1.48	1.500	.000	.00	1 .0
.208	.2692					.0148	.00	.94	1.64	.40	.013	.00	.00	PIPE
1068.333	259.877	.906	260.783	8.40	7.52	.88	261.66	.06	1.12	1.47	1.500	.000	.00	1 .0
.167	.2692					.0131	.00	.96	1.52	.40	.013	.00	.00	PIPE

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 5-30-2024 Time: 2: 2: 4

OCEAN BREEZE RANCH
Q100
LINE W7

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1068.500	259.922	.943	260.865	8.40	7.17	.80	261.66	.05	1.12	1.45	1.500	.000	.00	1 .0
.127	.2692					.0116	.00	1.00	1.41	.40	.013	.00	.00	PIPE
1068.627	259.956	.983	260.939	8.40	6.84	.73	261.67	.05	1.12	1.43	1.500	.000	.00	1 .0
.089	.2692					.0103	.00	1.03	1.30	.40	.013	.00	.00	PIPE
1068.716	259.980	1.026	261.006	8.40	6.52	.66	261.67	.04	1.12	1.39	1.500	.000	.00	1 .0
.058	.2692					.0092	.00	1.07	1.20	.40	.013	.00	.00	PIPE
1068.774	259.996	1.071	261.067	8.40	6.22	.60	261.67	.04	1.12	1.36	1.500	.000	.00	1 .0
.016	.2692					.0082	.00	1.11	1.10	.40	.013	.00	.00	PIPE

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		2.000														
CD	2	2	0	.000	10.000	3.000			.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
OCEAN BREEZE RANCH
HEADING LINE NO 2 IS -
Q100
HEADING LINE NO 3 IS -
LINE W8-1

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1000.000	266.400	2	266.400

ELEMENT NO 2 IS A WALL EXIT *

U/S DATA	STATION	INVERT	SECT
	1000.000	266.400	1

ELEMENT NO 3 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1073.020	266.920	1	.013	.000	.000	.000	0

ELEMENT NO 4 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1073.020	266.920	2	.200

ELEMENT NO 5 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1073.020	266.920	2	266.920

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 5-28-2024 Time: 5: 6:37

OCEAN BREEZE RANCH
Q100
LINE W8-1

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT) / SF Ave	Water Elev / HF	Q (CFS) / SE Dpth	Vel (FPS) / Froude N	Vel Head / Norm Dp	Energy Grd.El. / "N"	Super Elev / X-Fall	Critical Depth / ZR	Flow Top Width / Type Ch	Height/ Dia.-FT / No Wth Prs/Pip	Base Wt or I.D. /	ZL /
1000.000	266.400	.822	267.222	25.00	10.14	1.60	268.82	.00	1.29	3.00	10.000	3.000	.00
WALL	EXIT												
1000.000	266.400	1.761	268.161	25.00	8.53	1.13	269.29	.00	1.76	1.30	2.000	.000	.00
6.562	.0071					.0108	.07	1.76	1.00	2.00	.013	.00	.00
1006.562	266.447	1.888	268.335	25.00	8.14	1.03	269.36	.00	1.76	.92	2.000	.000	.00
17.307	.0071					.0110	.19	1.89	.78	2.00	.013	.00	.00
1023.869	266.570	2.000	268.570	25.00	7.96	.98	269.55	.00	1.76	.00	2.000	.000	.00
49.151	.0071					.0118	.58	2.00	.00	2.00	.013	.00	.00
1073.020	266.920	2.250	269.170	25.00	7.96	.98	270.15	.00	1.76	.00	2.000	.000	.00
WALL	ENTRANCE												
1073.020	266.920	3.313	270.233	25.00	2.52	.10	270.33	.00	1.29	3.00	10.000	3.000	.00

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	4	1		1.500														
CD	2	2	0	.000	10.000	3.000			.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -

OCEAN BREEZE RANCH

HEADING LINE NO 2 IS -

Q100

HEADING LINE NO 3 IS -

LINE W8-2

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1000.000	266.390	2	268.070

ELEMENT NO 2 IS A WALL EXIT

U/S DATA	STATION	INVERT	SECT
	1000.000	266.390	1

ELEMENT NO 3 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1167.900	268.070	1	.013	.000	.000	.000	0

ELEMENT NO 4 IS A WALL ENTRANCE

U/S DATA	STATION	INVERT	SECT	FP
	1167.900	268.070	2	.200

ELEMENT NO 5 IS A JUNCTION

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	1172.400	268.400	2	0	0	.013	.000	.000	.000	.000	.000	.000

RADIUS	ANGLE
.000	.000

ELEMENT NO 6 IS A WALL EXIT

U/S DATA	STATION	INVERT	SECT
	1172.400	268.400	1

ELEMENT NO 7 IS A REACH

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1212.200	268.800	1	.013	.000	.000	.000	0

ELEMENT NO 8 IS A WALL ENTRANCE

U/S DATA	STATION	INVERT	SECT	FP
	1212.200	268.800	2	.200

ELEMENT NO 9 IS A SYSTEM HEADWORKS

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1212.200	268.800	2	268.800

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 5-28-2024 Time: 5: 7: 3

OCEAN BREEZE RANCH
Q100
LINE W8-2

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT) / SF Ave	Water Elev / HF	Q (CFS) / SE Dpth	Vel (FPS) / Froude N	Vel Head / Norm Dp	Energy Grd.El. / "N"	Super Elev / X-Fall	Critical Depth / ZR	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip / Type Ch
1000.000	266.390	1.680	268.070	5.90	1.17	.02	268.09	.00	.49	3.00	10.000	3.000	.00	0 .0
WALL EXIT														
1000.000	266.390	1.681	268.071	5.90	3.34	.17	268.24	.00	.94	.00	1.500	.000	.00	1 .0
26.377	.0100					.0031	.08	1.68	.00	.80	.013	.00	.00	PIPE
1026.377	266.654	1.500	268.154	5.90	3.34	.17	268.33	.00	.94	.00	1.500	.000	.00	1 .0
17.164	.0100					.0029	.05	1.50	.00	.80	.013	.00	.00	PIPE
1043.541	266.826	1.360	268.186	5.90	3.50	.19	268.38	.00	.94	.87	1.500	.000	.00	1 .0
8.525	.0100					.0029	.02	1.36	.44	.80	.013	.00	.00	PIPE
1052.066	266.911	1.280	268.191	5.90	3.67	.21	268.40	.00	.94	1.06	1.500	.000	.00	1 .0
6.661	.0100					.0031	.02	1.28	.53	.80	.013	.00	.00	PIPE
1058.726	266.978	1.213	268.191	5.90	3.85	.23	268.42	.00	.94	1.18	1.500	.000	.00	1 .0
5.293	.0100					.0034	.02	1.21	.60	.80	.013	.00	.00	PIPE
1064.020	267.031	1.155	268.186	5.90	4.04	.25	268.44	.00	.94	1.26	1.500	.000	.00	1 .0
4.438	.0100					.0038	.02	1.16	.66	.80	.013	.00	.00	PIPE
1068.458	267.075	1.102	268.177	5.90	4.24	.28	268.46	.00	.94	1.32	1.500	.000	.00	1 .0
1.063	.0100					.0042	.00	1.10	.73	.80	.013	.00	.00	PIPE
1069.521	267.086	1.054	268.140	5.90	4.45	.31	268.45	.00	.94	1.37	1.500	.000	.00	1 .0
HYDRAULIC JUMP														

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 5-28-2024 Time: 5: 7: 3

OCEAN BREEZE RANCH
Q100
LINE W8-2

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1069.521	267.086	.804	267.890	5.90	6.12	.58	268.47	.00	.94	1.50	1.500	.000	.00	1 .0
46.478	.0100					.0100	.47	.80	1.34	.80	.013	.00	.00	PIPE
1115.999	267.551	.804	268.355	5.90	6.12	.58	268.94	.00	.94	1.50	1.500	.000	.00	1 .0
37.765	.0100					.0095	.36	.80	1.34	.80	.013	.00	.00	PIPE
1153.764	267.929	.831	268.760	5.90	5.86	.53	269.29	.00	.94	1.49	1.500	.000	.00	1 .0
9.832	.0100					.0084	.08	.83	1.26	.80	.013	.00	.00	PIPE
1163.596	268.027	.864	268.891	5.90	5.59	.49	269.38	.00	.94	1.48	1.500	.000	.00	1 .0
3.568	.0100					.0074	.03	.86	1.17	.80	.013	.00	.00	PIPE
1167.164	268.063	.899	268.962	5.90	5.33	.44	269.40	.00	.94	1.47	1.500	.000	.00	1 .0
.736	.0100					.0066	.00	.90	1.08	.80	.013	.00	.00	PIPE
1167.900	268.070	.938	269.008	5.90	5.08	.40	269.41	.00	.94	1.45	1.500	.000	.00	1 .0
WALL ENTRANCE														
1167.900	268.070	1.938	270.008	5.90	1.01	.02	270.02	.00	.49	3.00	10.000	3.000	.00	0 .0
JUNCT STR	.0733					.0001	.00	1.94	.13		.013	.00	.00	RECTANG
1172.400	268.400	1.601	270.001	5.90	1.23	.02	270.02	.00	.49	3.00	10.000	3.000	.00	0 .0
WALL EXIT														
1172.400	268.400	1.602	270.002	5.90	3.34	.17	270.17	.00	.94	.00	1.500	.000	.00	1 .0
14.750	.0101					.0031	.05	1.60	.00	.80	.013	.00	.00	PIPE

Program Package Serial Number: 7358

WATER SURFACE PROFILE LISTING Date: 5-28-2024 Time: 5: 7: 3

OCEAN BREEZE RANCH
Q100
LINE W8-2

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1187.151	268.548	1.500	270.048	5.90	3.34	.17	270.22	.00	.94	.00	1.500	.000	.00	1 .0
17.057	.0101					.0029	.05	1.50	.00	.80	.013	.00	.00	PIPE
1204.208	268.720	1.360	270.080	5.90	3.50	.19	270.27	.00	.94	.87	1.500	.000	.00	1 .0
7.992	.0101					.0028	.02	1.36	.44	.80	.013	.00	.00	PIPE
1212.200	268.800	1.285	270.085	5.90	3.66	.21	270.29	.00	.94	1.05	1.500	.000	.00	1 .0
WALL	ENTRANCE													
1212.200	268.800	2.285	271.085	5.90	.86	.01	271.10	.00	.49	3.00	10.000	3.000	.00	0 .0

Brow Ditch Calculations

Worksheet for NODE 1020

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.069 ft/ft
Constructed Depth	18.0 in
Constructed Top Width	1.00 ft
Discharge	3.20 cfs

Results	
Normal Depth	8.3 in
Flow Area	0.3 ft²
Wetted Perimeter	1.6 ft
Hydraulic Radius	2.4 in
Top Width	0.68 ft
Critical Depth	13.5 in
Critical Slope	0.011 ft/ft
Velocity	10.14 ft/s
Velocity Head	1.60 ft
Specific Energy	2.29 ft
Froude Number	2.626
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	8.3 in
Critical Depth	13.5 in
Channel Slope	0.069 ft/ft
Critical Slope	0.011 ft/ft

Worksheet for NODE 1024

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.040 ft/ft
Constructed Depth	12.0 in
Constructed Top Width	1.00 ft
Discharge	1.55 cfs

Results	
Normal Depth	5.7 in
Flow Area	0.2 ft²
Wetted Perimeter	1.2 ft
Hydraulic Radius	2.1 in
Top Width	0.69 ft
Critical Depth	8.5 in
Critical Slope	0.008 ft/ft
Velocity	7.17 ft/s
Velocity Head	0.80 ft
Specific Energy	1.27 ft
Froude Number	2.253
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	5.7 in
Critical Depth	8.5 in
Channel Slope	0.040 ft/ft
Critical Slope	0.008 ft/ft

Worksheet for NODE 1028 NORTH

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.017 ft/ft
Constructed Depth	12.0 in
Constructed Top Width	2.00 ft
Discharge	2.68 cfs

Results	
Normal Depth	5.8 in
Flow Area	0.4 ft²
Wetted Perimeter	1.8 ft
Hydraulic Radius	3.0 in
Top Width	1.39 ft
Critical Depth	7.9 in
Critical Slope	0.005 ft/ft
Velocity	6.03 ft/s
Velocity Head	0.56 ft
Specific Energy	1.05 ft
Froude Number	1.877
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	5.8 in
Critical Depth	7.9 in
Channel Slope	0.017 ft/ft
Critical Slope	0.005 ft/ft

Worksheet for NODE 1028 SOUTH

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.012 ft/ft
Constructed Depth	12.0 in
Constructed Top Width	3.00 ft
Discharge	3.98 cfs

Results	
Normal Depth	6.0 in
Flow Area	0.7 ft²
Wetted Perimeter	2.4 ft
Hydraulic Radius	3.5 in
Top Width	2.12 ft
Critical Depth	7.9 in
Critical Slope	0.004 ft/ft
Velocity	5.61 ft/s
Velocity Head	0.49 ft
Specific Energy	0.99 ft
Froude Number	1.713
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	6.0 in
Critical Depth	7.9 in
Channel Slope	0.012 ft/ft
Critical Slope	0.004 ft/ft

Worksheet for NODE 1061 MIDDLE

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.010 ft/ft
Constructed Depth	18.0 in
Constructed Top Width	2.00 ft
Discharge	3.74 cfs

Results	
Normal Depth	8.9 in
Flow Area	0.7 ft²
Wetted Perimeter	2.1 ft
Hydraulic Radius	3.9 in
Top Width	1.40 ft
Critical Depth	10.3 in
Critical Slope	0.005 ft/ft
Velocity	5.40 ft/s
Velocity Head	0.45 ft
Specific Energy	1.19 ft
Froude Number	1.355
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	8.9 in
Critical Depth	10.3 in
Channel Slope	0.010 ft/ft
Critical Slope	0.005 ft/ft

Worksheet for NODE 1061 NORTH

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.015 ft/ft
Constructed Depth	12.0 in
Constructed Top Width	2.00 ft
Discharge	2.20 cfs

Results	
Normal Depth	5.4 in
Flow Area	0.4 ft²
Wetted Perimeter	1.7 ft
Hydraulic Radius	2.9 in
Top Width	1.34 ft
Critical Depth	7.2 in
Critical Slope	0.005 ft/ft
Velocity	5.43 ft/s
Velocity Head	0.46 ft
Specific Energy	0.91 ft
Froude Number	1.743
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	5.4 in
Critical Depth	7.2 in
Channel Slope	0.015 ft/ft
Critical Slope	0.005 ft/ft

Worksheet for NODE 1079-1215

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.018 ft/ft
Constructed Depth	12.0 in
Constructed Top Width	2.00 ft
Discharge	0.82 cfs

Results	
Normal Depth	3.2 in
Flow Area	0.2 ft²
Wetted Perimeter	1.2 ft
Hydraulic Radius	1.9 in
Top Width	1.04 ft
Critical Depth	4.4 in
Critical Slope	0.005 ft/ft
Velocity	4.40 ft/s
Velocity Head	0.30 ft
Specific Energy	0.57 ft
Froude Number	1.831
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	3.2 in
Critical Depth	4.4 in
Channel Slope	0.018 ft/ft
Critical Slope	0.005 ft/ft

Worksheet for NODE 1082

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.060 ft/ft
Constructed Depth	24.0 in
Constructed Top Width	1.00 ft
Discharge	2.13 cfs

Results	
Normal Depth	7.8 in
Flow Area	0.2 ft²
Wetted Perimeter	1.5 ft
Hydraulic Radius	2.0 in
Top Width	0.57 ft
Critical Depth	11.9 in
Critical Slope	0.013 ft/ft
Velocity	8.55 ft/s
Velocity Head	1.14 ft
Specific Energy	1.79 ft
Froude Number	2.283
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	7.8 in
Critical Depth	11.9 in
Channel Slope	0.060 ft/ft
Critical Slope	0.013 ft/ft

Worksheet for NODE 1084

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.027 ft/ft
Constructed Depth	18.0 in
Constructed Top Width	1.00 ft
Discharge	1.23 cfs

Results	
Normal Depth	6.5 in
Flow Area	0.2 ft²
Wetted Perimeter	1.3 ft
Hydraulic Radius	2.0 in
Top Width	0.60 ft
Critical Depth	8.4 in
Critical Slope	0.010 ft/ft
Velocity	5.71 ft/s
Velocity Head	0.51 ft
Specific Energy	1.05 ft
Froude Number	1.679
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	6.5 in
Critical Depth	8.4 in
Channel Slope	0.027 ft/ft
Critical Slope	0.010 ft/ft

Worksheet for NODE 1085

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.072 ft/ft
Constructed Depth	12.0 in
Constructed Top Width	2.00 ft
Discharge	0.50 cfs

Results	
Normal Depth	1.8 in
Flow Area	0.1 ft²
Wetted Perimeter	0.9 ft
Hydraulic Radius	1.1 in
Top Width	0.78 ft
Critical Depth	3.4 in
Critical Slope	0.005 ft/ft
Velocity	6.28 ft/s
Velocity Head	0.61 ft
Specific Energy	0.77 ft
Froude Number	3.467
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	1.8 in
Critical Depth	3.4 in
Channel Slope	0.072 ft/ft
Critical Slope	0.005 ft/ft

Worksheet for NODE 1203

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.010 ft/ft
Constructed Depth	12.0 in
Constructed Top Width	2.00 ft
Discharge	0.79 cfs

Results	
Normal Depth	3.6 in
Flow Area	0.2 ft²
Wetted Perimeter	1.3 ft
Hydraulic Radius	2.1 in
Top Width	1.10 ft
Critical Depth	4.3 in
Critical Slope	0.005 ft/ft
Velocity	3.53 ft/s
Velocity Head	0.19 ft
Specific Energy	0.50 ft
Froude Number	1.384
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	3.6 in
Critical Depth	4.3 in
Channel Slope	0.010 ft/ft
Critical Slope	0.005 ft/ft

Worksheet for NODE 1217

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.038 ft/ft
Constructed Depth	12.0 in
Constructed Top Width	2.00 ft
Discharge	1.51 cfs

Results	
Normal Depth	3.6 in
Flow Area	0.2 ft²
Wetted Perimeter	1.3 ft
Hydraulic Radius	2.0 in
Top Width	1.10 ft
Critical Depth	5.9 in
Critical Slope	0.005 ft/ft
Velocity	6.86 ft/s
Velocity Head	0.73 ft
Specific Energy	1.03 ft
Froude Number	2.701
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	3.6 in
Critical Depth	5.9 in
Channel Slope	0.038 ft/ft
Critical Slope	0.005 ft/ft

Worksheet for NODE 1301-1354 NORTH

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.500 ft/ft
Constructed Depth	12.0 in
Constructed Top Width	2.00 ft
Discharge	9.31 cfs

Results	
Normal Depth	4.7 in
Flow Area	0.3 ft²
Wetted Perimeter	1.5 ft
Hydraulic Radius	2.6 in
Top Width	1.25 ft
Critical Depth	14.5 in
Critical Slope	0.005 ft/ft
Velocity	28.80 ft/s
Velocity Head	12.89 ft
Specific Energy	13.28 ft
Froude Number	9.974
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	4.7 in
Critical Depth	14.5 in
Channel Slope	0.500 ft/ft
Critical Slope	0.005 ft/ft

Worksheet for NODE 1301-1354 WEST BD

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.012 ft/ft
Constructed Depth	18.0 in
Constructed Top Width	2.00 ft
Discharge	5.00 cfs

Results	
Normal Depth	9.8 in
Flow Area	0.8 ft²
Wetted Perimeter	2.3 ft
Hydraulic Radius	4.2 in
Top Width	1.48 ft
Critical Depth	12.0 in
Critical Slope	0.006 ft/ft
Velocity	6.21 ft/s
Velocity Head	0.60 ft
Specific Energy	1.42 ft
Froude Number	1.481
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	9.8 in
Critical Depth	12.0 in
Channel Slope	0.012 ft/ft
Critical Slope	0.006 ft/ft

Worksheet for NODE 1301-1354 EAST BD

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.007 ft/ft
Constructed Depth	18.0 in
Constructed Top Width	2.00 ft
Discharge	5.00 cfs

Results	
Normal Depth	11.1 in
Flow Area	1.0 ft²
Wetted Perimeter	2.5 ft
Hydraulic Radius	4.6 in
Top Width	1.57 ft
Critical Depth	12.0 in
Critical Slope	0.006 ft/ft
Velocity	5.17 ft/s
Velocity Head	0.42 ft
Specific Energy	1.34 ft
Froude Number	1.161
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	11.1 in
Critical Depth	12.0 in
Channel Slope	0.007 ft/ft
Critical Slope	0.006 ft/ft

Worksheet for NODE 1307-1310

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.220 ft/ft
Constructed Depth	12.0 in
Constructed Top Width	2.00 ft
Discharge	8.46 cfs

Results	
Normal Depth	5.4 in
Flow Area	0.4 ft²
Wetted Perimeter	1.7 ft
Hydraulic Radius	2.9 in
Top Width	1.35 ft
Critical Depth	13.9 in
Critical Slope	0.005 ft/ft
Velocity	20.82 ft/s
Velocity Head	6.73 ft
Specific Energy	7.19 ft
Froude Number	6.678
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	5.4 in
Critical Depth	13.9 in
Channel Slope	0.220 ft/ft
Critical Slope	0.005 ft/ft

Worksheet for NODE 1309

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.165 ft/ft
Constructed Depth	12.0 in
Constructed Top Width	2.00 ft
Discharge	5.48 cfs

Results	
Normal Depth	4.7 in
Flow Area	0.3 ft²
Wetted Perimeter	1.5 ft
Hydraulic Radius	2.6 in
Top Width	1.26 ft
Critical Depth	11.3 in
Critical Slope	0.005 ft/ft
Velocity	16.63 ft/s
Velocity Head	4.30 ft
Specific Energy	4.69 ft
Froude Number	5.723
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	4.7 in
Critical Depth	11.3 in
Channel Slope	0.165 ft/ft
Critical Slope	0.005 ft/ft

Worksheet for NODE 1313-1314-NORTH

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.066 ft/ft
Constructed Depth	12.0 in
Constructed Top Width	2.00 ft
Discharge	1.77 cfs

Results	
Normal Depth	3.4 in
Flow Area	0.2 ft²
Wetted Perimeter	1.2 ft
Hydraulic Radius	2.0 in
Top Width	1.07 ft
Critical Depth	6.4 in
Critical Slope	0.005 ft/ft
Velocity	8.75 ft/s
Velocity Head	1.19 ft
Specific Energy	1.47 ft
Froude Number	3.543
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	3.4 in
Critical Depth	6.4 in
Channel Slope	0.066 ft/ft
Critical Slope	0.005 ft/ft

Worksheet for NODE 1313-1314-SOUTH

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.100 ft/ft
Constructed Depth	12.0 in
Constructed Top Width	2.00 ft
Discharge	6.76 cfs

Results	
Normal Depth	5.9 in
Flow Area	0.5 ft²
Wetted Perimeter	1.8 ft
Hydraulic Radius	3.1 in
Top Width	1.40 ft
Critical Depth	12.5 in
Critical Slope	0.005 ft/ft
Velocity	14.67 ft/s
Velocity Head	3.35 ft
Specific Energy	3.84 ft
Froude Number	4.516
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	5.9 in
Critical Depth	12.5 in
Channel Slope	0.100 ft/ft
Critical Slope	0.005 ft/ft

Worksheet for NODE 1314

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.050 ft/ft
Constructed Depth	18.0 in
Constructed Top Width	1.00 ft
Discharge	3.99 cfs

Results	
Normal Depth	10.2 in
Flow Area	0.4 ft²
Wetted Perimeter	1.9 ft
Hydraulic Radius	2.7 in
Top Width	0.75 ft
Critical Depth	15.1 in
Critical Slope	0.011 ft/ft
Velocity	9.36 ft/s
Velocity Head	1.36 ft
Specific Energy	2.21 ft
Froude Number	2.192
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	10.2 in
Critical Depth	15.1 in
Channel Slope	0.050 ft/ft
Critical Slope	0.011 ft/ft

Worksheet for NODE 1341

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.082 ft/ft
Constructed Depth	12.0 in
Constructed Top Width	2.00 ft
Discharge	1.50 cfs

Results	
Normal Depth	3.0 in
Flow Area	0.2 ft²
Wetted Perimeter	1.1 ft
Hydraulic Radius	1.7 in
Top Width	1.00 ft
Critical Depth	5.9 in
Critical Slope	0.005 ft/ft
Velocity	9.04 ft/s
Velocity Head	1.27 ft
Specific Energy	1.52 ft
Froude Number	3.908
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	3.0 in
Critical Depth	5.9 in
Channel Slope	0.082 ft/ft
Critical Slope	0.005 ft/ft

Worksheet for NODE 1349

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.086 ft/ft
Constructed Depth	12.0 in
Constructed Top Width	1.00 ft
Discharge	0.35 cfs

Results	
Normal Depth	2.2 in
Flow Area	0.1 ft²
Wetted Perimeter	0.6 ft
Hydraulic Radius	1.1 in
Top Width	0.43 ft
Critical Depth	4.0 in
Critical Slope	0.008 ft/ft
Velocity	6.68 ft/s
Velocity Head	0.69 ft
Specific Energy	0.88 ft
Froude Number	3.366
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	2.2 in
Critical Depth	4.0 in
Channel Slope	0.086 ft/ft
Critical Slope	0.008 ft/ft

Worksheet for NODE 1350-1310

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.028 ft/ft
Constructed Depth	18.0 in
Constructed Top Width	2.00 ft
Discharge	4.86 cfs

Results	
Normal Depth	7.8 in
Flow Area	0.6 ft²
Wetted Perimeter	1.9 ft
Hydraulic Radius	3.5 in
Top Width	1.32 ft
Critical Depth	11.8 in
Critical Slope	0.006 ft/ft
Velocity	8.53 ft/s
Velocity Head	1.13 ft
Specific Energy	1.78 ft
Froude Number	2.286
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	7.8 in
Critical Depth	11.8 in
Channel Slope	0.028 ft/ft
Critical Slope	0.006 ft/ft

Worksheet for NODE 1351

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.030 ft/ft
Constructed Depth	12.0 in
Constructed Top Width	2.00 ft
Discharge	0.33 cfs

Results	
Normal Depth	1.8 in
Flow Area	0.1 ft²
Wetted Perimeter	0.9 ft
Hydraulic Radius	1.1 in
Top Width	0.79 ft
Critical Depth	2.8 in
Critical Slope	0.005 ft/ft
Velocity	4.09 ft/s
Velocity Head	0.26 ft
Specific Energy	0.41 ft
Froude Number	2.249
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	1.8 in
Critical Depth	2.8 in
Channel Slope	0.030 ft/ft
Critical Slope	0.005 ft/ft

Worksheet for NODE 1356-1357

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.090 ft/ft
Constructed Depth	18.0 in
Constructed Top Width	1.00 ft
Discharge	4.50 cfs

Results	
Normal Depth	9.3 in
Flow Area	0.4 ft²
Wetted Perimeter	1.8 ft
Hydraulic Radius	2.5 in
Top Width	0.72 ft
Critical Depth	16.0 in
Critical Slope	0.012 ft/ft
Velocity	12.10 ft/s
Velocity Head	2.28 ft
Specific Energy	3.05 ft
Froude Number	2.967
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	9.3 in
Critical Depth	16.0 in
Channel Slope	0.090 ft/ft
Critical Slope	0.012 ft/ft

Worksheet for NODE 1357

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.083 ft/ft
Constructed Depth	18.0 in
Constructed Top Width	2.00 ft
Discharge	5.39 cfs

Results	
Normal Depth	6.3 in
Flow Area	0.4 ft²
Wetted Perimeter	1.6 ft
Hydraulic Radius	3.0 in
Top Width	1.18 ft
Critical Depth	12.4 in
Critical Slope	0.006 ft/ft
Velocity	13.08 ft/s
Velocity Head	2.66 ft
Specific Energy	3.18 ft
Froude Number	3.904
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	6.3 in
Critical Depth	12.4 in
Channel Slope	0.083 ft/ft
Critical Slope	0.006 ft/ft

Worksheet for NODE 2007-2008

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.070 ft/ft
Constructed Depth	18.0 in
Constructed Top Width	2.00 ft
Discharge	9.73 cfs

Results	
Normal Depth	8.8 in
Flow Area	0.7 ft²
Wetted Perimeter	2.1 ft
Hydraulic Radius	3.9 in
Top Width	1.40 ft
Critical Depth	16.7 in
Critical Slope	0.006 ft/ft
Velocity	14.22 ft/s
Velocity Head	3.14 ft
Specific Energy	3.88 ft
Froude Number	3.585
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	8.8 in
Critical Depth	16.7 in
Channel Slope	0.070 ft/ft
Critical Slope	0.006 ft/ft

Worksheet for NODE 2009

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.070 ft/ft
Constructed Depth	24.0 in
Constructed Top Width	2.00 ft
Discharge	10.89 cfs

Results	
Normal Depth	10.3 in
Flow Area	0.8 ft²
Wetted Perimeter	2.3 ft
Hydraulic Radius	4.0 in
Top Width	1.31 ft
Critical Depth	18.9 in
Critical Slope	0.007 ft/ft
Velocity	14.50 ft/s
Velocity Head	3.27 ft
Specific Energy	4.13 ft
Froude Number	3.377
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	10.3 in
Critical Depth	18.9 in
Channel Slope	0.070 ft/ft
Critical Slope	0.007 ft/ft

Worksheet for NODE 2039- SOUTH RETAINING WALL

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.097 ft/ft
Constructed Depth	12.0 in
Constructed Top Width	2.00 ft
Discharge	5.23 cfs

Results	
Normal Depth	5.3 in
Flow Area	0.4 ft²
Wetted Perimeter	1.6 ft
Hydraulic Radius	2.8 in
Top Width	1.32 ft
Critical Depth	11.0 in
Critical Slope	0.005 ft/ft
Velocity	13.55 ft/s
Velocity Head	2.85 ft
Specific Energy	3.29 ft
Froude Number	4.424
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	5.3 in
Critical Depth	11.0 in
Channel Slope	0.097 ft/ft
Critical Slope	0.005 ft/ft

Worksheet for NODE 2039

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.027 ft/ft
Constructed Depth	30.0 in
Constructed Top Width	3.00 ft
Discharge	18.84 cfs

Results	
Normal Depth	14.1 in
Flow Area	1.6 ft²
Wetted Perimeter	3.3 ft
Hydraulic Radius	5.9 in
Top Width	2.06 ft
Critical Depth	21.5 in
Critical Slope	0.005 ft/ft
Velocity	11.71 ft/s
Velocity Head	2.13 ft
Specific Energy	3.31 ft
Froude Number	2.334
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	14.1 in
Critical Depth	21.5 in
Channel Slope	0.027 ft/ft
Critical Slope	0.005 ft/ft

Worksheet for NODE 2039-SOUTH

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.120 ft/ft
Constructed Depth	18.0 in
Constructed Top Width	2.00 ft
Discharge	7.90 cfs

Results	
Normal Depth	6.9 in
Flow Area	0.5 ft²
Wetted Perimeter	1.8 ft
Hydraulic Radius	3.2 in
Top Width	1.24 ft
Critical Depth	15.0 in
Critical Slope	0.006 ft/ft
Velocity	16.53 ft/s
Velocity Head	4.25 ft
Specific Energy	4.83 ft
Froude Number	4.697
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	6.9 in
Critical Depth	15.0 in
Channel Slope	0.120 ft/ft
Critical Slope	0.006 ft/ft

Worksheet for NODE 2056 SOUTH

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.170 ft/ft
Constructed Depth	12.0 in
Constructed Top Width	2.00 ft
Discharge	2.92 cfs

Results	
Normal Depth	3.5 in
Flow Area	0.2 ft²
Wetted Perimeter	1.3 ft
Hydraulic Radius	2.0 in
Top Width	1.07 ft
Critical Depth	8.3 in
Critical Slope	0.005 ft/ft
Velocity	14.15 ft/s
Velocity Head	3.11 ft
Specific Energy	3.40 ft
Froude Number	5.692
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	3.5 in
Critical Depth	8.3 in
Channel Slope	0.170 ft/ft
Critical Slope	0.005 ft/ft

Worksheet for NODE 2056

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.018 ft/ft
Constructed Depth	24.0 in
Constructed Top Width	2.00 ft
Discharge	9.37 cfs

Results	
Normal Depth	13.5 in
Flow Area	1.1 ft²
Wetted Perimeter	2.8 ft
Hydraulic Radius	4.8 in
Top Width	1.50 ft
Critical Depth	17.6 in
Critical Slope	0.007 ft/ft
Velocity	8.31 ft/s
Velocity Head	1.07 ft
Specific Energy	2.20 ft
Froude Number	1.689
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	13.5 in
Critical Depth	17.6 in
Channel Slope	0.018 ft/ft
Critical Slope	0.007 ft/ft

Worksheet for NODE 3018

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.020 ft/ft
Constructed Depth	18.0 in
Constructed Top Width	1.00 ft
Discharge	1.50 cfs

Results	
Normal Depth	7.8 in
Flow Area	0.3 ft²
Wetted Perimeter	1.5 ft
Hydraulic Radius	2.3 in
Top Width	0.66 ft
Critical Depth	9.3 in
Critical Slope	0.010 ft/ft
Velocity	5.30 ft/s
Velocity Head	0.44 ft
Specific Energy	1.08 ft
Froude Number	1.423
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	7.8 in
Critical Depth	9.3 in
Channel Slope	0.020 ft/ft
Critical Slope	0.010 ft/ft

Worksheet for NODE 3051-3052-EAST

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.003 ft/ft
Constructed Depth	18.0 in
Constructed Top Width	2.00 ft
Discharge	2.58 cfs

Results	
Normal Depth	10.0 in
Flow Area	0.8 ft²
Wetted Perimeter	2.3 ft
Hydraulic Radius	4.2 in
Top Width	1.49 ft
Critical Depth	8.6 in
Critical Slope	0.005 ft/ft
Velocity	3.13 ft/s
Velocity Head	0.15 ft
Specific Energy	0.98 ft
Froude Number	0.741
Flow Type	Subcritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	10.0 in
Critical Depth	8.6 in
Channel Slope	0.003 ft/ft
Critical Slope	0.005 ft/ft

Worksheet for NODE 3051-3052-WEST

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.016 ft/ft
Constructed Depth	18.0 in
Constructed Top Width	2.00 ft
Discharge	5.08 cfs

Results	
Normal Depth	9.2 in
Flow Area	0.7 ft²
Wetted Perimeter	2.2 ft
Hydraulic Radius	4.0 in
Top Width	1.43 ft
Critical Depth	12.0 in
Critical Slope	0.006 ft/ft
Velocity	6.95 ft/s
Velocity Head	0.75 ft
Specific Energy	1.52 ft
Froude Number	1.713
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	9.2 in
Critical Depth	12.0 in
Channel Slope	0.016 ft/ft
Critical Slope	0.006 ft/ft

Worksheet for NODE 3101-3102 EAST

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.035 ft/ft
Constructed Depth	18.0 in
Constructed Top Width	2.00 ft
Discharge	8.77 cfs

Results	
Normal Depth	9.9 in
Flow Area	0.8 ft²
Wetted Perimeter	2.3 ft
Hydraulic Radius	4.2 in
Top Width	1.49 ft
Critical Depth	15.8 in
Critical Slope	0.006 ft/ft
Velocity	10.67 ft/s
Velocity Head	1.77 ft
Specific Energy	2.60 ft
Froude Number	2.532
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	9.9 in
Critical Depth	15.8 in
Channel Slope	0.035 ft/ft
Critical Slope	0.006 ft/ft

Worksheet for NODE 3101-3102 WEST

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.012 ft/ft
Constructed Depth	30.0 in
Constructed Top Width	4.00 ft
Discharge	31.80 cfs

Results	
Normal Depth	18.4 in
Flow Area	3.2 ft²
Wetted Perimeter	4.6 ft
Hydraulic Radius	8.4 in
Top Width	3.13 ft
Critical Depth	24.2 in
Critical Slope	0.004 ft/ft
Velocity	9.97 ft/s
Velocity Head	1.54 ft
Specific Energy	3.07 ft
Froude Number	1.740
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	18.4 in
Critical Depth	24.2 in
Channel Slope	0.012 ft/ft
Critical Slope	0.004 ft/ft

Worksheet for NODE 3131-3132 EAST

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.044 ft/ft
Constructed Depth	12.0 in
Constructed Top Width	2.00 ft
Discharge	2.46 cfs

Results	
Normal Depth	4.4 in
Flow Area	0.3 ft²
Wetted Perimeter	1.5 ft
Hydraulic Radius	2.4 in
Top Width	1.21 ft
Critical Depth	7.6 in
Critical Slope	0.005 ft/ft
Velocity	8.26 ft/s
Velocity Head	1.06 ft
Specific Energy	1.43 ft
Froude Number	2.938
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	4.4 in
Critical Depth	7.6 in
Channel Slope	0.044 ft/ft
Critical Slope	0.005 ft/ft

Worksheet for NODE 3131-3132 WEST

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.015 ft/ft
Constructed Depth	18.0 in
Constructed Top Width	2.00 ft
Discharge	7.78 cfs

Results	
Normal Depth	11.7 in
Flow Area	1.0 ft²
Wetted Perimeter	2.6 ft
Hydraulic Radius	4.7 in
Top Width	1.61 ft
Critical Depth	14.9 in
Critical Slope	0.006 ft/ft
Velocity	7.44 ft/s
Velocity Head	0.86 ft
Specific Energy	1.83 ft
Froude Number	1.628
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	11.7 in
Critical Depth	14.9 in
Channel Slope	0.015 ft/ft
Critical Slope	0.006 ft/ft

Worksheet for NODE 3135

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.013 ft/ft
Constructed Depth	18.0 in
Constructed Top Width	2.00 ft
Discharge	4.60 cfs

Results	
Normal Depth	9.2 in
Flow Area	0.7 ft²
Wetted Perimeter	2.2 ft
Hydraulic Radius	4.0 in
Top Width	1.43 ft
Critical Depth	11.5 in
Critical Slope	0.006 ft/ft
Velocity	6.27 ft/s
Velocity Head	0.61 ft
Specific Energy	1.38 ft
Froude Number	1.544
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	9.2 in
Critical Depth	11.5 in
Channel Slope	0.013 ft/ft
Critical Slope	0.006 ft/ft

Worksheet for NODE 3161

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.029 ft/ft
Constructed Depth	18.0 in
Constructed Top Width	2.00 ft
Discharge	4.70 cfs

Results	
Normal Depth	7.6 in
Flow Area	0.5 ft²
Wetted Perimeter	1.9 ft
Hydraulic Radius	3.5 in
Top Width	1.30 ft
Critical Depth	11.6 in
Critical Slope	0.006 ft/ft
Velocity	8.55 ft/s
Velocity Head	1.14 ft
Specific Energy	1.77 ft
Froude Number	2.318
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	7.6 in
Critical Depth	11.6 in
Channel Slope	0.029 ft/ft
Critical Slope	0.006 ft/ft

Worksheet for NODE 3166

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.075 ft/ft
Constructed Depth	12.0 in
Constructed Top Width	2.00 ft
Discharge	2.03 cfs

Results	
Normal Depth	3.5 in
Flow Area	0.2 ft²
Wetted Perimeter	1.3 ft
Hydraulic Radius	2.0 in
Top Width	1.09 ft
Critical Depth	6.9 in
Critical Slope	0.005 ft/ft
Velocity	9.50 ft/s
Velocity Head	1.40 ft
Specific Energy	1.70 ft
Froude Number	3.779
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	3.5 in
Critical Depth	6.9 in
Channel Slope	0.075 ft/ft
Critical Slope	0.005 ft/ft

Worksheet for NODE 3172-3161 EAST

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.058 ft/ft
Constructed Depth	24.0 in
Constructed Top Width	3.00 ft
Discharge	19.02 cfs

Results	
Normal Depth	10.9 in
Flow Area	1.2 ft²
Wetted Perimeter	2.8 ft
Hydraulic Radius	5.2 in
Top Width	2.02 ft
Critical Depth	20.5 in
Critical Slope	0.005 ft/ft
Velocity	15.64 ft/s
Velocity Head	3.80 ft
Specific Energy	4.70 ft
Froude Number	3.550
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	10.9 in
Critical Depth	20.5 in
Channel Slope	0.058 ft/ft
Critical Slope	0.005 ft/ft

Worksheet for NODE 3172-3161 WEST

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.029 ft/ft
Constructed Depth	30.0 in
Constructed Top Width	3.00 ft
Discharge	19.02 cfs

Results	
Normal Depth	13.9 in
Flow Area	1.6 ft²
Wetted Perimeter	3.2 ft
Hydraulic Radius	5.8 in
Top Width	2.04 ft
Critical Depth	21.6 in
Critical Slope	0.005 ft/ft
Velocity	12.09 ft/s
Velocity Head	2.27 ft
Specific Energy	3.43 ft
Froude Number	2.428
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	13.9 in
Critical Depth	21.6 in
Channel Slope	0.029 ft/ft
Critical Slope	0.005 ft/ft

Worksheet for NODE 3218-3219- EAST

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.039 ft/ft
Constructed Depth	24.0 in
Constructed Top Width	3.00 ft
Discharge	10.00 cfs

Results	
Normal Depth	8.7 in
Flow Area	0.9 ft²
Wetted Perimeter	2.4 ft
Hydraulic Radius	4.3 in
Top Width	1.81 ft
Critical Depth	14.8 in
Critical Slope	0.005 ft/ft
Velocity	11.46 ft/s
Velocity Head	2.04 ft
Specific Energy	2.77 ft
Froude Number	2.907
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	8.7 in
Critical Depth	14.8 in
Channel Slope	0.039 ft/ft
Critical Slope	0.005 ft/ft

Worksheet for NODE 3218-3219- WEST

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.013 ft/ft
Constructed Depth	30.0 in
Constructed Top Width	3.00 ft
Discharge	11.67 cfs

Results	
Normal Depth	13.3 in
Flow Area	1.5 ft²
Wetted Perimeter	3.1 ft
Hydraulic Radius	5.7 in
Top Width	2.00 ft
Critical Depth	16.9 in
Critical Slope	0.005 ft/ft
Velocity	7.91 ft/s
Velocity Head	0.97 ft
Specific Energy	2.08 ft
Froude Number	1.622
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	13.3 in
Critical Depth	16.9 in
Channel Slope	0.013 ft/ft
Critical Slope	0.005 ft/ft

Worksheet for NODE 3220

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.041 ft/ft
Constructed Depth	12.0 in
Constructed Top Width	2.00 ft
Discharge	2.36 cfs

Results	
Normal Depth	4.4 in
Flow Area	0.3 ft²
Wetted Perimeter	1.5 ft
Hydraulic Radius	2.4 in
Top Width	1.21 ft
Critical Depth	7.4 in
Critical Slope	0.005 ft/ft
Velocity	7.98 ft/s
Velocity Head	0.99 ft
Specific Energy	1.36 ft
Froude Number	2.845
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	4.4 in
Critical Depth	7.4 in
Channel Slope	0.041 ft/ft
Critical Slope	0.005 ft/ft

Worksheet for NODE 3223 SOUTH

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.080 ft/ft
Constructed Depth	12.0 in
Constructed Top Width	2.00 ft
Discharge	4.62 cfs

Results	
Normal Depth	5.2 in
Flow Area	0.4 ft²
Wetted Perimeter	1.6 ft
Hydraulic Radius	2.8 in
Top Width	1.31 ft
Critical Depth	10.4 in
Critical Slope	0.005 ft/ft
Velocity	12.22 ft/s
Velocity Head	2.32 ft
Specific Energy	2.75 ft
Froude Number	4.014
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	5.2 in
Critical Depth	10.4 in
Channel Slope	0.080 ft/ft
Critical Slope	0.005 ft/ft

Worksheet for NODE 3223

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.045 ft/ft
Constructed Depth	24.0 in
Constructed Top Width	3.00 ft
Discharge	11.35 cfs

Results	
Normal Depth	8.9 in
Flow Area	0.9 ft²
Wetted Perimeter	2.5 ft
Hydraulic Radius	4.4 in
Top Width	1.83 ft
Critical Depth	15.8 in
Critical Slope	0.005 ft/ft
Velocity	12.49 ft/s
Velocity Head	2.42 ft
Specific Energy	3.17 ft
Froude Number	3.125
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	8.9 in
Critical Depth	15.8 in
Channel Slope	0.045 ft/ft
Critical Slope	0.005 ft/ft

Worksheet for NODE 3229

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.011 ft/ft
Constructed Depth	12.0 in
Constructed Top Width	2.00 ft
Discharge	1.23 cfs

Results	
Normal Depth	4.4 in
Flow Area	0.3 ft²
Wetted Perimeter	1.5 ft
Hydraulic Radius	2.4 in
Top Width	1.21 ft
Critical Depth	5.4 in
Critical Slope	0.005 ft/ft
Velocity	4.14 ft/s
Velocity Head	0.27 ft
Specific Energy	0.63 ft
Froude Number	1.474
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	4.4 in
Critical Depth	5.4 in
Channel Slope	0.011 ft/ft
Critical Slope	0.005 ft/ft

Worksheet for NODE 3230

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.074 ft/ft
Constructed Depth	12.0 in
Constructed Top Width	2.00 ft
Discharge	0.69 cfs

Results	
Normal Depth	2.1 in
Flow Area	0.1 ft²
Wetted Perimeter	0.9 ft
Hydraulic Radius	1.3 in
Top Width	0.84 ft
Critical Depth	4.0 in
Critical Slope	0.005 ft/ft
Velocity	6.96 ft/s
Velocity Head	0.75 ft
Specific Energy	0.93 ft
Froude Number	3.572
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	2.1 in
Critical Depth	4.0 in
Channel Slope	0.074 ft/ft
Critical Slope	0.005 ft/ft

Worksheet for NODE 3331 HILLSIDE 2

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.060 ft/ft
Constructed Depth	12.0 in
Constructed Top Width	2.00 ft
Discharge	4.33 cfs

Results	
Normal Depth	5.4 in
Flow Area	0.4 ft²
Wetted Perimeter	1.7 ft
Hydraulic Radius	2.9 in
Top Width	1.34 ft
Critical Depth	10.0 in
Critical Slope	0.005 ft/ft
Velocity	10.81 ft/s
Velocity Head	1.82 ft
Specific Energy	2.26 ft
Froude Number	3.485
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	5.4 in
Critical Depth	10.0 in
Channel Slope	0.060 ft/ft
Critical Slope	0.005 ft/ft

Worksheet for NODE 3331

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.059 ft/ft
Constructed Depth	12.0 in
Constructed Top Width	2.00 ft
Discharge	1.43 cfs

Results	
Normal Depth	3.2 in
Flow Area	0.2 ft²
Wetted Perimeter	1.2 ft
Hydraulic Radius	1.8 in
Top Width	1.03 ft
Critical Depth	5.8 in
Critical Slope	0.005 ft/ft
Velocity	7.93 ft/s
Velocity Head	0.98 ft
Specific Energy	1.24 ft
Froude Number	3.336
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	3.2 in
Critical Depth	5.8 in
Channel Slope	0.059 ft/ft
Critical Slope	0.005 ft/ft

Worksheet for NODE 3331-HILLSIDE

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.117 ft/ft
Constructed Depth	12.0 in
Constructed Top Width	2.00 ft
Discharge	4.84 cfs

Results	
Normal Depth	4.8 in
Flow Area	0.3 ft²
Wetted Perimeter	1.6 ft
Hydraulic Radius	2.6 in
Top Width	1.27 ft
Critical Depth	10.6 in
Critical Slope	0.005 ft/ft
Velocity	14.22 ft/s
Velocity Head	3.14 ft
Specific Energy	3.55 ft
Froude Number	4.842
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	4.8 in
Critical Depth	10.6 in
Channel Slope	0.117 ft/ft
Critical Slope	0.005 ft/ft

Worksheet for NODE 3333-3334

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.022 ft/ft
Constructed Depth	24.0 in
Constructed Top Width	3.00 ft
Discharge	13.31 cfs

Results	
Normal Depth	11.5 in
Flow Area	1.3 ft²
Wetted Perimeter	3.0 ft
Hydraulic Radius	5.4 in
Top Width	2.08 ft
Critical Depth	17.1 in
Critical Slope	0.005 ft/ft
Velocity	9.97 ft/s
Velocity Head	1.54 ft
Specific Energy	2.51 ft
Froude Number	2.194
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	11.5 in
Critical Depth	17.1 in
Channel Slope	0.022 ft/ft
Critical Slope	0.005 ft/ft

Worksheet for NODE 3337-3335

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data		
Roughness Coefficient	0.013	
Channel Slope	0.033	ft/ft
Constructed Depth	12.0	in
Constructed Top Width	2.00	ft
Discharge	1.01	cfs

Results		
Normal Depth	3.1	in
Flow Area	0.2	ft²
Wetted Perimeter	1.2	ft
Hydraulic Radius	1.8	in
Top Width	1.01	ft
Critical Depth	4.9	in
Critical Slope	0.005	ft/ft
Velocity	5.83	ft/s
Velocity Head	0.53	ft
Specific Energy	0.78	ft
Froude Number	2.483	
Flow Type	Supercritical	

GVF Input Data		
Downstream Depth	0.0	in
Length	0.0	ft
Number Of Steps	0	

GVF Output Data		
Upstream Depth	0.0	in
Profile Description	N/A	
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	3.1	in
Critical Depth	4.9	in
Channel Slope	0.033	ft/ft
Critical Slope	0.005	ft/ft

Worksheet for NODE 3341 HILLSIDE

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.056 ft/ft
Constructed Depth	12.0 in
Constructed Top Width	2.00 ft
Discharge	0.45 cfs

Results	
Normal Depth	1.8 in
Flow Area	0.1 ft²
Wetted Perimeter	0.9 ft
Hydraulic Radius	1.1 in
Top Width	0.78 ft
Critical Depth	3.2 in
Critical Slope	0.005 ft/ft
Velocity	5.58 ft/s
Velocity Head	0.48 ft
Specific Energy	0.64 ft
Froude Number	3.071
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	1.8 in
Critical Depth	3.2 in
Channel Slope	0.056 ft/ft
Critical Slope	0.005 ft/ft

Worksheet for NODE 3341

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.079 ft/ft
Constructed Depth	18.0 in
Constructed Top Width	2.00 ft
Discharge	7.74 cfs

Results	
Normal Depth	7.6 in
Flow Area	0.6 ft²
Wetted Perimeter	1.9 ft
Hydraulic Radius	3.5 in
Top Width	1.30 ft
Critical Depth	14.9 in
Critical Slope	0.006 ft/ft
Velocity	14.06 ft/s
Velocity Head	3.07 ft
Specific Energy	3.71 ft
Froude Number	3.812
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	7.6 in
Critical Depth	14.9 in
Channel Slope	0.079 ft/ft
Critical Slope	0.006 ft/ft

Worksheet for NODE 3343 SOUTH

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.055 ft/ft
Constructed Depth	12.0 in
Constructed Top Width	2.00 ft
Discharge	1.10 cfs

Results	
Normal Depth	2.8 in
Flow Area	0.2 ft²
Wetted Perimeter	1.1 ft
Hydraulic Radius	1.7 in
Top Width	0.97 ft
Critical Depth	5.1 in
Critical Slope	0.005 ft/ft
Velocity	7.17 ft/s
Velocity Head	0.80 ft
Specific Energy	1.04 ft
Froude Number	3.183
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	2.8 in
Critical Depth	5.1 in
Channel Slope	0.055 ft/ft
Critical Slope	0.005 ft/ft

Worksheet for NODE 3343

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.015 ft/ft
Constructed Depth	18.0 in
Constructed Top Width	2.00 ft
Discharge	6.27 cfs

Results	
Normal Depth	10.4 in
Flow Area	0.9 ft²
Wetted Perimeter	2.4 ft
Hydraulic Radius	4.4 in
Top Width	1.52 ft
Critical Depth	13.4 in
Critical Slope	0.006 ft/ft
Velocity	7.12 ft/s
Velocity Head	0.79 ft
Specific Energy	1.66 ft
Froude Number	1.650
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	10.4 in
Critical Depth	13.4 in
Channel Slope	0.015 ft/ft
Critical Slope	0.006 ft/ft

Worksheet for NODE 3347-3348 HILLSIDE

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.053 ft/ft
Constructed Depth	12.0 in
Constructed Top Width	2.00 ft
Discharge	3.84 cfs

Results	
Normal Depth	5.2 in
Flow Area	0.4 ft²
Wetted Perimeter	1.6 ft
Hydraulic Radius	2.8 in
Top Width	1.32 ft
Critical Depth	9.5 in
Critical Slope	0.005 ft/ft
Velocity	9.96 ft/s
Velocity Head	1.54 ft
Specific Energy	1.98 ft
Froude Number	3.254
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	5.2 in
Critical Depth	9.5 in
Channel Slope	0.053 ft/ft
Critical Slope	0.005 ft/ft

Worksheet for NODE 3347

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.053 ft/ft
Constructed Depth	12.0 in
Constructed Top Width	2.00 ft
Discharge	2.13 cfs

Results	
Normal Depth	3.9 in
Flow Area	0.2 ft²
Wetted Perimeter	1.4 ft
Hydraulic Radius	2.2 in
Top Width	1.14 ft
Critical Depth	7.0 in
Critical Slope	0.005 ft/ft
Velocity	8.52 ft/s
Velocity Head	1.13 ft
Specific Energy	1.46 ft
Froude Number	3.216
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	3.9 in
Critical Depth	7.0 in
Channel Slope	0.053 ft/ft
Critical Slope	0.005 ft/ft

Worksheet for NODE 3348

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.018 ft/ft
Constructed Depth	18.0 in
Constructed Top Width	2.00 ft
Discharge	7.68 cfs

Results	
Normal Depth	11.0 in
Flow Area	1.0 ft²
Wetted Perimeter	2.5 ft
Hydraulic Radius	4.6 in
Top Width	1.57 ft
Critical Depth	14.8 in
Critical Slope	0.006 ft/ft
Velocity	8.01 ft/s
Velocity Head	1.00 ft
Specific Energy	1.92 ft
Froude Number	1.805
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	11.0 in
Critical Depth	14.8 in
Channel Slope	0.018 ft/ft
Critical Slope	0.006 ft/ft

Worksheet for NODE 3401-3402-EAST

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.030 ft/ft
Constructed Depth	18.0 in
Constructed Top Width	2.00 ft
Discharge	9.40 cfs

Results	
Normal Depth	10.7 in
Flow Area	0.9 ft²
Wetted Perimeter	2.5 ft
Hydraulic Radius	4.5 in
Top Width	1.54 ft
Critical Depth	16.4 in
Critical Slope	0.006 ft/ft
Velocity	10.24 ft/s
Velocity Head	1.63 ft
Specific Energy	2.52 ft
Froude Number	2.340
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	10.7 in
Critical Depth	16.4 in
Channel Slope	0.030 ft/ft
Critical Slope	0.006 ft/ft

Worksheet for NODE 3401-3402-NORTH

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.020 ft/ft
Constructed Depth	12.0 in
Constructed Top Width	2.00 ft
Discharge	0.95 cfs

Results	
Normal Depth	3.4 in
Flow Area	0.2 ft²
Wetted Perimeter	1.2 ft
Hydraulic Radius	1.9 in
Top Width	1.06 ft
Critical Depth	4.7 in
Critical Slope	0.005 ft/ft
Velocity	4.78 ft/s
Velocity Head	0.36 ft
Specific Energy	0.64 ft
Froude Number	1.949
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	3.4 in
Critical Depth	4.7 in
Channel Slope	0.020 ft/ft
Critical Slope	0.005 ft/ft

Worksheet for NODE 3401-3402-WEST

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.030 ft/ft
Constructed Depth	12.0 in
Constructed Top Width	2.00 ft
Discharge	2.10 cfs

Results	
Normal Depth	4.5 in
Flow Area	0.3 ft²
Wetted Perimeter	1.5 ft
Hydraulic Radius	2.5 in
Top Width	1.22 ft
Critical Depth	7.0 in
Critical Slope	0.005 ft/ft
Velocity	6.90 ft/s
Velocity Head	0.74 ft
Specific Energy	1.11 ft
Froude Number	2.437
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	4.5 in
Critical Depth	7.0 in
Channel Slope	0.030 ft/ft
Critical Slope	0.005 ft/ft

Worksheet for NODE 3451-3452

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.200 ft/ft
Constructed Depth	18.0 in
Constructed Top Width	3.00 ft
Discharge	12.54 cfs

Results	
Normal Depth	6.0 in
Flow Area	0.6 ft²
Wetted Perimeter	2.1 ft
Hydraulic Radius	3.3 in
Top Width	1.73 ft
Critical Depth	15.5 in
Critical Slope	0.004 ft/ft
Velocity	21.83 ft/s
Velocity Head	7.41 ft
Specific Energy	7.91 ft
Froude Number	6.678
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	6.0 in
Critical Depth	15.5 in
Channel Slope	0.200 ft/ft
Critical Slope	0.004 ft/ft

Worksheet for NODE 3453-3452

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.026 ft/ft
Constructed Depth	18.0 in
Constructed Top Width	1.00 ft
Discharge	1.96 cfs

Results	
Normal Depth	8.3 in
Flow Area	0.3 ft²
Wetted Perimeter	1.6 ft
Hydraulic Radius	2.3 in
Top Width	0.68 ft
Critical Depth	10.6 in
Critical Slope	0.010 ft/ft
Velocity	6.26 ft/s
Velocity Head	0.61 ft
Specific Energy	1.30 ft
Froude Number	1.625
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	8.3 in
Critical Depth	10.6 in
Channel Slope	0.026 ft/ft
Critical Slope	0.010 ft/ft

Worksheet for NODE 3502 EAST-BEFORE ROAD

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.020 ft/ft
Constructed Depth	18.0 in
Constructed Top Width	2.00 ft
Discharge	6.91 cfs

Results	
Normal Depth	10.2 in
Flow Area	0.8 ft²
Wetted Perimeter	2.4 ft
Hydraulic Radius	4.3 in
Top Width	1.50 ft
Critical Depth	14.1 in
Critical Slope	0.006 ft/ft
Velocity	8.15 ft/s
Velocity Head	1.03 ft
Specific Energy	1.88 ft
Froude Number	1.912
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	10.2 in
Critical Depth	14.1 in
Channel Slope	0.020 ft/ft
Critical Slope	0.006 ft/ft

Worksheet for NODE 3502 WEST

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.150 ft/ft
Constructed Depth	12.0 in
Constructed Top Width	2.00 ft
Discharge	1.67 cfs

Results	
Normal Depth	2.7 in
Flow Area	0.1 ft²
Wetted Perimeter	1.1 ft
Hydraulic Radius	1.6 in
Top Width	0.95 ft
Critical Depth	6.2 in
Critical Slope	0.005 ft/ft
Velocity	11.57 ft/s
Velocity Head	2.08 ft
Specific Energy	2.31 ft
Froude Number	5.239
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	2.7 in
Critical Depth	6.2 in
Channel Slope	0.150 ft/ft
Critical Slope	0.005 ft/ft

Worksheet for NODE 3547 EAST

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.018 ft/ft
Constructed Depth	18.0 in
Constructed Top Width	2.00 ft
Discharge	5.17 cfs

Results	
Normal Depth	9.0 in
Flow Area	0.7 ft²
Wetted Perimeter	2.2 ft
Hydraulic Radius	3.9 in
Top Width	1.42 ft
Critical Depth	12.2 in
Critical Slope	0.006 ft/ft
Velocity	7.30 ft/s
Velocity Head	0.83 ft
Specific Energy	1.58 ft
Froude Number	1.818
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	9.0 in
Critical Depth	12.2 in
Channel Slope	0.018 ft/ft
Critical Slope	0.006 ft/ft

Worksheet for NODE 3547 WEST

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.030 ft/ft
Constructed Depth	18.0 in
Constructed Top Width	2.00 ft
Discharge	1.84 cfs

Results	
Normal Depth	4.7 in
Flow Area	0.3 ft²
Wetted Perimeter	1.3 ft
Hydraulic Radius	2.4 in
Top Width	1.03 ft
Critical Depth	7.3 in
Critical Slope	0.005 ft/ft
Velocity	6.79 ft/s
Velocity Head	0.72 ft
Specific Energy	1.11 ft
Froude Number	2.331
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	4.7 in
Critical Depth	7.3 in
Channel Slope	0.030 ft/ft
Critical Slope	0.005 ft/ft

Worksheet for NODE 3551 WEST

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.120 ft/ft
Constructed Depth	12.0 in
Constructed Top Width	2.00 ft
Discharge	1.22 cfs

Results	
Normal Depth	2.5 in
Flow Area	0.1 ft²
Wetted Perimeter	1.0 ft
Hydraulic Radius	1.5 in
Top Width	0.91 ft
Critical Depth	5.3 in
Critical Slope	0.005 ft/ft
Velocity	9.76 ft/s
Velocity Head	1.48 ft
Specific Energy	1.69 ft
Froude Number	4.639
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	2.5 in
Critical Depth	5.3 in
Channel Slope	0.120 ft/ft
Critical Slope	0.005 ft/ft

Worksheet for NODE 3551-EAST

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.036 ft/ft
Constructed Depth	18.0 in
Constructed Top Width	2.00 ft
Discharge	7.62 cfs

Results	
Normal Depth	9.2 in
Flow Area	0.7 ft²
Wetted Perimeter	2.2 ft
Hydraulic Radius	4.0 in
Top Width	1.43 ft
Critical Depth	14.8 in
Critical Slope	0.006 ft/ft
Velocity	10.42 ft/s
Velocity Head	1.69 ft
Specific Energy	2.46 ft
Froude Number	2.570
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	9.2 in
Critical Depth	14.8 in
Channel Slope	0.036 ft/ft
Critical Slope	0.006 ft/ft

Worksheet for NODE 3562 EAST

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.067 ft/ft
Constructed Depth	12.0 in
Constructed Top Width	2.00 ft
Discharge	1.04 cfs

Results	
Normal Depth	2.6 in
Flow Area	0.1 ft²
Wetted Perimeter	1.1 ft
Hydraulic Radius	1.6 in
Top Width	0.94 ft
Critical Depth	4.9 in
Critical Slope	0.005 ft/ft
Velocity	7.57 ft/s
Velocity Head	0.89 ft
Specific Energy	1.11 ft
Froude Number	3.487
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	2.6 in
Critical Depth	4.9 in
Channel Slope	0.067 ft/ft
Critical Slope	0.005 ft/ft

Worksheet for NODE 3562 WEST

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.062 ft/ft
Constructed Depth	12.0 in
Constructed Top Width	2.00 ft
Discharge	1.47 cfs

Results	
Normal Depth	3.2 in
Flow Area	0.2 ft²
Wetted Perimeter	1.2 ft
Hydraulic Radius	1.8 in
Top Width	1.03 ft
Critical Depth	5.9 in
Critical Slope	0.005 ft/ft
Velocity	8.10 ft/s
Velocity Head	1.02 ft
Specific Energy	1.28 ft
Froude Number	3.399
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	3.2 in
Critical Depth	5.9 in
Channel Slope	0.062 ft/ft
Critical Slope	0.005 ft/ft

Worksheet for NODE 3563

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.058 ft/ft
Constructed Depth	12.0 in
Constructed Top Width	2.00 ft
Discharge	0.23 cfs

Results	
Normal Depth	1.3 in
Flow Area	0.0 ft²
Wetted Perimeter	0.7 ft
Hydraulic Radius	0.8 in
Top Width	0.67 ft
Critical Depth	2.3 in
Critical Slope	0.006 ft/ft
Velocity	4.64 ft/s
Velocity Head	0.34 ft
Specific Energy	0.45 ft
Froude Number	3.006
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	1.3 in
Critical Depth	2.3 in
Channel Slope	0.058 ft/ft
Critical Slope	0.006 ft/ft

Worksheet for NODE 3658-3653 EAST

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.150 ft/ft
Constructed Depth	12.0 in
Constructed Top Width	2.00 ft
Discharge	0.15 cfs

Results	
Normal Depth	0.9 in
Flow Area	0.0 ft²
Wetted Perimeter	0.6 ft
Hydraulic Radius	0.6 in
Top Width	0.54 ft
Critical Depth	1.9 in
Critical Slope	0.006 ft/ft
Velocity	5.77 ft/s
Velocity Head	0.52 ft
Specific Energy	0.59 ft
Froude Number	4.600
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	0.9 in
Critical Depth	1.9 in
Channel Slope	0.150 ft/ft
Critical Slope	0.006 ft/ft

Worksheet for NODE 3658-3653-EAST

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.063 ft/ft
Constructed Depth	12.0 in
Constructed Top Width	2.00 ft
Discharge	1.90 cfs

Results	
Normal Depth	3.6 in
Flow Area	0.2 ft²
Wetted Perimeter	1.3 ft
Hydraulic Radius	2.0 in
Top Width	1.09 ft
Critical Depth	6.7 in
Critical Slope	0.005 ft/ft
Velocity	8.77 ft/s
Velocity Head	1.19 ft
Specific Energy	1.49 ft
Froude Number	3.468
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	3.6 in
Critical Depth	6.7 in
Channel Slope	0.063 ft/ft
Critical Slope	0.005 ft/ft

Worksheet for NODE 3658-3653-WEST

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.002 ft/ft
Constructed Depth	24.0 in
Constructed Top Width	3.00 ft
Discharge	6.14 cfs

Results	
Normal Depth	14.3 in
Flow Area	1.8 ft²
Wetted Perimeter	3.5 ft
Hydraulic Radius	6.3 in
Top Width	2.31 ft
Critical Depth	11.6 in
Critical Slope	0.005 ft/ft
Velocity	3.34 ft/s
Velocity Head	0.17 ft
Specific Energy	1.36 ft
Froude Number	0.661
Flow Type	Subcritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	14.3 in
Critical Depth	11.6 in
Channel Slope	0.002 ft/ft
Critical Slope	0.005 ft/ft

Worksheet for NODE 3702-EAST

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.006 ft/ft
Constructed Depth	18.0 in
Constructed Top Width	3.00 ft
Discharge	6.50 cfs

Results	
Normal Depth	10.2 in
Flow Area	1.3 ft²
Wetted Perimeter	2.9 ft
Hydraulic Radius	5.2 in
Top Width	2.26 ft
Critical Depth	11.1 in
Critical Slope	0.004 ft/ft
Velocity	5.08 ft/s
Velocity Head	0.40 ft
Specific Energy	1.25 ft
Froude Number	1.191
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	10.2 in
Critical Depth	11.1 in
Channel Slope	0.006 ft/ft
Critical Slope	0.004 ft/ft

Worksheet for NODE 3702-WEST

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.016 ft/ft
Constructed Depth	18.0 in
Constructed Top Width	2.00 ft
Discharge	6.93 cfs

Results	
Normal Depth	10.7 in
Flow Area	0.9 ft²
Wetted Perimeter	2.5 ft
Hydraulic Radius	4.5 in
Top Width	1.54 ft
Critical Depth	14.1 in
Critical Slope	0.006 ft/ft
Velocity	7.55 ft/s
Velocity Head	0.89 ft
Specific Energy	1.78 ft
Froude Number	1.725
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	10.7 in
Critical Depth	14.1 in
Channel Slope	0.016 ft/ft
Critical Slope	0.006 ft/ft

Worksheet for NODE 3704

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.089 ft/ft
Constructed Depth	12.0 in
Constructed Top Width	2.00 ft
Discharge	1.62 cfs

Results	
Normal Depth	3.0 in
Flow Area	0.2 ft²
Wetted Perimeter	1.2 ft
Hydraulic Radius	1.8 in
Top Width	1.01 ft
Critical Depth	6.1 in
Critical Slope	0.005 ft/ft
Velocity	9.49 ft/s
Velocity Head	1.40 ft
Specific Energy	1.65 ft
Froude Number	4.067
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	3.0 in
Critical Depth	6.1 in
Channel Slope	0.089 ft/ft
Critical Slope	0.005 ft/ft

Worksheet for NODE 3801-3802-EAST

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.008 ft/ft
Constructed Depth	30.0 in
Constructed Top Width	4.00 ft
Discharge	22.25 cfs

Results	
Normal Depth	17.1 in
Flow Area	2.9 ft²
Wetted Perimeter	4.3 ft
Hydraulic Radius	7.9 in
Top Width	3.02 ft
Critical Depth	20.3 in
Critical Slope	0.004 ft/ft
Velocity	7.76 ft/s
Velocity Head	0.94 ft
Specific Energy	2.36 ft
Froude Number	1.403
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	17.1 in
Critical Depth	20.3 in
Channel Slope	0.008 ft/ft
Critical Slope	0.004 ft/ft

Worksheet for NODE 3801-3802-WEST

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.004 ft/ft
Constructed Depth	18.0 in
Constructed Top Width	2.00 ft
Discharge	1.63 cfs

Results	
Normal Depth	7.3 in
Flow Area	0.5 ft²
Wetted Perimeter	1.8 ft
Hydraulic Radius	3.4 in
Top Width	1.27 ft
Critical Depth	6.8 in
Critical Slope	0.005 ft/ft
Velocity	3.17 ft/s
Velocity Head	0.16 ft
Specific Energy	0.76 ft
Froude Number	0.878
Flow Type	Subcritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	7.3 in
Critical Depth	6.8 in
Channel Slope	0.004 ft/ft
Critical Slope	0.005 ft/ft

Worksheet for NODE 3901-3902 EAST

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.020 ft/ft
Constructed Depth	18.0 in
Constructed Top Width	2.00 ft
Discharge	5.71 cfs

Results	
Normal Depth	9.2 in
Flow Area	0.7 ft²
Wetted Perimeter	2.2 ft
Hydraulic Radius	4.0 in
Top Width	1.43 ft
Critical Depth	12.8 in
Critical Slope	0.006 ft/ft
Velocity	7.78 ft/s
Velocity Head	0.94 ft
Specific Energy	1.71 ft
Froude Number	1.915
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	9.2 in
Critical Depth	12.8 in
Channel Slope	0.020 ft/ft
Critical Slope	0.006 ft/ft

Worksheet for NODE 4031-4032

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.023 ft/ft
Constructed Depth	18.0 in
Constructed Top Width	2.00 ft
Discharge	9.88 cfs

Results	
Normal Depth	11.8 in
Flow Area	1.1 ft²
Wetted Perimeter	2.7 ft
Hydraulic Radius	4.8 in
Top Width	1.62 ft
Critical Depth	16.8 in
Critical Slope	0.006 ft/ft
Velocity	9.36 ft/s
Velocity Head	1.36 ft
Specific Energy	2.34 ft
Froude Number	2.043
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	11.8 in
Critical Depth	16.8 in
Channel Slope	0.023 ft/ft
Critical Slope	0.006 ft/ft

Worksheet for NODE 4034-4033

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.039 ft/ft
Constructed Depth	12.0 in
Constructed Top Width	2.00 ft
Discharge	5.94 cfs

Results	
Normal Depth	7.0 in
Flow Area	0.6 ft²
Wetted Perimeter	2.0 ft
Hydraulic Radius	3.6 in
Top Width	1.53 ft
Critical Depth	11.8 in
Critical Slope	0.005 ft/ft
Velocity	10.04 ft/s
Velocity Head	1.57 ft
Specific Energy	2.15 ft
Froude Number	2.841
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	7.0 in
Critical Depth	11.8 in
Channel Slope	0.039 ft/ft
Critical Slope	0.005 ft/ft

Worksheet for NODE 4036-4032

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.009 ft/ft
Constructed Depth	24.0 in
Constructed Top Width	3.00 ft
Discharge	9.03 cfs

Results	
Normal Depth	11.8 in
Flow Area	1.4 ft²
Wetted Perimeter	3.0 ft
Hydraulic Radius	5.5 in
Top Width	2.11 ft
Critical Depth	14.1 in
Critical Slope	0.005 ft/ft
Velocity	6.53 ft/s
Velocity Head	0.66 ft
Specific Energy	1.65 ft
Froude Number	1.419
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	11.8 in
Critical Depth	14.1 in
Channel Slope	0.009 ft/ft
Critical Slope	0.005 ft/ft

Worksheet for NODE 4041-4042

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.010 ft/ft
Constructed Depth	24.0 in
Constructed Top Width	3.00 ft
Discharge	9.49 cfs

Results	
Normal Depth	11.9 in
Flow Area	1.4 ft²
Wetted Perimeter	3.0 ft
Hydraulic Radius	5.5 in
Top Width	2.11 ft
Critical Depth	14.4 in
Critical Slope	0.005 ft/ft
Velocity	6.82 ft/s
Velocity Head	0.72 ft
Specific Energy	1.71 ft
Froude Number	1.479
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	11.9 in
Critical Depth	14.4 in
Channel Slope	0.010 ft/ft
Critical Slope	0.005 ft/ft

Worksheet for NODE 4046-4022

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.119 ft/ft
Constructed Depth	12.0 in
Constructed Top Width	2.00 ft
Discharge	2.31 cfs

Results	
Normal Depth	3.4 in
Flow Area	0.2 ft²
Wetted Perimeter	1.2 ft
Hydraulic Radius	1.9 in
Top Width	1.06 ft
Critical Depth	7.3 in
Critical Slope	0.005 ft/ft
Velocity	11.66 ft/s
Velocity Head	2.11 ft
Specific Energy	2.39 ft
Froude Number	4.752
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	3.4 in
Critical Depth	7.3 in
Channel Slope	0.119 ft/ft
Critical Slope	0.005 ft/ft

Worksheet for NODE 4046-4047

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.084 ft/ft
Constructed Depth	12.0 in
Constructed Top Width	3.00 ft
Discharge	4.69 cfs

Results	
Normal Depth	4.1 in
Flow Area	0.4 ft²
Wetted Perimeter	1.9 ft
Hydraulic Radius	2.5 in
Top Width	1.76 ft
Critical Depth	8.5 in
Critical Slope	0.004 ft/ft
Velocity	11.67 ft/s
Velocity Head	2.12 ft
Specific Energy	2.46 ft
Froude Number	4.302
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	4.1 in
Critical Depth	8.5 in
Channel Slope	0.084 ft/ft
Critical Slope	0.004 ft/ft

Worksheet for NODE 4046 TO NODE 4052

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.015 ft/ft
Constructed Depth	18.0 in
Constructed Top Width	2.00 ft
Discharge	4.69 cfs

Results	
Normal Depth	9.0 in
Flow Area	0.7 ft²
Wetted Perimeter	2.2 ft
Hydraulic Radius	3.9 in
Top Width	1.42 ft
Critical Depth	11.6 in
Critical Slope	0.006 ft/ft
Velocity	6.62 ft/s
Velocity Head	0.68 ft
Specific Energy	1.43 ft
Froude Number	1.648
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	9.0 in
Critical Depth	11.6 in
Channel Slope	0.015 ft/ft
Critical Slope	0.006 ft/ft

Worksheet for NODE 4047-4047

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.028 ft/ft
Constructed Depth	12.0 in
Constructed Top Width	3.00 ft
Discharge	2.29 cfs

Results	
Normal Depth	3.8 in
Flow Area	0.4 ft²
Wetted Perimeter	1.8 ft
Hydraulic Radius	2.3 in
Top Width	1.69 ft
Critical Depth	6.0 in
Critical Slope	0.004 ft/ft
Velocity	6.38 ft/s
Velocity Head	0.63 ft
Specific Energy	0.95 ft
Froude Number	2.440
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	3.8 in
Critical Depth	6.0 in
Channel Slope	0.028 ft/ft
Critical Slope	0.004 ft/ft

Worksheet for NODE 4051-4052

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.035 ft/ft
Constructed Depth	24.0 in
Constructed Top Width	3.00 ft
Discharge	1.78 cfs

Results	
Normal Depth	3.9 in
Flow Area	0.3 ft²
Wetted Perimeter	1.4 ft
Hydraulic Radius	2.2 in
Top Width	1.20 ft
Critical Depth	6.3 in
Critical Slope	0.005 ft/ft
Velocity	6.91 ft/s
Velocity Head	0.74 ft
Specific Energy	1.06 ft
Froude Number	2.631
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	3.9 in
Critical Depth	6.3 in
Channel Slope	0.035 ft/ft
Critical Slope	0.005 ft/ft

Worksheet for NODE 4056-4057 SOUTH

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.040 ft/ft
Constructed Depth	12.0 in
Constructed Top Width	2.00 ft
Discharge	4.17 cfs

Results	
Normal Depth	5.8 in
Flow Area	0.5 ft²
Wetted Perimeter	1.8 ft
Hydraulic Radius	3.1 in
Top Width	1.39 ft
Critical Depth	9.9 in
Critical Slope	0.005 ft/ft
Velocity	9.22 ft/s
Velocity Head	1.32 ft
Specific Energy	1.81 ft
Froude Number	2.856
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	5.8 in
Critical Depth	9.9 in
Channel Slope	0.040 ft/ft
Critical Slope	0.005 ft/ft

Worksheet for NODE 4056-4057 WEST

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.031 ft/ft
Constructed Depth	12.0 in
Constructed Top Width	2.00 ft
Discharge	1.08 cfs

Results	
Normal Depth	3.2 in
Flow Area	0.2 ft²
Wetted Perimeter	1.2 ft
Hydraulic Radius	1.9 in
Top Width	1.04 ft
Critical Depth	5.0 in
Critical Slope	0.005 ft/ft
Velocity	5.83 ft/s
Velocity Head	0.53 ft
Specific Energy	0.80 ft
Froude Number	2.431
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	3.2 in
Critical Depth	5.0 in
Channel Slope	0.031 ft/ft
Critical Slope	0.005 ft/ft

Worksheet for NODE 4062-4062

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.078 ft/ft
Constructed Depth	12.0 in
Constructed Top Width	2.00 ft
Discharge	4.57 cfs

Results	
Normal Depth	5.2 in
Flow Area	0.4 ft²
Wetted Perimeter	1.6 ft
Hydraulic Radius	2.8 in
Top Width	1.31 ft
Critical Depth	10.3 in
Critical Slope	0.005 ft/ft
Velocity	12.07 ft/s
Velocity Head	2.26 ft
Specific Energy	2.70 ft
Froude Number	3.964
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	5.2 in
Critical Depth	10.3 in
Channel Slope	0.078 ft/ft
Critical Slope	0.005 ft/ft

Worksheet for NODE 4064-4064

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.022 ft/ft
Constructed Depth	12.0 in
Constructed Top Width	2.00 ft
Discharge	4.57 cfs

Results	
Normal Depth	7.1 in
Flow Area	0.6 ft²
Wetted Perimeter	2.0 ft
Hydraulic Radius	3.6 in
Top Width	1.54 ft
Critical Depth	10.3 in
Critical Slope	0.005 ft/ft
Velocity	7.53 ft/s
Velocity Head	0.88 ft
Specific Energy	1.47 ft
Froude Number	2.114
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	7.1 in
Critical Depth	10.3 in
Channel Slope	0.022 ft/ft
Critical Slope	0.005 ft/ft

Worksheet for NODE 4064-4074

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.200 ft/ft
Constructed Depth	12.0 in
Constructed Top Width	2.00 ft
Discharge	9.97 cfs

Results	
Normal Depth	6.0 in
Flow Area	0.5 ft²
Wetted Perimeter	1.8 ft
Hydraulic Radius	3.2 in
Top Width	1.42 ft
Critical Depth	15.0 in
Critical Slope	0.005 ft/ft
Velocity	21.00 ft/s
Velocity Head	6.86 ft
Specific Energy	7.36 ft
Froude Number	6.399
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	6.0 in
Critical Depth	15.0 in
Channel Slope	0.200 ft/ft
Critical Slope	0.005 ft/ft

Worksheet for NODE 4074

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.030 ft/ft
Constructed Depth	24.0 in
Constructed Top Width	2.00 ft
Discharge	13.71 cfs

Results	
Normal Depth	14.4 in
Flow Area	1.2 ft²
Wetted Perimeter	3.0 ft
Hydraulic Radius	5.0 in
Top Width	1.55 ft
Critical Depth	21.3 in
Critical Slope	0.007 ft/ft
Velocity	11.03 ft/s
Velocity Head	1.89 ft
Specific Energy	3.09 ft
Froude Number	2.172
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	14.4 in
Critical Depth	21.3 in
Channel Slope	0.030 ft/ft
Critical Slope	0.007 ft/ft

Worksheet for NODE 5001-5002-EAST

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.048 ft/ft
Constructed Depth	12.0 in
Constructed Top Width	1.00 ft
Discharge	0.81 cfs

Results	
Normal Depth	3.9 in
Flow Area	0.1 ft²
Wetted Perimeter	0.9 ft
Hydraulic Radius	1.6 in
Top Width	0.57 ft
Critical Depth	6.1 in
Critical Slope	0.008 ft/ft
Velocity	6.62 ft/s
Velocity Head	0.68 ft
Specific Energy	1.00 ft
Froude Number	2.514
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	3.9 in
Critical Depth	6.1 in
Channel Slope	0.048 ft/ft
Critical Slope	0.008 ft/ft

Worksheet for NODE 5001-5002-WEST

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.066 ft/ft
Constructed Depth	24.0 in
Constructed Top Width	3.00 ft
Discharge	18.15 cfs

Results	
Normal Depth	10.3 in
Flow Area	1.1 ft²
Wetted Perimeter	2.7 ft
Hydraulic Radius	4.9 in
Top Width	1.96 ft
Critical Depth	20.0 in
Critical Slope	0.005 ft/ft
Velocity	16.23 ft/s
Velocity Head	4.09 ft
Specific Energy	4.95 ft
Froude Number	3.790
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	10.3 in
Critical Depth	20.0 in
Channel Slope	0.066 ft/ft
Critical Slope	0.005 ft/ft

Worksheet for NODE 5004

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.029 ft/ft
Constructed Depth	24.0 in
Constructed Top Width	2.00 ft
Discharge	8.77 cfs

Results	
Normal Depth	11.6 in
Flow Area	0.9 ft²
Wetted Perimeter	2.5 ft
Hydraulic Radius	4.3 in
Top Width	1.39 ft
Critical Depth	17.0 in
Critical Slope	0.007 ft/ft
Velocity	9.78 ft/s
Velocity Head	1.49 ft
Specific Energy	2.45 ft
Froude Number	2.147
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	11.6 in
Critical Depth	17.0 in
Channel Slope	0.029 ft/ft
Critical Slope	0.007 ft/ft

Worksheet for NODE 5020-5014

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.110 ft/ft
Constructed Depth	12.0 in
Constructed Top Width	2.00 ft
Discharge	2.72 cfs

Results	
Normal Depth	3.7 in
Flow Area	0.2 ft²
Wetted Perimeter	1.3 ft
Hydraulic Radius	2.1 in
Top Width	1.11 ft
Critical Depth	8.0 in
Critical Slope	0.005 ft/ft
Velocity	11.86 ft/s
Velocity Head	2.19 ft
Specific Energy	2.49 ft
Froude Number	4.604
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	3.7 in
Critical Depth	8.0 in
Channel Slope	0.110 ft/ft
Critical Slope	0.005 ft/ft

Worksheet for NODE 5021-5014

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.085 ft/ft
Constructed Depth	12.0 in
Constructed Top Width	2.00 ft
Discharge	1.25 cfs

Results	
Normal Depth	2.7 in
Flow Area	0.1 ft²
Wetted Perimeter	1.1 ft
Hydraulic Radius	1.6 in
Top Width	0.95 ft
Critical Depth	5.4 in
Critical Slope	0.005 ft/ft
Velocity	8.69 ft/s
Velocity Head	1.17 ft
Specific Energy	1.40 ft
Froude Number	3.940
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	2.7 in
Critical Depth	5.4 in
Channel Slope	0.085 ft/ft
Critical Slope	0.005 ft/ft

Worksheet for NODE 5023-5024

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.120 ft/ft
Constructed Depth	12.0 in
Constructed Top Width	2.00 ft
Discharge	1.47 cfs

Results	
Normal Depth	2.7 in
Flow Area	0.1 ft²
Wetted Perimeter	1.1 ft
Hydraulic Radius	1.6 in
Top Width	0.95 ft
Critical Depth	5.9 in
Critical Slope	0.005 ft/ft
Velocity	10.29 ft/s
Velocity Head	1.65 ft
Specific Energy	1.87 ft
Froude Number	4.679
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	2.7 in
Critical Depth	5.9 in
Channel Slope	0.120 ft/ft
Critical Slope	0.005 ft/ft

Worksheet for NODE 5024-5004

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.030 ft/ft
Constructed Depth	18.0 in
Constructed Top Width	2.00 ft
Discharge	9.53 cfs

Results	
Normal Depth	10.8 in
Flow Area	0.9 ft²
Wetted Perimeter	2.5 ft
Hydraulic Radius	4.5 in
Top Width	1.55 ft
Critical Depth	16.5 in
Critical Slope	0.006 ft/ft
Velocity	10.27 ft/s
Velocity Head	1.64 ft
Specific Energy	2.54 ft
Froude Number	2.339
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	10.8 in
Critical Depth	16.5 in
Channel Slope	0.030 ft/ft
Critical Slope	0.006 ft/ft

Worksheet for NODE 5030-5030

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.100 ft/ft
Constructed Depth	12.0 in
Constructed Top Width	1.00 ft
Discharge	0.95 cfs

Results	
Normal Depth	3.5 in
Flow Area	0.1 ft²
Wetted Perimeter	0.8 ft
Hydraulic Radius	1.5 in
Top Width	0.54 ft
Critical Depth	6.7 in
Critical Slope	0.008 ft/ft
Velocity	9.08 ft/s
Velocity Head	1.28 ft
Specific Energy	1.57 ft
Froude Number	3.637
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	3.5 in
Critical Depth	6.7 in
Channel Slope	0.100 ft/ft
Critical Slope	0.008 ft/ft

Riprap Sizing

PA-1: OBR RIP RAP SIZING TABLE			
STORM DRAIN NAME	DIAMETER	SPECIFICATIONS	
SD-LINE-B1-1	48" (4') RCP X4	Q (cfs)	354.9
		V (fps)	9.5
		RIPRAP (D-40)	1/4 TON, L = 16', W = 28.5' T= 2.7'
SD-LINE-B-1	60" (5') RCP X2	Q (cfs)	354.9
		V (fps)	10.7
		RIPRAP (D-40)	1/4 TON, L = 20', W = 21' T= 2.7'
SD-LINE-B2	42" (3.5') RCP	Q (cfs)	36.6
		V (fps)	4.0
		RIPRAP (D-40)	NO.2 BACKING, L = 14', W = 10.5' T= 1.1'
SD-LINE-B3	60" (5') HDPE	Q (cfs)	322.5
		V (fps)	16.8
		RIPRAP (D-40)	2 TON , L = 20', W = 15' T= 4.4'
SD-LINE-B4	18" (1.5') HDPE	Q (cfs)	18.4
		V (fps)	16.8
		RIPRAP (D-40)	NO.2 BACKING, L = 10', W = 4.5' T= 1.1'
SD-LINE-B6	54" (4.5') RCP	Q (cfs)	149.7
		V (fps)	14.9
		RIPRAP (D-40)	1 TON, L = 18', W = 13.5' T= 4.4'
SD-LINE-B7	36" (3') RCP X2	Q (cfs)	39.8
		V (fps)	10.7
		RIPRAP (D-40)	1/4 TON, L = 12', W = 22' T= 2.7'
SD-LINE-B5	48" (4') HDPE	Q (cfs)	102.0
		V (fps)	8.1
		RIPRAP (D-40)	NO.2 BACKING, L = 20', W = 12' T= 1.1'

PA-3: OBR RIP RAP SIZING TABLE			
STORM DRAIN NAME	DIAMETER	SPECIFICATIONS	
SD-LINE-E	18" (1.5') HDPE	Q (cfs)	12.5
		V (fps)	17.8
		RIPRAP	NO.2 BACKING, L = 10', W = 4.5' T= 1.1'
SD-LINE-F	30" (2.5') HDPE	Q (cfs)	51.2
		V (fps)	19.6
		RIPRAP (D-40)	1/2 TON, L=10', W=15', T= 2.3'
SD-LINE-G1	24" (2') HDPE	Q (cfs)	12.8
		V (fps)	4.1
		RIPRAP	NO.2 BACKING, L = 10', W = 6' T= 1.1'
SD-LINE-G2	18" (1.5') HDPE	Q (cfs)	13.3
		V (fps)	14.2
		RIPRAP (D-40)	NO.2 BACKING, L = 10', W = 4.5' T= 1.1'
SD-LINE-H1	36" (3') RCP X1	Q (cfs)	77.5
		V (fps)	11.4
		RIPRAP (D-40)	1/4 TON, L=12', W=9', T= 2.7'
SD-LINE-H3	18" (1.5') HDPE	Q (cfs)	4.8
		V (fps)	5.8
		RIPRAP (D-40)	NO.2 BACKING, L = 10', W = 4.5' T= 1.1'
SD-LINE-H4	18" (1.5') HDPE	Q (cfs)	44.7
		V (fps)	12.4
		RIPRAP (D-40)	NO.2 BACKING , L = 10', W = 4.5' T= 1.1'
SD-LINE-I1	36" (3') HDPE	Q (cfs)	20.7
		V (fps)	6.4
		RIPRAP (D-40)	NO.2 BACKING , L = 12', W = 9' T= 1.1'
SD-LINE-K1	36" (3') HDPE	Q (cfs)	42.6
		V (fps)	3.8

		RIPRAP (D-40)	NO.2 BACKING , L = 12', W = 9' T= 1.1'
SD-LINE-J1	42" (3.5') HDPE	Q (cfs)	58.8
		V (fps)	8.9
		RIPRAP (D-40)	NO.2 BACKING , L = 14', W = 10.5' T= 1.1'
SD-LINE-J3	36" (3') HDPE X2	Q (cfs)	35.8
		V (fps)	7.3
		RIPRAP (D-40)	NO.2 BACKING , L = 18', W = 14.7' T= 1.1'
SD-LINE-J2	18" (1.5') HDPE	Q (cfs)	10.7
		V (fps)	14.0
		RIPRAP (D-40)	NO.2 BACKING , L = 10', W = 4.5' T= 1.1'
SD-LINE-P	8'(S)X5'(H) BOX CULVERT X3	Q (cfs)	1237.5
		V (fps)	7.8
		RIPRAP (D-40)	NO.2 BACKING , L = 30', W = 45' T= 1.1'
SD-LINE-R1	24" (2') HDPE	Q (cfs)	13.4
		V (fps)	7.5
		RIPRAP (D-40)	NO.2 BACKING, L = 10', W = 6' T= 1.1'
SD-LINE-R2	Reverse Curb Outlet. 3'X0.25'	Q (cfs)	9.1
		V (fps)	14.6
		RIPRAP (D-40)	NO.2 BACKING, L = 10', W = 9.0' T= 1.1'
SD-LINE-R3	18" (1.5') HDPE	Q (cfs)	9.1
		V (fps)	8.6
		RIPRAP (D-40)	NO.2 BACKING, L = 10', W = 4.5' T= 1.1'
SD-LINE-Q1	18" (1.5') HDPE	Q (cfs)	1.5
		V (fps)	5.0
		RIPRAP (D-40)	NO.2 BACKING, L = 10', W = 4.5' T= 1.1'
SD-LINE-Q2	18" (1.5') HDPE	Q (cfs)	7.6
		V (fps)	4.3
		RIPRAP (D-40)	NO.2 BACKING, L = 10', W = 4.5' T= 1.1'
SD-LINE-Q3	30" (2.5') HDPE	Q (cfs)	33.1
		V (fps)	8.0
		RIPRAP (D-40)	NO.2 BACKING, L = 10', W = 7.5' T= 1.1'
SD-LINE-S	30" (2.5') HDPE	Q (cfs)	23.9
		V (fps)	8.4
		RIPRAP (D-40)	NO.2 BACKING, L = 10', W = 7.5' T= 1.1'
SD-LINE-T1	24" (2') HDPE	Q (cfs)	10.7
		V (fps)	5.5
		RIPRAP (D-40)	NO.2 BACKING, L = 10', W = 6.0' T= 1.1'
SD-LINE-T2	18" (1.5') HDPE	Q (cfs)	7.1
		V (fps)	7.2
		RIPRAP (D-40)	NO.2 BACKING, L = 10', W = 4.5' T= 1.1'
SD-LINE-T3	18" (1.5') HDPE	Q (cfs)	3.8
		V (fps)	6.1
		RIPRAP (D-40)	NO.2 BACKING, L = 10', W = 4.5' T= 1.1'
SD-LINE-U	18" (1.5') HDPE	Q (cfs)	7.7
		V (fps)	8.0
		RIPRAP (D-40)	NO.2 BACKING, L = 10', W = 4.5' T= 1.1'
SD-LINE-V1	24" (2') HDPE X2	Q (cfs)	40.6
		V (fps)	8.1
		RIPRAP (D-40)	NO.2 BACKING, L = 10', W = 10.6' T= 1.1'
SD-LINE-V2	24" (2') HDPE	Q (cfs)	20.3
		V (fps)	9.4
		RIPRAP (D-40)	NO.2 BACKING, L = 10', W = 6' T= 1.1'

PA-2: OBR RIP RAP SIZING TABLE			
STORM DRAIN NAME	DIAMETER	SPECIFICATIONS	
SD-LINE-A2	18" (1.5') HDPE	Q (cfs)	13.5
		V (fps)	8.0
		RIPRAP (D-40)	NO.2 BACKING, L = 10', W = 4.5' T= 1.1'
SD-LINE-A3	36" (3') HDPE X2	Q (cfs)	69.2
		V (fps)	7.3
		RIPRAP (D-40)	NO.2 BACKING, L =12', W =16.5' T= 1.1'

SD-LINE-A5	36" (3') HDPE	Q (cfs)	25.8
		V (fps)	5.3
		RIPRAP (D-40)	NO.2 BACKING, L = 12', W =9' T= 1.1'
SD-LINE-A7	36" (3') HDPE	Q (cfs)	40.4
		V (fps)	6.0
		RIPRAP (D-40)	NO.2 BACKING, L = 12', W =9' T= 1.1'
SD-LINE-A8	30" (2.5') HDPE X2	Q (cfs)	26.4
		V (fps)	5.8
		RIPRAP (D-40)	NO.2 BACKING, L = 13.5', W =26' T= 1.1'
SD-LINE-A10	18" (1.5') HDPE	Q (cfs)	8.9
		V (fps)	14.2
		RIPRAP (D-40)	NO.2 BACKING, L = 10', W =4.5' T= 1.1'
SD-LINE-A11	18" (1.5') HDPE	Q (cfs)	5.5
		V (fps)	5.9
		RIPRAP (D-40)	NO.2 BACKING, L = 10', W =4.5' T= 1.1'
SD-LINE-C	42" (3.5') HDPE	Q (cfs)	42.2
		V (fps)	6.9
		RIPRAP (D-40)	NO.2 BACKING, L = 14', W =10.5' T= 1.1'
SD-LINE-D	30" (2.5') RCP	Q (cfs)	18.8
		V (fps)	3.8
		RIPRAP (D-40)	NO.2 BACKING, L = 10', W =7.5' T= 1.1'

PA-OFFSITE: OBR RIP RAP SIZING TABLE			
STORM DRAIN NAME	DIAMETER	SPECIFICATIONS	
SD-LINE-W2	30" (2.5') RCP	Q (cfs)	28.9
		V (fps)	14.1
		RIPRAP (D-40)	NO.2 BACKING, L = 10', W =7.5' T= 1.1'
SD-LINE-W3	30" (2.5') RCP	Q (cfs)	23.3
		V (fps)	10.1
		RIPRAP (D-40)	NO.2 BACKING, L = 10', W =7.5' T= 1.1'
SD-LINE-W4	24" (2') HDPE	Q (cfs)	13.5
		V (fps)	12.0
		RIPRAP (D-40)	NO.2 BACKING, L = 10', W =6.0' T= 1.1'
SD-LINE-W4-1	24" (2') HDPE	Q (cfs)	13.5
		V (fps)	15.2
		RIPRAP (D-40)	NO.2 BACKING, L = 10', W =6.0' T= 1.1'
SD-LINE-W6	18" (1.5') RCP	Q (cfs)	5.0
		V (fps)	5.2
		RIPRAP (D-40)	NO.2 BACKING, L = 10', W =4.5' T= 1.1'
SD-LINE-W7	18" (1.5') RCP	Q (cfs)	8.4
		V (fps)	7.7
		RIPRAP (D-40)	NO.2 BACKING, L = 10', W =4.5' T= 1.1'
SD-LINE-W8-1	24" (2') RCP	Q (cfs)	25.0
		V (fps)	8.1
		RIPRAP (D-40)	NO.2 BACKING, L = 10', W =9' T= 1.1'
SD-LINE-W8-2	18" (1.5') RCP	Q (cfs)	5.9
		V (fps)	6.1
		RIPRAP (D-40)	NO.2 BACKING, L = 10', W =9' T= 1.1'
SD-LINE-X2	18" (1.5') RCP	Q (cfs)	6.5
		V (fps)	3.7
		RIPRAP (D-40)	NO.2 BACKING, L = 10', W =4.5' T= 1.1'

PA-EQUESTRIAN MUP: OBR RIP RAP SIZING TABLE			
STORM DRAIN NAME	DIAMETER	SPECIFICATIONS	
SD-LINE-Y1	5'(S)X2'(H) BOX CULVERT X2	Q (cfs)	150.4
		V (fps)	8.9
		RIPRAP (D-40)	NO.2 BACKING, L = 135', W = 13' T=1.1'
SD-LINE-Y7	36" (3') RCP X2	Q (cfs)	156.5
		V (fps)	12.3
		RIPRAP (D-40)	1/4 TON, L = 12', W = 11' T=2.7'
SD-LINE-Y6	5'(W)X2'(H) BOX CULVERT X2	Q (cfs)	120.4
		V (fps)	7.8
		RIPRAP (D-40)	NO.2 BACKING, L = 20', W = 13' T=1.1'
SD-LINE-Y2	18" (1.5') RCP X2	Q (cfs)	14.1
		V (fps)	5.5
		RIPRAP (D-40)	NO.2 BACKING, L = 10', W =9.0' T= 1.1'
SD-LINE-Y8	18" (1.5') RCP X2	Q (cfs)	9.2
		V (fps)	6.8
		RIPRAP (D-40)	NO.2 BACKING, L = 10', W =9.0' T= 1.1'
SD-LINE-Y5	18" (1.5') RCP X3	Q (cfs)	14.4
		V (fps)	7.3
		RIPRAP (D-40)	NO.2 BACKING, L = 10', W =12.0' T= 1.1'
SD-LINE-Y3	24" (2') RCP X 3	Q (cfs)	16.5
		V (fps)	4.8
		RIPRAP (D-40)	NO.2 BACKING, L = 10', W =12.0' T= 1.1'

Riser Details Per SPECS
Structural Engineer

GENERAL NOTES

1. THE PROJECT SPECIFICATION SHALL CONFORM TO THE STANDARD SPECFICATIONS FOR PUBLIC WORKS CONSTRUCTION, 2021 EDITION, UNLESS OTHERWISE NOTED. THE NOTES ON THESE PLANS TAKE PRECEDENCE OVER STANDARD SPECIFICATIONS.

2. THE STRUCTURAL DRAWINGS ARE TO BE USED IN CONJUNCTION WITH THE CIVIL DRAWINGS. NO PORTION OF THE STRUCTURAL RELATED WORK, INCLUDING SHOP DRAWING DEVELOPMENT, SHALL BE PERFORMED WITHOUT CONSIDERING THE REQUIREMENTS OF CONTRACT DOCUMENTS IN THEIR ENTIRETY.

3. DETAILS AND SCHEDULES INDICATED AS "TYPICAL" MAY NOT BE SPECIFICALLY REFERENCED ON DRAWINGS. DETERMINE WHERE EACH TYPICAL DETAIL OR SCHEDULE APPLIES BEFORE PROCEEDING WITH WORK. IF CONDITIONS ARE FOUND WHICH ARE NOT SPECIFICALLY DETAILED AND NO TYPICAL DETAIL OR SCHEDULE APPLIES, NOTIFY THE ENGINEER BEFORE PROCEEDING WITH THE WORK.

4. OPENINGS, POCKETS, CORE DRILLING, ETC. SHALL NOT BE PLACED IN STRUCTURAL WALLS, SLABS, AND MEMBERS UNLESS SPECIFICALLY DETAILED ON THE STRUCTURAL DRAWINGS. NOTIFY THE ENGINEER OF RECORD WHEN DRAWINGS BY OTHERS INDICATE OPENINGS, POCKETS, CORE DRILLING, ETC. NOT INDICATED ON THE STRUCTURAL DRAWINGS BUT WHICH ARE LOCATED IN STRUCTURAL MEMBERS.

5. THE CONTRACTOR SHALL REVIEW EXISTING CONDITIONS ON THE SITE DURING THE BIDDING. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS PRIOR TO STARTING WORK. THE ENGINEER SHALL BE NOTIFIED OF ANY DISCREPANCIES OR INCONSISTENCIES PRIOR TO PROCEEDING.

6. UNLESS OTHERWISE NOTED, ALL PHASES OF STRUCTURAL WORK ARE TO CONFORM TO THE MINIMUM STANDARDS OF THE 2022 CALIFORNIA BUILDING CODE (CBC) AND ANY ASTM SPECIFICATIONS ON WHICH THESE STANDARDS ARE BASED. WHERE CONFLICT BETWEEN THE CBC AND SPECIFICATIONS OCCUR, THE MOST STRINGENT SHALL GOVERN.

7. ALL ASTM DESIGNATIONS REFERRED TO ON THESE DRAWINGS SHALL BE THE LATEST ADOPTED OR REVISED, AS OF THE DATE OF THESE DRAWINGS.

8. ALL DIMENSIONS SHALL TAKE PRECEDENCE OVER SCALE SHOWN ON THESE PLANS. DRAWINGS SHALL NOT BE SCALED FOR CONSTRUCTION PURPOSES.

9. NOTES AND DETAILS ON THE PLANS TAKE PRECEDENCE OVER GENERAL NOTES AND TYPICAL DETAILS.

10. THE STRUCTURAL DRAWINGS SHOW ONLY THE BASIC STRUCTURAL REQUIREMENTS. REFER TO CIVIL DRAWINGS FOR NON-STRUCTURAL ITEMS.

11. THE STRUCTURAL CONTRACT DOCUMENTS AND SPECIFICATIONS REPRESENT THE FINISHED STRUCTURE AND DO NOT INDICATE THE METHOD OF CONSTRUCTION.

12. NEITHER THE OWNER NOR THE ENGINEER WILL ENFORCE SAFETY MEASURES OR REGULATIONS. THE CONTRACTOR SHALL, AT HIS EXPENSE, DESIGN, CONSTRUCT, AND MAINTAIN ALL SAFETY DEVICES. THE CONTRACTOR IS RESPONSIBLE FOR CONFORMING TO ALL LOCAL, STATE, AND FEDERAL SAFETY AND HEALTH STANDARDS, LAWS AND REGULATIONS.

13. SATISFACTORY EXECUTION OF CONSTRUCTION IS DEPENDENT UPON CONFORMANCE WITH THE INTENT OF THESE DRAWINGS. THE OWNER OR CONTRACTOR SHALL RETAIN A CALIFORNIA LICENSED CIVIL ENGINEER DURING CONSTRUCTION TO OBSERVE THE CONSTRUCTION AND STATE THAT THE STRUCTURE HAS BEEN BUILT IN GENERAL CONFORMANCE WITH THE INTENT OF THESE DRAWINGS.

14. WHERE NO CONSTRUCTION DETAILS ARE SHOWN OR NOTED FOR ANY PART OF THE WORK, THE DETAILS SHALL BE THE SAME AS FOR OTHER SIMILAR WORK.

15. THE STANDARD DETAILS SHALL CONFORM TO THE 2022 SAN DIEGO REGIONAL STANDARD DRAWINGS.

ABBREVIATIONS

CLR	CLEAR
ELEV	ELEVATION
HDPE	HIGH DENSITY POLYETHELENE
MIN	MINIMUM
PDCI	PRIVATE DEVELOPMENT CONSTRUCTION INSPECTION
RCP	REINFORCED CONCRETE PIPE
SDRSD	SAN DIEGO REGIONAL STANDARD DRAWINGS
TYP	TYPICAL

DESIGN BASIS

CODE: 2022 CALFORNIA BUILDING CODE (CBC) CCR, TITLE 24, PART 2

GRAVITY LOADS:

UNIT WEIGHT OF SOIL = 130 PCF
UNIT WEIGHT OF SATURATED SOIL = 138 PCF

LATERAL EARTH PRESSURE:

EQUIVALENT FLUID PRESSURE FOR ACTIVE CONDITION (LEVEL) = 35 PCF
EQUIVALENT FLUID PRESSURE FOR ACTIVE CONDITION (2:1 SLOPING) = 50 PCF
EQUIVALENT FLUID PRESSURE FOR AT-REST CONDITION = ADD 7H PSF WHERE WALL HEIGHT ≤ 8 FEET
EQUIVALENT FLUID PRESSURE FOR AT-REST CONDITION = ADD 13H PSF WHERE WALL HEIGHT > 8 FEET
PASSIVE EARTH PRESSURE = 350 PCF
COEFFICIENT OF FRICTION = 0.35
HYDROSTATIC FLUID PRESSURE = 62.4H PSF
UNDRAINED EQUIVALENT FLUID PRESSURE FOR ACTIVE CONDITION (LEVEL) = 18 PCF
UNDRAINED EQUIVALENT FLUID PRESSURE FOR ACTIVE CONDITION (2:1) = 27 PCF

UPLIFT PRESSURE:

BUOYANT PRESSURE = 62.4H PSF (H = DIFFERENCE BETWEEN RISER RIM ELEVATION AND BASE OF SLAB

WELDING NOTES:

1. ALL WELDING SHALL BE IN ACCORDANCE WITH AMERICAN WELDING SOCIETY (AWS) CODE D1.1 (LATEST EDITION).

2. SPECIAL INSPECTION AND TESTING IS REQUIRED IN ACCORDANCE WITH SECTIONS 1704 AND 1705 OF THE CBC. AND THE SPECIAL INSPECTION TABLES ON THESE DOCUMENTS.

3. ALL WELDING SHALL BE DONE BY CERTIFIED WELDERS.

4. ALL WELDS SHALL HAVE A WELD CONTROLLED SEQUENCE AND TECHNIQUE IN ORDER TO MINIMIZE SHRINKAGE, STRESSES, AND DISTORTION.

5. ALL ELECTRODES FILLER MATERIAL SHALL BE A MINIMUM OF E70XX.

6. WELDING OF REINFORCING BARS SHALL BE IN ACCORDANCE WITH AWS D1.4. REINFORCING STEEL TO BE WELDED SHALL HAVE A CARBON EQUIVALENT (CE) OF 0.75 AND SPECIAL INSPECTION IS REQUIRED.

7. UNLESS A LARGER SIZE FILLET WELD IS INDICATED, PROVIDE MINIMUM SIZE WELD PER AISC SPECIFICATION, SECTION J2 AND TABLE J2.4.

8. WELD LENGTHS INDICATED ON THE PLANS ARE THE MINIMUM NET EFFECTIVE LENGTH REQUIRED. WHERE LENGTH OF WELD IS NOT SPECIFIED, IT SHALL BE FULL LENGTH OF THE JOINT.

REINFORCING STEEL:

1. ALL REINFORCING SHALL BE PLACED IN CONFORMANCE WITH THE CBC AND THE "MANUAL OF STANDARD PRACTICE" BY CRSI OR AS MODIFIED BY THE CONSTRUCTION DOCUMENTS.

2. SPECIAL INSPECTION AND TESTING IS REQUIRED IN ACCORDANCE WITH SECTIONS 1704 AND 1705 OF THE CBC. AND THE SPECIAL INSPECTION TABLES ON THESE DOCUMENTS.

3. REINFORCING BARS SHALL CONFORM TO ASTM A615 DEFORMED GRADE 60. REINFORCING BARS THAT ARE TO BE WELDED SHALL CONFORM TO ASTM A706 DEFORMED GRADE 60.

4. DETAILS OF REINFORCEMENT SHALL COMPLY WITH ACI 318, CHAPTER 7 (LATEST EDITION).

5. WELDING OF REINFORCING BARS SHALL BE IN ACCORDANCE WITH ASTM A706 WITH LOW HYDROGEN ELECTRODES AND STRUCTURAL WELDING CODE REINFORCING STEEL SHALL CONFORM TO ANSI / AWS D1.4. MINIMUM TENSILE STRENGTH OF WELD METALS SHALL BE 90 KSI.

6. ALL REINFORCING BAR BENDS SHALL BE MADE COLD, UNLESS OTHERWISE PERMITTED BY THE BUILDING OFFICIAL.

7. DOWELS BETWEEN FOOTINGS AND WALLS SHALL BE LAPPED WITH THE SAME GRADE, SIZE, SPACING, AND NUMBER AS THE VERTICAL REINFORCEMENT.

8. REINFORCING SPLICES ARE TO BE MADE AS INDICATED ON THE DRAWINGS.

STRUCTURAL OBSERVATION

PER CBC CHAPTER 17 SECTION 1704, THE OWNER OR THE OWNER'S AUTHORIZED AGENT SHALL EMPLOY A REGISTERED DESIGN PROFESSIONAL TO PERFORM STRUCTURAL OBSERVATIONS. THE STRUCTURAL OBSERVER SHALL VISUALLY OBSERVE REPRESENTATIVE LOCATIONS OF STRUCTURAL SYSTEMS, DETAILS, AND LOAD PATHS FOR GENERAL CONFORMANCE TO THE APPROVED CONSTRUCTION DOCUMENTS. STRUCTURAL OBSERVATION DOES NOT INCLUDE OR WAIVE THE RESPONSIBILITY FOR INSPECTIONS IN SECTION 110 OR THE SPECIAL INSPECTIONS IN SECTION 1705 OR OTHER SECTIONS OF THE CODE.

PRIOR TO THE COMMENCEMENT OF OBSERVATIONS, THE STRUCTURAL OBSERVER SHALL SUBMIT TO THE BUILDING OFFICIAL A WRITTEN STATEMENT IDENTIFYING THE FREQUENCY AND EXTENT OF THE STRUCTURAL OBSERVATIONS. AT THE CONCLUSION OF THE WORK INCLUDED IN THE PERMIT, THE STRUCTURAL OBSERVER SHALL SUBMIT TO THE BUILDING OFFICIAL A WRITTEN STATEMENT THAT THE SITE VISITS HAVE BEEN MADE AND IDENTIFY ANY REPORTED DEFICIENCIES THAT, TO THE BEST OF THE STRUCTURAL OBSERVER'S KNOWLDEDGE, HAVE NOT BEEN RESOLVED.

CONCRETE:

1. CONCRETE CONSTRUCTION SHALL CONFORM TO CHAPTER 19 OF THE CALIFORNIA BUILDING CODE, ACI 318 'BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE, 2022 EDITION", EXCEPT AS MODIFIED BY THE SUPPLEMENTAL REQUIREMENTS CONTAINED ON THESE PLANS OR SHOWN ON THE DRAWINGS.

2. SPECIAL INSPECTION AND TESTING IS REQUIRED IN ACCORDANCE WITH SECTIONS 1704 AND 1705 OF THE CBC. AND THE SPECIAL INSPECTION TABLES ON THESE DOCUMENTS.

3. ALL CONCRETE SHALL HAVE A MAXIMUM UNIT WEIGHT OF 150 PCF AND HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3600 PSI AT 28 DAYS.

4. THE MAXIMUM AGGREGATE SIZE IN FOUNDATIONS SHALL BE 1 INCH. THE MAXIMUM AGGREGATE SIZE IN WALLS AND OTHER CONCRETE SHALL BE 3/4 INCH. PEA GRAVEL SHALL NOT BE USED FOR STRUCTURAL CONCRETE.

5. CEMENT SHALL CONFORM TO ASTM C150, TYPE II OR TYPE II/V, LOW ALKALI. AGGREGATES SHALL CONFORM TO ASTM C33.

6. CONCRETE MIXES SHALL BE DESIGNED BY A QUALIFIED TESTING LABORATORY. THE MIX DESIGNS SHALL CONFORM TO CBC CHAPTER 19.

7. NON-STRUCTURAL STEEL EMBEDDED IN CONCRETE SHALL BE HOT-DIPPED GALVANIZED. ALL DAMAGED AREAS SHALL BE REPAIRED PRIOR TO EMBEDMENT.

8. READY MIXED CONCRETE SHALL CONFORM TO ASTM C94.

9. PLACEMETN OF CONCRETE SHALL CONFORM TO ACI 304. CLEAN AND ROUGHEN TO 1/4 INCH AMPLITUDE FOR ALL CONCRETE SURFACES AGAINST WHICH CONCRETE IS PLACED.

10. ALL EXPOSED CONCRETE TO HAVE A SMOOTH FORM FINISH USING B-B PLYFORM, CLASS 2, EXT-APA PLYWOOD.

11. ALL REINFORCING STEEL, ANCHOR BOLTS, DOWELS, AND INSERTS SHALL BE WELL SECURED IN POSITION PRIOR TO PLACING CONCRETE.

12. IF THE CONTRACTOR REQUESTS TO MAKE ANY CONSTRUCTION JOINTS OTHER THAN THOSE SHOWN ON THESE DRAWINGS, THEY SHALL SUBMIT DETAILS OF CHANGES TO THE ENGINEER OF RECORD FOR REVIEW BEFORE STARTING WORK.

13. PROVIDE 3/4 INCH CHAMGER ON ALL EXPOSED CONCRETE CORNERS, UNLESS OTHERWISE SHOWN.

14. ALL REINFORCING BARS SHALL BE PROVIDED WITH THE FOLLOWING CONCRETE MINIMUM COVER:
FOOTINGS CAST AGAINST EARTH = 3"
FORMED CONCRETE EXPOSED TO EARTH, WEATHER OR LIQUID = 2"

FOUNDATION:

1. KEEP ONE COPY OF THE SOILS REPORT WITH THE APPROVED SET OF CONSTRUCTION DOCUMENTS. THE SOILS REPORT SHALL BE CONSIDERED A PART OF THE CONSTRUCTION DOCUMENTS. PRIOR TO POURING CONCRETE AND PRIOR TO THE CONTRACTOR REQUESTING A BUILDING DEPARTMENT FOUNDATION INSPECTION, THE GEOTECHNICAL ENGINEER SHALL INSPECT AND APPROVE THE FOOTING EXCAVATIONS. THE GEOTECHNICAL ENGINEER SHALL POST NOTICE ON THE JOB SITE AND ADVISE THE BUILDING OFFICIAL IN WRITING THAT THE WORK INSPECTED MEETS THE CONDITIONS OF THE REPORT. THE GEOTECHNICAL ENGINEER'S WRITTEN CERTIFICATION SHALL VERIFY THE FOLLOWING:

A. THE FOUNDATION PAD WAS PREPARED IN ACCORDANCE WITH THE SOILS REPORT
B. THE FOUNDATION EXCAVATIONS COMPLY WITH THE INTENT OF THE SOILS REPORT.

2. THE SOILS REPORT IS PREPARED BY GEOCON, INC. AND TITLED "GEOTECHNICAL INVESTIGATION, OCEAN BREEZE RANCH, BONSALL, CALIFORNIA" DATED MAY 24, 2024.

3. SOIL REMOVAL, BACKFILLING, AND RECOMPACTION SHALL BE PERFORMED PER SOILS REPORT RECOMMENDATIONS UNDER THE GEOTECHNICAL ENGINEER'S SUPERVISION AND INSPECTION.

4. SPECIAL INSPECTION AND TESTING IS REQUIRED IN ACCORDANCE WITH SECTIONS 1704 AND 1705 OF THE CBC. AND THE SPECIAL INSPECTION TABLES ON THESE DOCUMENTS.

5. THE FOOTING SYSTEM IS A SHALLOW FOUNDATION SYSTEM. THE DESIGN ALLOWABLE SOIL BEARING PRESSURE IS 2000 PSF

DECLARATION OF RESPONSIBLE CHARGE

I HEREBY DECLARE THAT I AM THE ENGINEER OF WORK FOR THIS PROJECT, THAT I HAVE EXERCISED RESPONSIBLE CHARGE OVER THE DESIGN OF THE PROJECT AS DEFINED IN SECTION 6703 OF THE CALIFORNIA BUSINESS AND PROFESSIONS CODE, AND THAT THE DESIGN IS CONSISTENT WITH CURRENT STANDARDS.

I UNDERSTAND THAT THE CHECK OF PROJECT DRAWINGS AND SPECIFICATIONS BY THE COUNTY OF SAN DIEGO, OR ITS AGENTS IS CONFINED TO A REVIEW ONLY AND DOES NOT RELIEVE ME, AS ENGINEER OF WORK, OF MY RESPONSIBILITIES FOR THE PROJECT DESIGN.

BY: _____ DATE: _____

RCE NO. 68444 EXPIRES: 9/30/2025

REGISTERED PROFESSIONAL ENGINEER
KAREN L DOLL
No. 68444
Exp. 09/30/2025
CIVIL
STATE OF CALIFORNIA

SPECS CREATIVE STRUCTURAL SOLUTIONS

1106 2ND ST., #636 ENCINITAS, CA 92024
PH: (858) 790-1445

KAREN L DOLL, R.C.E. 68444 | DATE REGISTRATION EXPIRES 9-30-25 | DESIGNED BY: KLD

RECORD PLAN

BY: _____ DATE: _____
NAME
R.C.E. _____
EXPIRES: _____

COUNTY APPROVED CHANGES

NO.	DESCRIPTION:	APPROVED BY:	DATE:

BENCH MARK

DESCRIPTION: FOUND 2" BRASS DISK MARKED "CALIF." "DEPT OF TRANSPORTATION" "SDGPS 03" "1991" "NE 15/76" & "1980"
LOCATION: BRASS DISK IN CONCRETE SIDEWALK ON NE CORNER BRIDGE ABUTMENT, 2.5' FROM FACE OF CURB & 2.5' FROM EXPANSION JOINT.
BRIDGE IS FOR HWY 76 AND SPANS INTERSTATE I-15.
RECORD FROM: ROS 21563
ELEVATION: 308.26
DATUM: NAVD 88

PRIVATE CONTRACT

SHEET 211 | COUNTY OF SAN DIEGO DEPARTMENT OF PUBLIC WORKS | 243 SHEETS

BMP DETAILS FOR:
OCEAN BREEZE RANCH-TM 5615

CALIFORNIA COORDINATE INDEX 410-1701,410-1707,410-1713 414-1703,414-1707,414-1719 418-1713,418-1719

APPROVED FOR: WILLIAM P. MORGAN, COUNTY ENGINEER
BY: _____ DATE: _____

ENGINEER OF WORK
DATE: _____
KAREN L. DOLL, RCE NO. 68444, EXP. 09-30-25

PDS2020-LDGRMJ-30295
GRADING PERMIT NO:

REQUIRED SPECIAL INSPECTIONS AND TESTS OF STEEL (CBC TABLE 1705A.2.1)

TYPE	CONTINUOUS SPECIAL INSPECTION	PERIODIC SPECIAL INSPECTION	REFERENCED STANDARD	CBC REFERENCE
1. MATERIAL IDENITIFCATION AND TESTING OF STRUCTURAL STEEL AND COLD-FORMED STEEK DECK:				
a. FOR STRUCTURAL STEEL, IDENTIFICATION MARKINGS TO CONFORM TO AISC 360.		X	AISC 360: A3.1	2202A.1, 2202.1
b. FOR OTHER STEEL, IDENTIFICATION MARKINGS TO CONFORM TO ASTM STANDARDS SPECIFIED IN THE APPROVED CONSTRUCTION DOCUMENTS.		X	APPLICABLE ASTM MATERIAL STANDARDS	2202A.1, 2202.1
c. MANUFACTURER'S CERTIFIED TEST REPORTS.		X	AISC 360: A3.1	
2. MATERIAL IDENTIFICATION OF WELDING CONSUMABLES AND TESTING OF WELDING ELEMENTS:				
a. IDENTIFICATION MARKINGS TO CONFORM TO AWS SPECIFICATION IN THE APPROVED CONSTRUCTION DOCUMENTS.		X	AISC 360: A3.5 & N3.2 AND APPLICABLE AWS A5 DOCUMENTS	
b. MANUFACTURER'S CERTIFICATE OF COMPLIANCE REQUIRED		X	AISC 360: N3.2	
c. NONDESTRUCTIVE TESTING OF WELDED JOINTS			AISC 360: N5.5	
3. INSPECTION OF WELDING				
a. STRUCTURAL STEEL AND COLD-FORMED STEEL DECK				
1. COMPLETE AND PARTIAL JOINT PENETRATION GROOVE WELDS	X		AISC 360: J2, M2.3, & M4.5, AWS D1.1 AWS D1.8	1705A.2.1, 1705A.2.5
2. MULTIPASS FILLET WELDS	X			
3. SINGLE-PASS FILLET WELDS > 5/16"	X			
4. PLUG AND SLOT WELDS	X			
5. SINGLE-PASS FILLET WELDS ≤ 5/16"		X		
6. FLOOR AND ROOF DECK WELDS		X	AWS D1.3, SDI QA/QC	1705A.2.1, 1705A.2.2, 1705A.2.5
7. END-WELDED STUDS		X	AWS D1.1	1705A.2.5, 2213A.2, 2212.6.2
8. WELDED SHEET STEEL FOR COLD-FORMING FRAMING MEMBERS		X	AWS D1.3	1705A.2.5, 1705A.2.4.1

ADDITIONAL NOTES ON STEEL SPECIAL INSPECTION

1. SPECIAL INSPECTIONS AND NON-DESTRUCTIVE TESTING OF STRUCTURAL STEEL ELEMENTS IN BUILDINGS, STRUCTURES, AND PORTIONS THEREOF SHALL ALSO BE IN ACCORDANCE WITH THE QUALITY ASSURANCE INSPECTION REQUIREMENTS OF AISC 360.

REQUIRED SPECIAL INSPECTIONS AND TESTS OF CONCRETE CONSTRUCTION (CBC TABLE 1705.3)

TYPE	CONTINUOUS SPECIAL INSPECTION	PERIODIC SPECIAL INSPECTION	REFERENCED STANDARD	CBC REFERENCE
1. INSPECT REINFORCEMENT AND VERIFY PLACEMENT		X	ACI 318 CH 20, 25.2, 25.3, 26.6.1-26.6.3	
2.REINFORCING BAR WELDING:				
a. VERIFY WELDABILITY OF REINFORCING BARS OTHER THAN ASTM A706;		X	AWS D1.4 ACI 318: 26.6.4	
b. INSPECT SINGLE-PASS FILLET WELDS, MAXIMUM 5/16"; AND		X		
c. INSPECT ALL OTHER WELDS	X			
3. INSPECT ANCHORS CAST IN CONCRETE		X	ACI 31817.8.2	
4. VERIFY USE OF REQUIRED MIX DESIGN		X	ACI 318 CH 19, 26.4.3, 26.4.4	1904.1 1904.2
5. PRIOR TO CONCRETE PLACEMENT, FABRICATE SPECIMENS FOR STRENGTH TESTS, PERFORM SLUMP AND AIR CONTENT TESTS, AND DETERMINE THE TEMPERATURE OF THE CONCRETE.	X		ASTM C31 ASTM C172 ACI 318: 26.5, 26.12	
6. INSPECT CONCRETE PLACEMENT FOR PROPER APPLICATION TECHNIQUES.	X		ACI 318: 26.5	
7. VERIFY MAINTENANCE OF SPECIFIED CURING TEMPERATURE AND TECHNIQUES.		X	ACI 318: 26.5.3-26.5.5	
8. INSPECT FORMWORK FOR SHAPE, LOCATION, AND DIMENSIONS OF THE CONCRETE MEMBER BEING FORMED		X	ACI 318: 26.11.1.2(b)	

REQUIRED SPECIAL INSPECTIONS AND TESTS OF SOILS (CBC TABLE 1705.6)

TYPE	CONTINUOUS SPECIAL INSPECTION	PERIODIC SPECIAL INSPECTION
1. VERIFY MATERIALS BELOW SHALLOW FOUNDATIONS ARE ADEQUATE TO ACHIEVE THE DESIGN BEARING CAPACITY		X
2. VERIFY EXCAVATIONS ARE EXTENDED TO PROPER DEPTH AND HAVE REACHED PROPER MATERIAL		X
3. PERFORM CLASSIFICATION AND TESTING OF COMPACTED FILL MATERIALS		X
4. DURING FILL PLACEMENT, VERIFY USE OF PROPER MATERIALS AND PROCEDURES IN ACCORDANCE WITH THE PROVISIONS OF THE APPROVED GEOTECHNICAL REPORT. VERIFY DENSITIES AND LIFT THICKNESSES DURING PLACEMENT AND COMPACTION OF COMPACTED FILL.	X	
5. PRIOR TO PLACEMENT OF COMPACTED FILL, INSPECT SUBGRADE AND VERIFY THAT SITE HAS BEEN PREPARED PROPERLY.		X

STRUCTURAL STEEL:

1. STEEL FABRICATION, ERECTION, AND CONSTRUCTION SHALL CONFORM TO CHAPTER 22 OF THE CBC, AISC 360 "SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS" AND AISC 303 "CODE OF STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIDGES" EXCEPT AS OTHERWISE NOTED..

2. MATERIALS

ROLLED SHAPES (WIDE FLANGES, CHANNELS, ANGLES, ETC)	ASTM A36
PLATES (SHEAR PLATE, ANCHOR PLATE, ETC)	ASTM A36
PIPES	ASTM A53 GRADE B
MACHINE BOLTS	A307
ANCHOR BOLTS	ASTM F1554 GRADE 36
WELDED SHEAR CONNECTORS	ASTM A108 GRADE 1015 THROUGH 1020
NUTS FOR BOLTS AND MACHINE BOLTS	ASTM A563
HARDENED WASHERS	ASTM F436
STEEL GRATING	ASTM A1011

3. HOT DIP GALVANIZE PER ASTM A123, A153, A385 AFTER FABRICATION OF ALL STRUCTURAL STEEL AND CONNECTORS EXPOSED TO WEATHER OR EMBEDDED IN CONCRETE. REPAIR PER ASTM A780.

4. CONNECTED MEMBERS SHALL ONLY BEAR ON UNTHREADED PORTIONS OF BOLTS.

5. BURNING OF HOLES IN STEEL MEMBERS IS NOT PERMITTED.

6. THE STRUCTURAL STEEL FABRICATOR SHALL SUBMIT SHOP DRAWINGS TO THE ENGINEER FOR REVIEW PRIOR TO FABRICATION.

7. BOLT HOLES SHALL BE 1/16" LARGER IN DIAMETER THAN NOMINAL SIZE OF BOLT USED, EXCEPT AS NOTED.

8. OPENINGS SHALL NOT BE PLACED IN STEEL MEMBERS UNLESS SPECIFICALLY DETAILED.

REGISTERED PROFESSIONAL ENGINEER
KAREN L DOLL
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KAREN L DOLL, R.C.E. 68444 | DATE REGISTRATION EXPIRES 9-30-25 | DESIGNED BY: KLD

RECORD PLAN

BY: _____ DATE: _____
NAME
R.C.E. _____
EXPIRES: _____

COUNTY APPROVED CHANGES

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BENCH MARK

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BRIDGE IS FOR HWY 76 AND SPANS INTERSTATE I-15.
RECORD FROM: ROS 21563
ELEVATION: 308.26
DATUM: NAVD 88

PRIVATE CONTRACT

SHEET 212 | COUNTY OF SAN DIEGO DEPARTMENT OF PUBLIC WORKS | 243 SHEETS

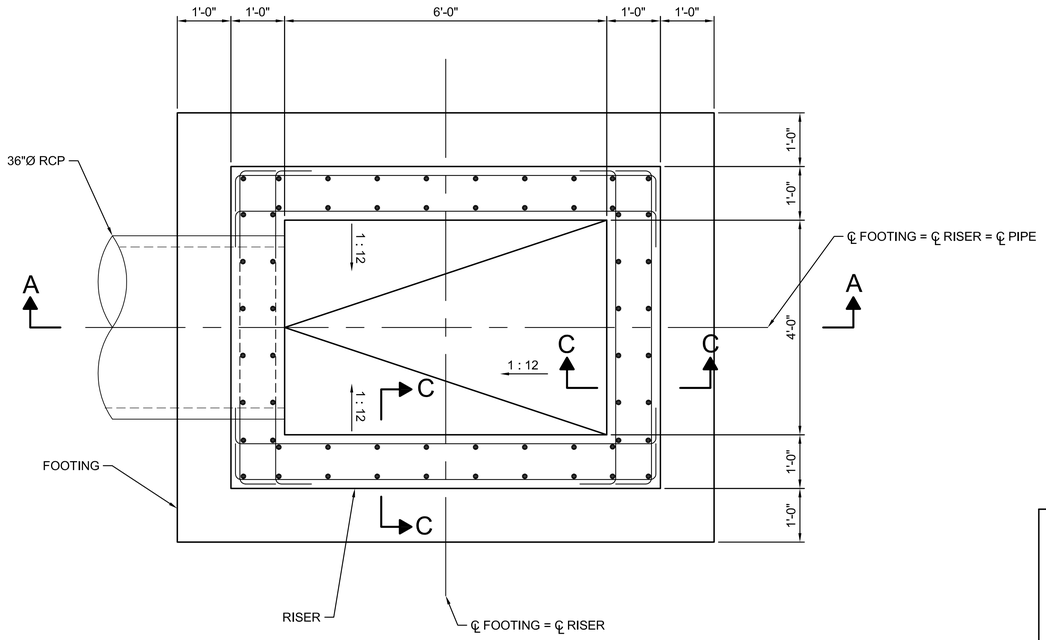
BMP DETAILS FOR:
OCEAN BREEZE RANCH-TM 5615

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APPROVED FOR: WILLIAM P. MORGAN, COUNTY ENGINEER
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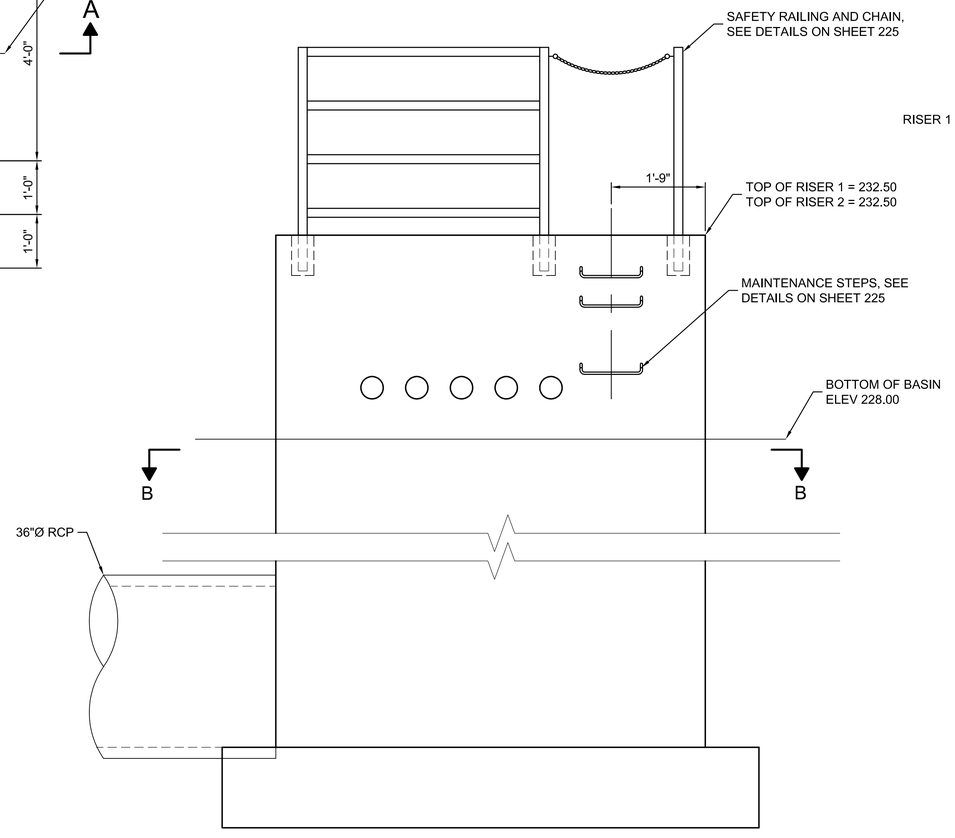
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GRADING PERMIT NO:



BMP 1A PLAN

3/4" = 1'-0"

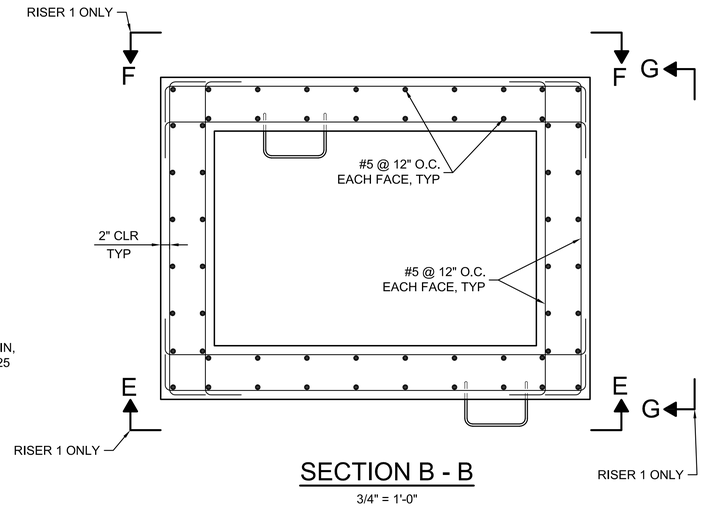
*1 RISER SHOWN, 2 RISERS TOTAL



BMP 1A ELEVATION

3/4" = 1'-0"

*1 RISER SHOWN, 2 RISERS TOTAL



SECTION B - B

3/4" = 1'-0"

NOTES:

1. SEE SOILS REPORT FOR ANY REMEDIAL GRADING REQUIREMENTS.
2. SEE STORM DRAIN PLANS FOR LOCATION OF STRUCTURES.
3. FOR SECTIONS A - A AND C - C, SEE SHEET 214
4. FOR VIEWS E - E, F - F, & G - G, SEE SHEET 215
5. RISER 2 DOES NOT REQUIRE ORIFICES
6. ALL EXPOSED STEEL AND CONNECTIONS SHALL BE HOT DIP GALVANIZED AFTER FABRICATION

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SHEET 213	COUNTY OF SAN DIEGO DEPARTMENT OF PUBLIC WORKS	243 SHEETS

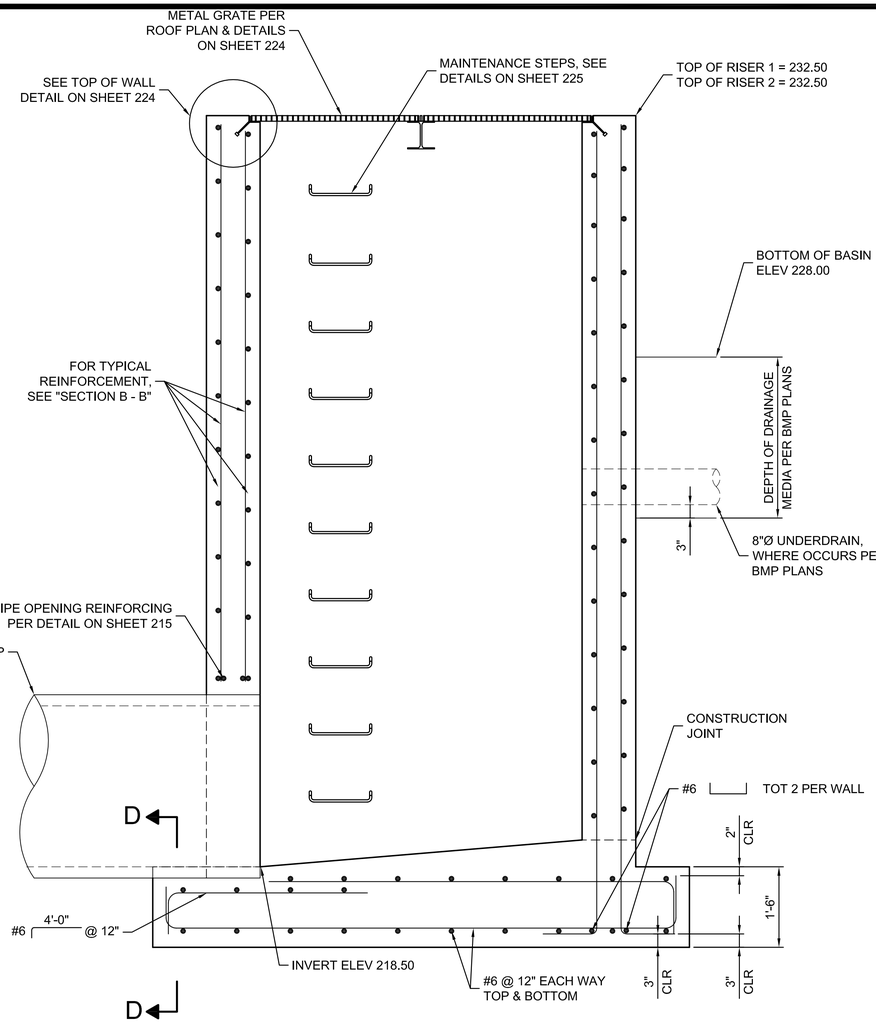
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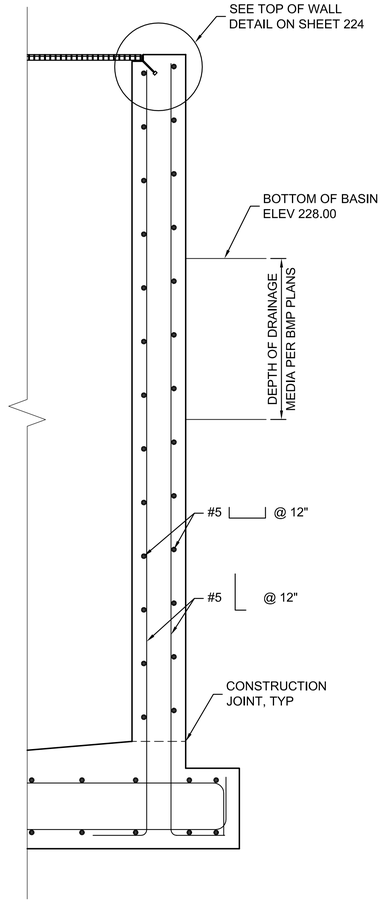
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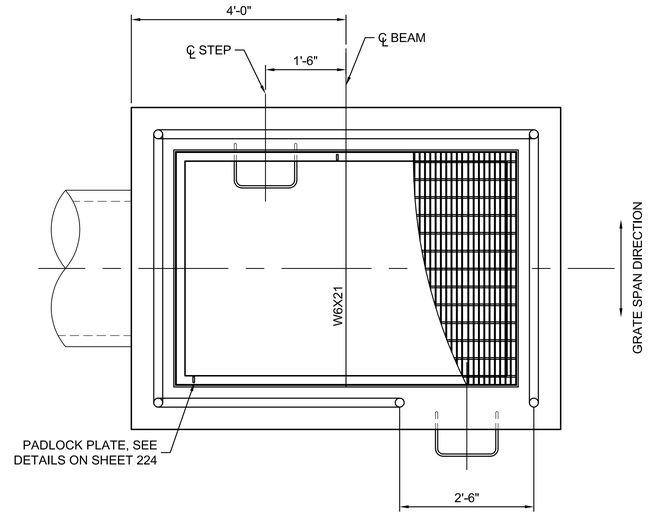
SECTION A - A

3/4" = 1'-0"
RISER 2 SHOWN, RISER 1 SIMILAR



SECTION C - C

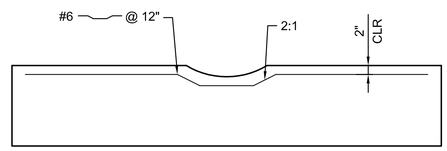
3/4" = 1'-0"



BMP 1A ROOF PLAN

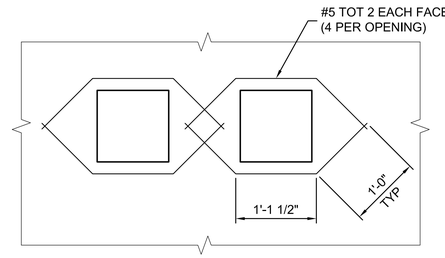
3/4" = 1'-0"

*1 RISER SHOWN, 2 RISERS TOTAL



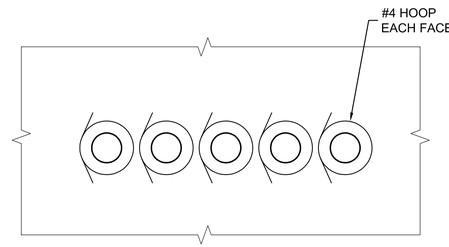
SECTION D - D

3/4" = 1'-0"



SQUARE ORIFICE OPENING REINFORCEMENT

1" = 1'-0"



ROUND ORIFICE OPENING REINFORCEMENT

1" = 1'-0"

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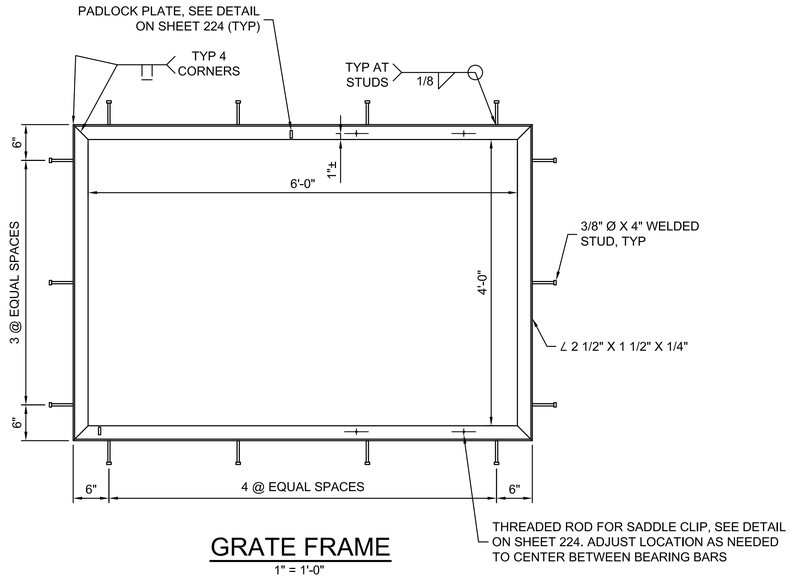
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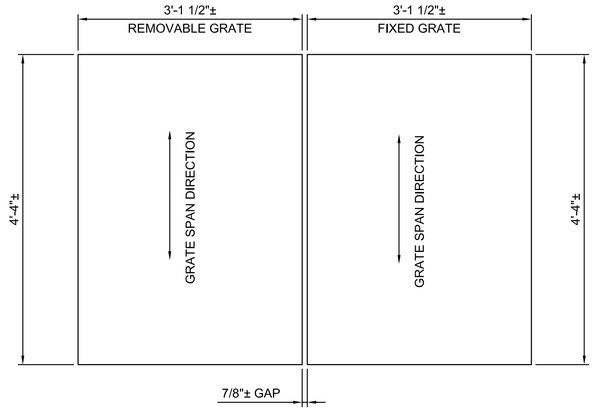
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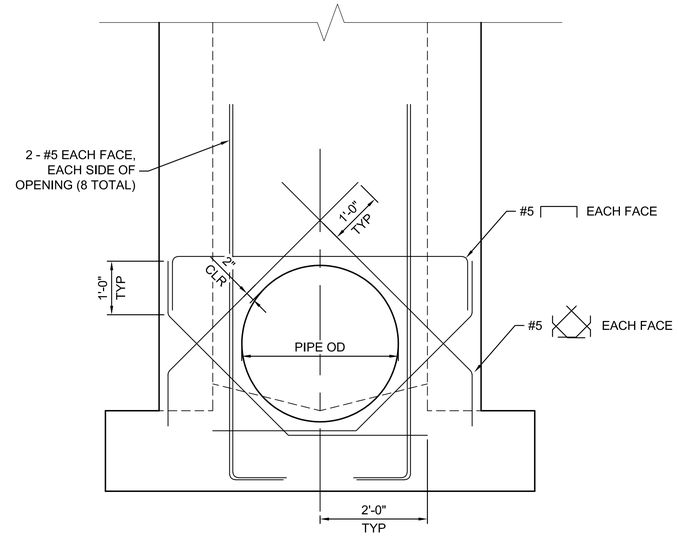
GRATE FRAME

1" = 1'-0"



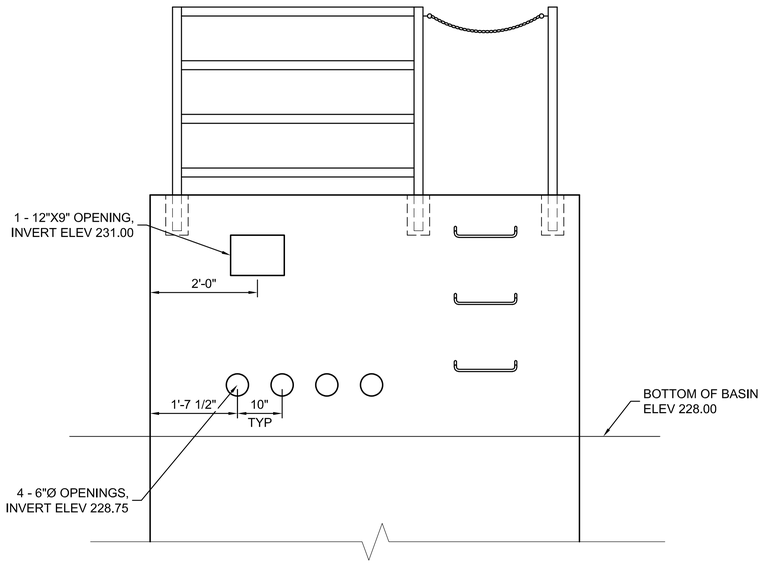
GRATE PLAN

1" = 1'-0"



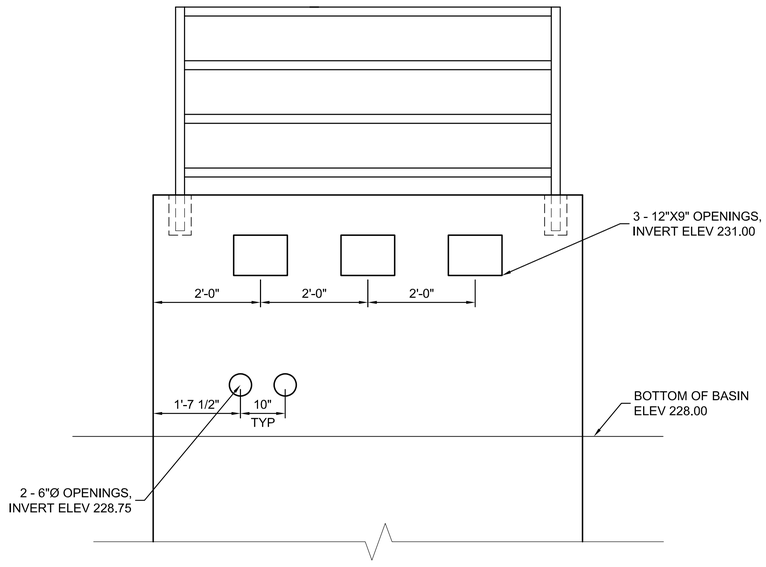
PIPE OPENING REINFORCEMENT

3/4" = 1'-0"
TYPICAL REINFORCEMENT NOT SHOWN



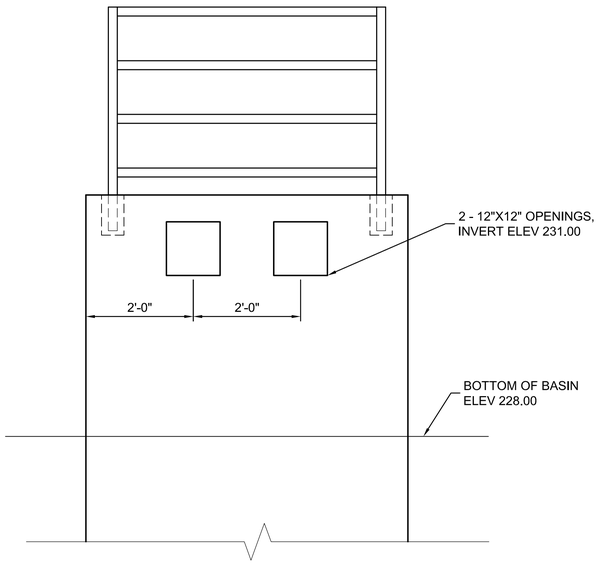
SECTION E - E

3/4" = 1'-0"



SECTION F - F

3/4" = 1'-0"



SECTION G - G

3/4" = 1'-0"

REGISTERED PROFESSIONAL ENGINEER
KAREN L DOLL
No. 68444
Exp. 09/30/2025
CIVIL
STATE OF CALIFORNIA

SPECS CREATIVE STRUCTURAL SOLUTIONS
1106 2ND ST., #636 ENCINITAS, CA 92024
PH: (858) 790-1445

KAREN L DOLL, R.C.E. 68444	DATE REGISTRATION EXPIRES 9-30-25	DESIGNED BY:
		KLD

RECORD PLAN

BY: _____ DATE: _____
NAME
R.C.E. _____
EXPIRES: _____

COUNTY APPROVED CHANGES

NO.	DESCRIPTION:	APPROVED BY:	DATE:

BENCH MARK

DESCRIPTION: FOUND 2" BRASS DISK MARKED "CALIF." "DEPT OF TRANSPORTATION" "SDGPS 03" "1991" "NE 15/76" & "1980"
LOCATION: BRASS DISK IN CONCRETE SIDEWALK ON NE CORNER BRIDGE ABUTMENT, 2.5' FROM FACE OF CURB & 2.5' FROM EXPANSION JOINT.
BRIDGE IS FOR HWY 76 AND SPANS INTERSTATE I-15.
RECORD FROM: ROS 21563
ELEVATION: 308.26
DATUM: NAVD 88

PRIVATE CONTRACT

SHEET 215	COUNTY OF SAN DIEGO DEPARTMENT OF PUBLIC WORKS	243 SHEETS

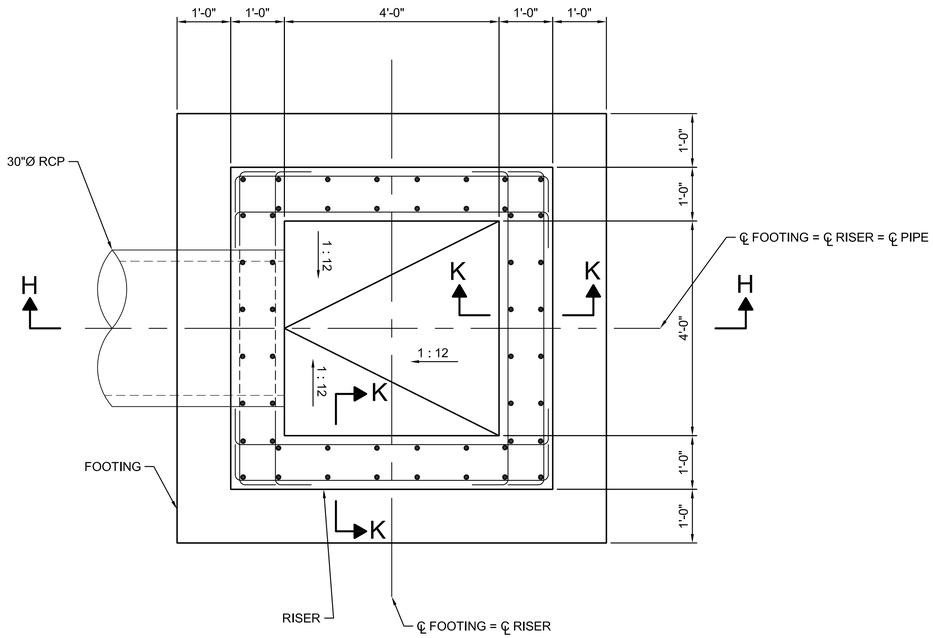
BMP DETAILS FOR:
OCEAN BREEZE RANCH-TM 5615

CALIFORNIA COORDINATE INDEX 410-1701,410-1707,410-1713 414-1703,414-1707,414-1719 418-1713,418-1719

APPROVED FOR: WILLIAM P. MORGAN, COUNTY ENGINEER
BY: _____ DATE: _____

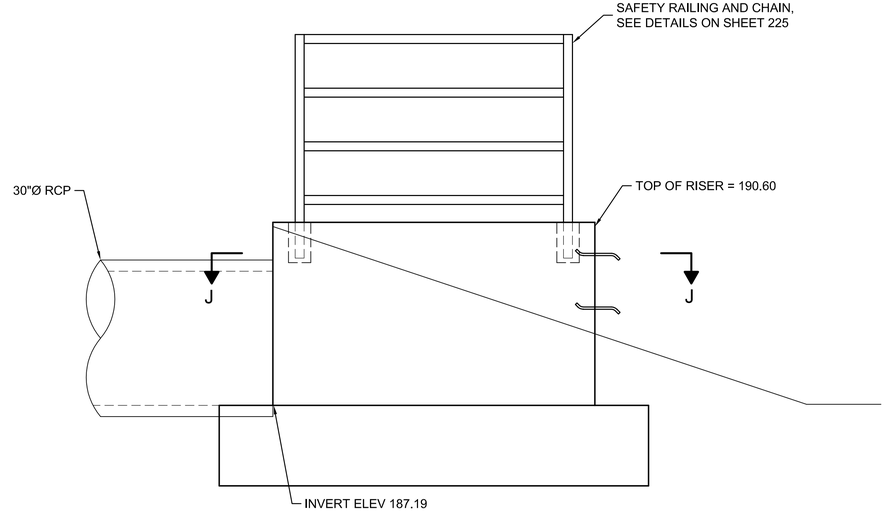
ENGINEER OF WORK
DATE: KAREN L. DOLL, RCE NO. 68444, EXP. 09-30-25

PDS2020-LDGRMJ-30295
GRADING PERMIT NO:



BMP 2A PLAN

3/4" = 1'-0"
*1 RISER SHOWN, 2 RISERS TOTAL



BMP 2A ELEVATION

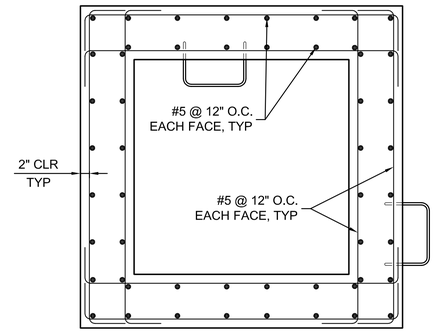
3/4" = 1'-0"
*1 RISER SHOWN, 2 RISERS TOTAL

NOTES:
1. SEE SOILS REPORT FOR ANY REMEDIAL GRADING REQUIREMENTS.

2. SEE STORM DRAIN PLANS FOR LOCATION OF STRUCTURES.

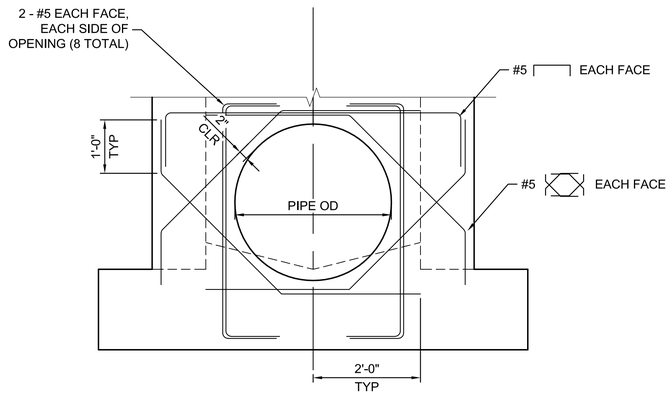
3. FOR SECTIONS H - H AND K - K, SEE SHEET 217

4. ALL EXPOSED STEEL AND CONNECTIONS SHALL BE HOT DIP GALVANIZED AFTER FABRICATION



SECTION J - J

3/4" = 1'-0"



PIPE OPENING REINFORCEMENT

3/4" = 1'-0"
TYPICAL REINFORCEMENT NOT SHOWN

KAREN L DOLL
No. 68444
Exp. 09/30/2025
CIVIL
REGISTERED PROFESSIONAL ENGINEER
STATE OF CALIFORNIA

SPECS CREATIVE STRUCTURAL SOLUTIONS
1106 2ND ST., #636 ENCINITAS, CA 92024
PH: (858) 790-1445

KAREN L DOLL, R.C.E. 68444	DATE REGISTRATION EXPIRES 9-30-25	DESIGNED BY: KLD

RECORD PLAN

BY: _____ DATE: _____
NAME
R.C.E. _____
EXPIRES: _____

COUNTY APPROVED CHANGES

NO.	DESCRIPTION:	APPROVED BY:	DATE:

BENCH MARK

DESCRIPTION: FOUND 2" BRASS DISK MARKED "CALIF." "DEPT OF TRANSPORTATION" "SDGPS 03" "1991" "NE 15/76" & "1980"
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RECORD FROM: ROS 21563
ELEVATION: 308.26
DATUM: NAVD 88

PRIVATE CONTRACT

SHEET 216	COUNTY OF SAN DIEGO DEPARTMENT OF PUBLIC WORKS	243 SHEETS

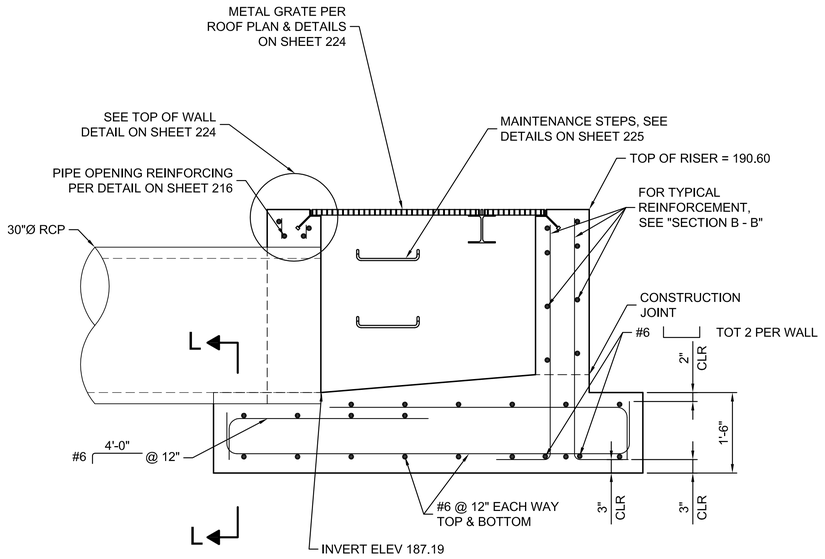
BMP DETAILS FOR:
OCEAN BREEZE RANCH-TM 5615

CALIFORNIA COORDINATE INDEX 410-1701,410-1707,410-1713 414-1703,414-1707,414-1719 418-1713,418-1719

APPROVED FOR: WILLIAM P. MORGAN, COUNTY ENGINEER
BY: _____ DATE: _____

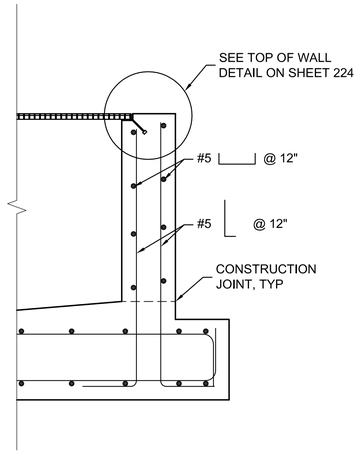
ENGINEER OF WORK
DATE:
KAREN L DOLL, RCE NO. 68444, EXP. 09-30-25

PDS2020-LDGRMJ-30295
GRADING PERMIT NO:



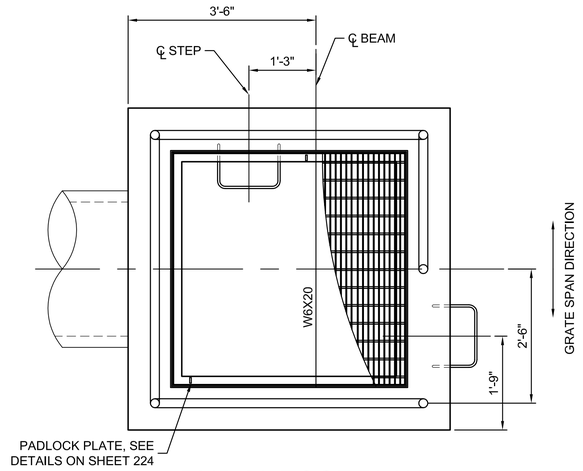
SECTION H - H

3/4" = 1'-0"
RISER 2 SHOWN, RISER 1 SIMILAR



SECTION K - K

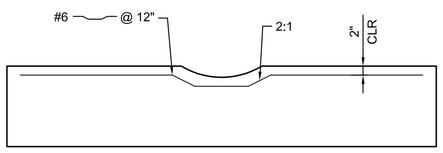
3/4" = 1'-0"



BMP 2A ROOF PLAN

3/4" = 1'-0"

*1 RISER SHOWN, 2 RISERS TOTAL



SECTION L - L

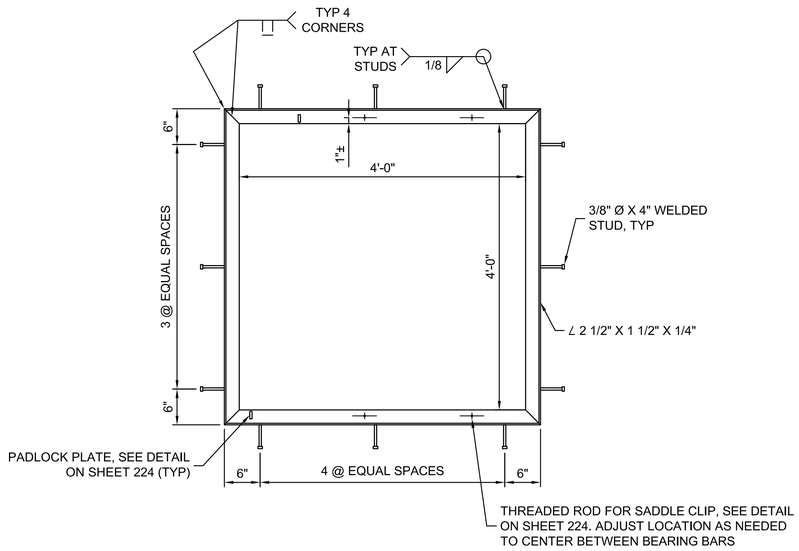
3/4" = 1'-0"

NOTES:
1. FOUR THREADED RODS WITH SADDLE CLIPS REQUIRED FOR THE FIXED GRATE. ADJUST AS NEEDED TO CENTER THREADED ROD BETWEEN BEARING BARS.

2. LOCATE PAD LOCK PLATE BETWEEN GRATE BARS, TWO PER REMOVABLE GRATE PLACED AT OPPOSITE CORNERS. SEE DETAILS ON SHEET 224.

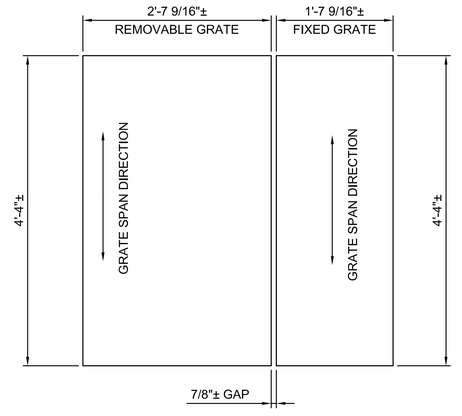
3. FOR LOCATION OF SECTIONS H - H AND K - K, SEE SHEET 216

4. ALL EXPOSED STEEL AND CONNECTIONS SHALL BE HOT DIP GALVANIZED AFTER FABRICATION



2A GRATE FRAME

1" = 1'-0"



2A GRATE PLAN

1" = 1'-0"

REGISTERED PROFESSIONAL ENGINEER
KAREN L DOLL
No. 68444
Exp. 09/30/2025
CIVIL
STATE OF CALIFORNIA

SPECS CREATIVE STRUCTURAL SOLUTIONS
1106 2ND ST., #636 ENCINITAS, CA 92024
PH: (858) 790-1445

KAREN L DOLL, R.C.E. 68444	DATE REGISTRATION EXPIRES 9-30-25	DESIGNED BY: KLD

RECORD PLAN

BY: _____ DATE: _____
NAME
R.C.E. _____
EXPIRES: _____

COUNTY APPROVED CHANGES

NO.	DESCRIPTION:	APPROVED BY:	DATE:

BENCH MARK

DESCRIPTION: FOUND 2" BRASS DISK MARKED "CALIF." "DEPT OF TRANSPORTATION" "SDGPS 03" "1991" "NE 15/76" & "1980"
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RECORD FROM: ROS 21563
ELEVATION: 308.26
DATUM: NAVD 88

PRIVATE CONTRACT

SHEET 217	COUNTY OF SAN DIEGO DEPARTMENT OF PUBLIC WORKS	243 SHEETS

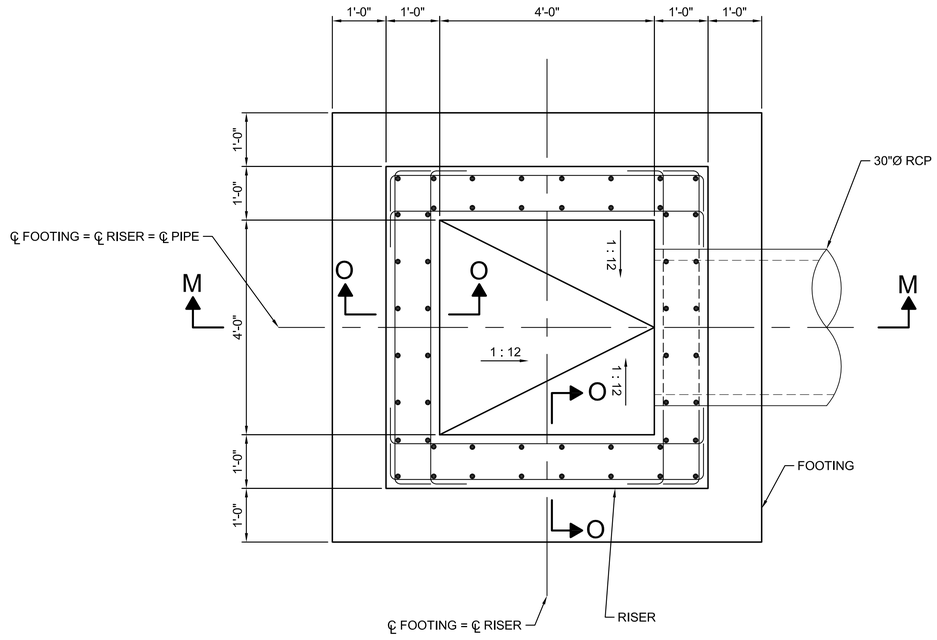
BMP DETAILS FOR:
OCEAN BREEZE RANCH-TM 5615

CALIFORNIA COORDINATE INDEX 410-1701,410-1707,410-1713 414-1703,414-1707,414-1719 418-1713,418-1719

APPROVED FOR: WILLIAM P. MORGAN, COUNTY ENGINEER
BY: _____ DATE: _____

ENGINEER OF WORK
DATE:
KAREN L. DOLL, RCE NO. 68444, EXP. 09-30-25

PDS2020-LDGRMJ-30295
GRADING PERMIT NO:



BMP 2B PLAN

3/4" = 1'-0"
*1 RISER SHOWN, 2 RISERS TOTAL

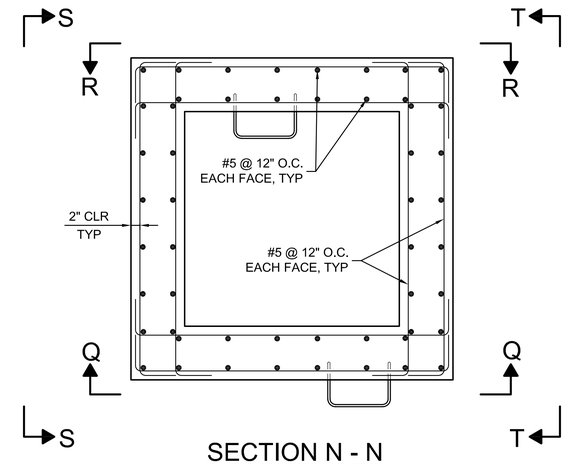
NOTES:
1. SEE SOILS REPORT FOR ANY REMEDIAL GRADING REQUIREMENTS.

2. SEE STORM DRAIN PLANS FOR LOCATION OF STRUCTURES.

3. FOR SECTIONS M - M AND O - O, SEE SHEET 219

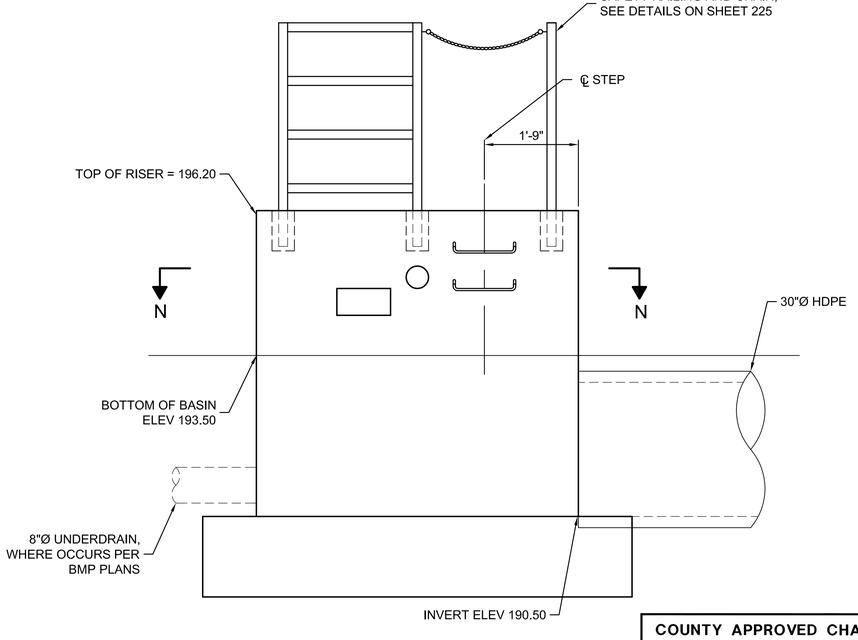
4. FOR VIEWS Q - Q, R - R, S - S, & T - T, SEE SHEET 220

5. ALL EXPOSED STEEL AND CONNECTIONS SHALL BE HOT DIP GALVANIZED AFTER FABRICATION



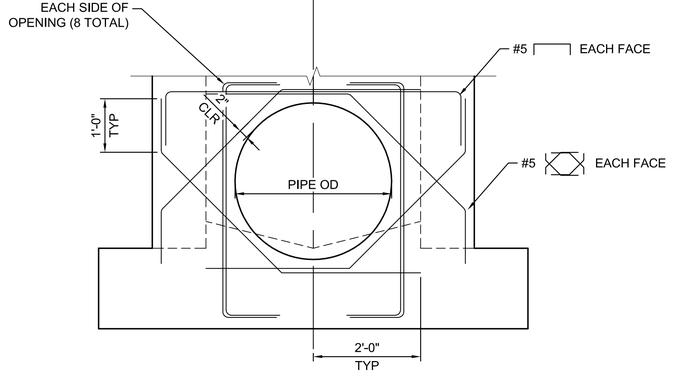
SECTION N - N

3/4" = 1'-0"



BMP 2B ELEVATION

3/4" = 1'-0"
*1 RISER SHOWN, 2 RISERS TOTAL



PIPE OPENING REINFORCEMENT

3/4" = 1'-0"
TYPICAL REINFORCEMENT NOT SHOWN

REGISTERED PROFESSIONAL ENGINEER
KAREN L DOLL
No. 68444
Exp. 09/30/2025
CIVIL
STATE OF CALIFORNIA

SPECS CREATIVE STRUCTURAL SOLUTIONS

1106 2ND ST., #636 ENCINITAS, CA 92024
PH: (858) 790-1445

KAREN L DOLL, R.C.E. 68444	DATE REGISTRATION EXPIRES 9-30-25	DESIGNED BY: KLD

RECORD PLAN

BY: _____ DATE: _____
NAME
R.C.E. _____
EXPIRES: _____

COUNTY APPROVED CHANGES

NO.	DESCRIPTION:	APPROVED BY:	DATE:

BENCH MARK

DESCRIPTION: FOUND 2" BRASS DISK MARKED "CALIF." "DEPT OF TRANSPORTATION" "SDGPS 03" "1991" "NE 15/76" & "1980"
LOCATION: BRASS DISK IN CONCRETE SIDEWALK ON NE CORNER BRIDGE ABUTMENT, 2.5' FROM FACE OF CURB & 2.5' FROM EXPANSION JOINT.
BRIDGE IS FOR HWY 76 AND SPANS INTERSTATE I-15.
RECORD FROM: ROS 21563
ELEVATION: 308.26
DATUM: NAVD 88

PRIVATE CONTRACT

SHEET 218	COUNTY OF SAN DIEGO DEPARTMENT OF PUBLIC WORKS	243 SHEETS

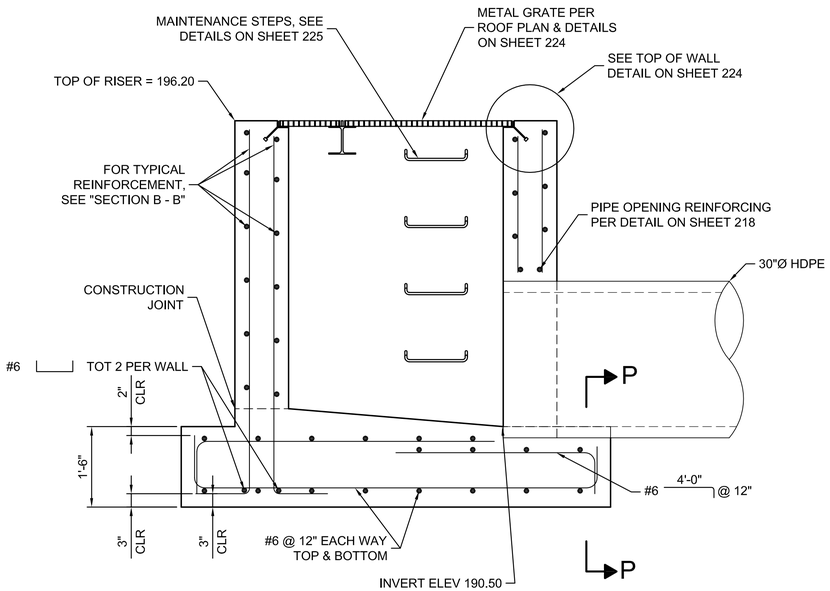
BMP DETAILS FOR:
OCEAN BREEZE RANCH-TM 5615

CALIFORNIA COORDINATE INDEX 410-1701,410-1707,410-1713 414-1703,414-1707,414-1719 418-1713,418-1719

APPROVED FOR: WILLIAM P. MORGAN, COUNTY ENGINEER
BY: _____ DATE: _____

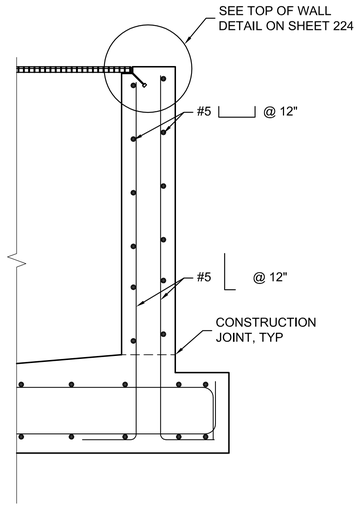
ENGINEER OF WORK _____ DATE:
KAREN L DOLL, RCE NO. 68444, EXP. 09-30-25

PDS2020-LDGRMJ-30295
GRADING PERMIT NO:



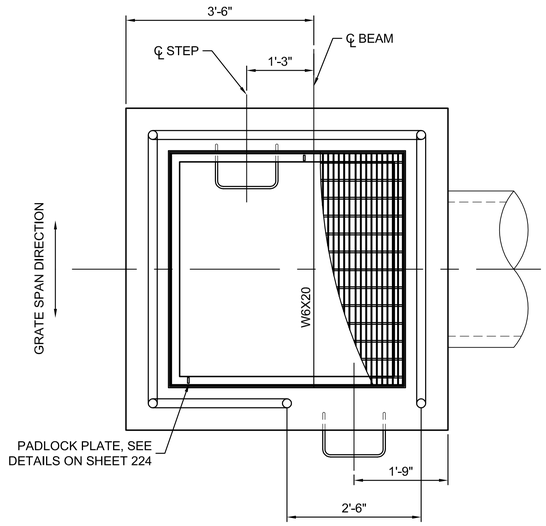
SECTION M - M

3/4" = 1'-0"
RISER 2 SHOWN, RISER 1 SIMILAR



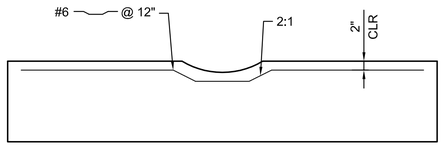
SECTION O - O

3/4" = 1'-0"



BMP 2B ROOF PLAN

3/4" = 1'-0"
*1 RISER SHOWN, 2 RISERS TOTAL



SECTION P - P

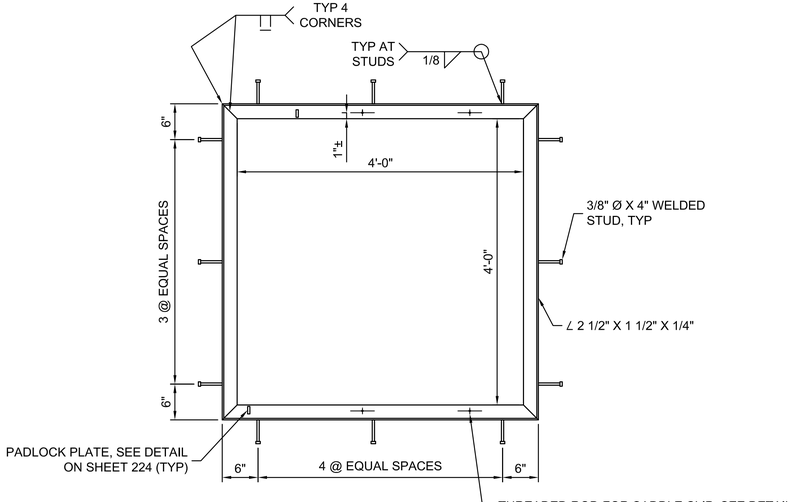
3/4" = 1'-0"

NOTES:
1. FOUR THREADED RODS WITH SADDLE CLIPS REQUIRED FOR THE FIXED GRATE. ADJUST AS NEEDED TO CENTER THREADED ROD BETWEEN BEARING BARS.

2. LOCATE PAD LOCK PLATE BETWEEN GRATE BARS, TWO PER REMOVABLE GRATE PLACED AT OPPOSITE CORNERS. SEE DETAILS ON SHEET 224.

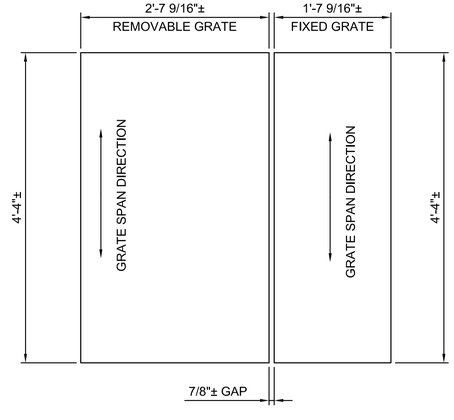
3. FOR LOCATION OF SECTIONS M - M AND O - O, SEE SHEET 218

4. ALL EXPOSED STEEL AND CONNECTIONS SHALL BE HOT DIP GALVANIZED AFTER FABRICATION



2B GRATE FRAME

1" = 1'-0"



2B GRATE PLAN

1" = 1'-0"

KAREN L DOLL
No. 68444
Exp. 09/30/2025
CIVIL
REGISTERED PROFESSIONAL ENGINEER
STATE OF CALIFORNIA

SPECS CREATIVE STRUCTURAL SOLUTIONS
1106 2ND ST., #636 ENCINITAS, CA 92024
PH: (858) 790-1445

KAREN L DOLL, R.C.E. 68444	DATE REGISTRATION EXPIRES 9-30-25	DESIGNED BY: KLD

COUNTY APPROVED CHANGES

NO.	DESCRIPTION:	APPROVED BY:	DATE:

RECORD PLAN

BY: _____ DATE: _____
NAME
R.C.E. _____
EXPIRES: _____

BENCH MARK

DESCRIPTION: FOUND 2" BRASS DISK MARKED "CALIF." "DEPT OF TRANSPORTATION" "SDGPS 03" "1991" "NE 15/76" & "1980"
LOCATION: BRASS DISK IN CONCRETE SIDEWALK ON NE CORNER BRIDGE ABUTMENT, 2.5' FROM FACE OF CURB & 2.5' FROM EXPANSION JOINT.
BRIDGE IS FOR HWY 76 AND SPANS INTERSTATE I-15.
RECORD FROM: ROS 21563
ELEVATION: 308.26
DATUM: NAVD 88

PRIVATE CONTRACT

SHEET 219	COUNTY OF SAN DIEGO DEPARTMENT OF PUBLIC WORKS	243 SHEETS

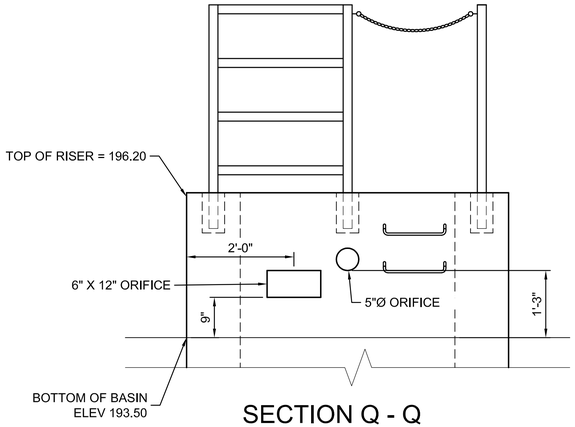
BMP DETAILS FOR:
OCEAN BREEZE RANCH-TM 5615

CALIFORNIA COORDINATE INDEX 410-1701,410-1707,410-1713 414-1703,414-1707,414-1719 418-1713,418-1719

APPROVED FOR: WILLIAM P. MORGAN, COUNTY ENGINEER
BY: _____ DATE: _____

ENGINEER OF WORK _____ DATE: KAREN L DOLL, RCE NO. 68444, EXP. 09-30-25

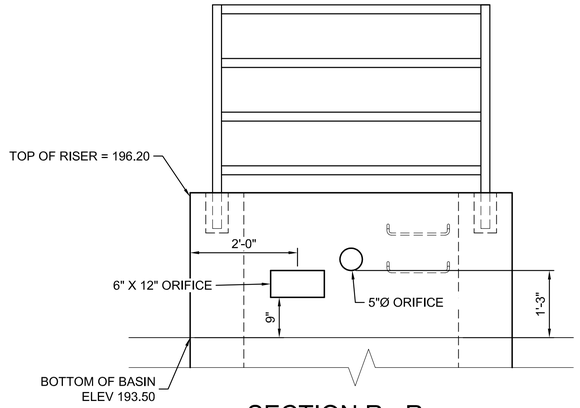
PDS2020-LDGRMJ-30295
GRADING PERMIT NO:



SECTION Q - Q

3/4" = 1'-0"

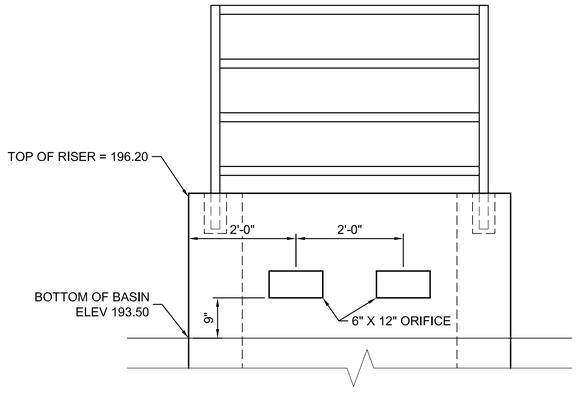
* RECTANGULAR ORIFICES ARE ON BOTH RISERS, ROUND ORIFICES ON 1 RISER



SECTION R - R

3/4" = 1'-0"

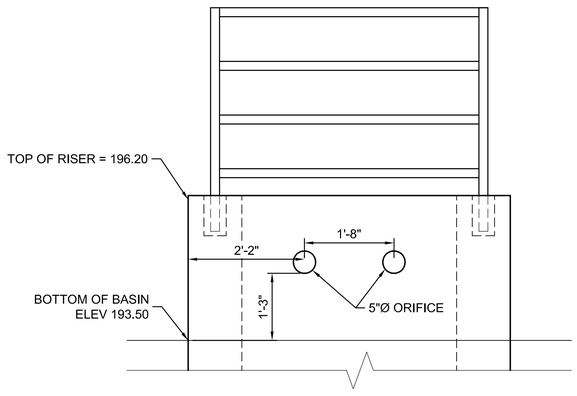
* RECTANGULAR ORIFICES ARE ON BOTH RISERS, ROUND ORIFICES ON 1 RISER



SECTION S - S

3/4" = 1'-0"

* RECTANGULAR ORIFICES ARE ON BOTH RISERS, ROUND ORIFICES ON 1 RISER



SECTION T - T

3/4" = 1'-0"

* RECTANGULAR ORIFICES ARE ON BOTH RISERS, ROUND ORIFICES ON 1 RISER

REGISTERED PROFESSIONAL ENGINEER
KAREN L DOLL
No. 68444
Exp. 09/30/2025
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KAREN L DOLL, R.C.E. 68444	DATE REGISTRATION EXPIRES 9-30-25	DESIGNED BY:
		KLD

RECORD PLAN

BY: _____ DATE: _____
NAME
R.C.E. _____
EXPIRES: _____

COUNTY APPROVED CHANGES

NO.	DESCRIPTION:	APPROVED BY:	DATE:

BENCH MARK

DESCRIPTION: FOUND 2" BRASS DISK MARKED "CALIF." "DEPT OF TRANSPORTATION" "SDGPS 03" "1991" "NE 15/76" & "1980"
LOCATION: BRASS DISK IN CONCRETE SIDEWALK ON NE CORNER BRIDGE ABUTMENT, 2.5' FROM FACE OF CURB & 2.5' FROM EXPANSION JOINT.
BRIDGE IS FOR HWY 76 AND SPANS INTERSTATE I-15.
RECORD FROM: ROS 21563
ELEVATION: 308.26
DATUM: NAVD 88

PRIVATE CONTRACT

SHEET 220	COUNTY OF SAN DIEGO DEPARTMENT OF PUBLIC WORKS	243 SHEETS

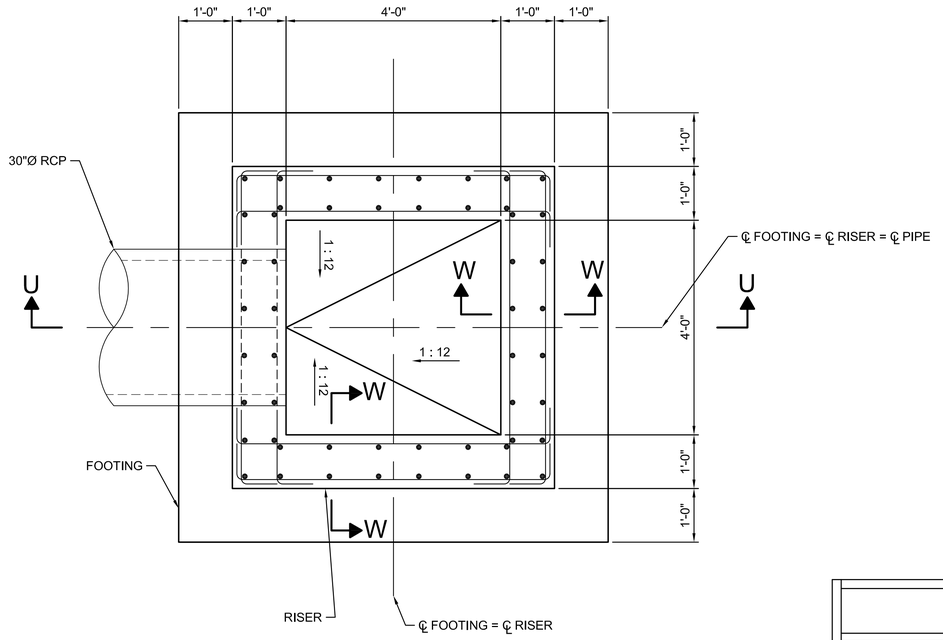
BMP DETAILS FOR:
OCEAN BREEZE RANCH-TM 5615

CALIFORNIA COORDINATE INDEX 410-1701,410-1707,410-1713 414-1703,414-1707,414-1719 418-1713,418-1719

APPROVED FOR: WILLIAM P. MORGAN, COUNTY ENGINEER
BY: _____ DATE: _____

ENGINEER OF WORK
DATE: _____
KAREN L. DOLL, RCE NO. 68444, EXP. 09-30-25

PDS2020-LDGRMJ-30295
GRADING PERMIT NO:



BMP 3D PLAN

3/4" = 1'-0"
*1 RISER SHOWN, 2 RISERS TOTAL

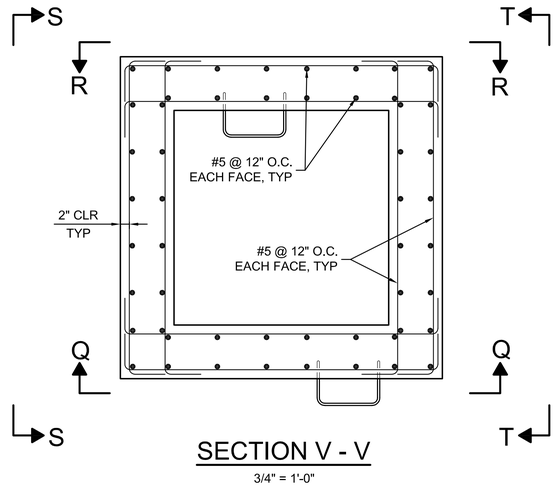
NOTES:
1. SEE SOILS REPORT FOR ANY REMEDIAL GRADING REQUIREMENTS.

2. SEE STORM DRAIN PLANS FOR LOCATION OF STRUCTURES.

3. FOR SECTIONS U - U AND W - W, SEE SHEET 222

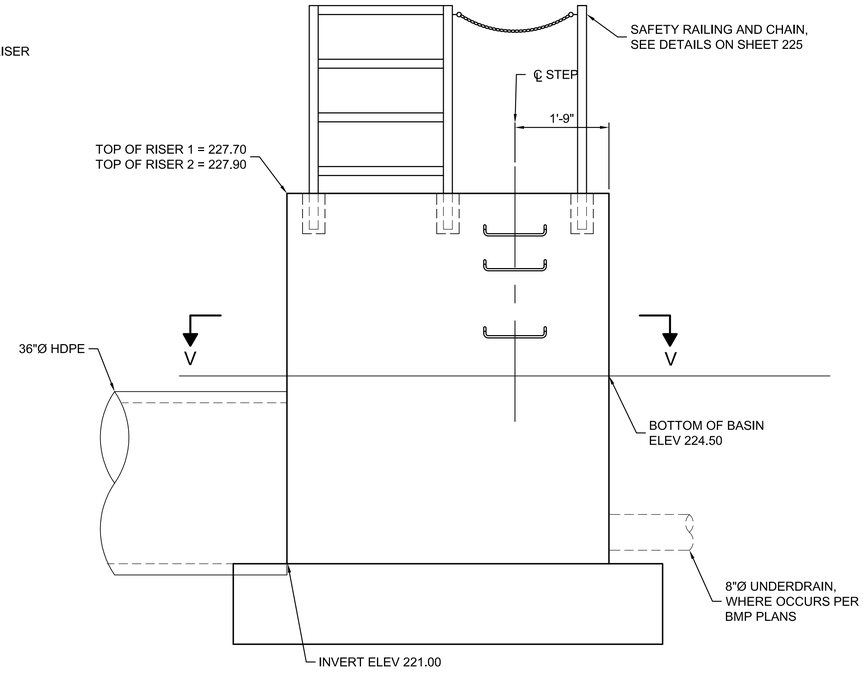
4. FOR VIEWS Q - Q, R - R, S - S, & T - T, SEE SHEET 223

5. ALL EXPOSED STEEL AND CONNECTIONS SHALL BE HOT DIP GALVANIZED AFTER FABRICATION



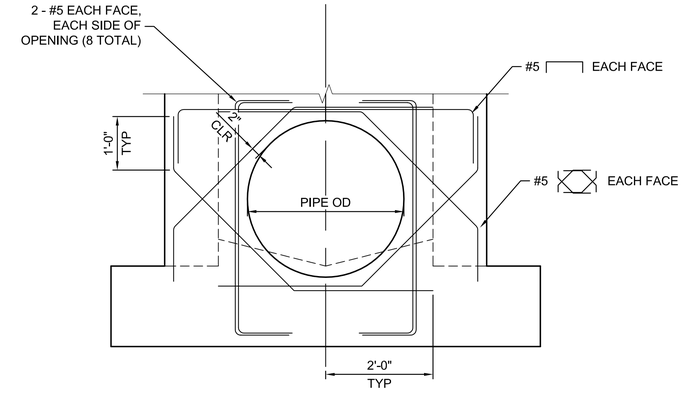
SECTION V - V

3/4" = 1'-0"



BMP 3D ELEVATION

3/4" = 1'-0"
*1 RISER SHOWN, 2 RISERS TOTAL



PIPE OPENING REINFORCEMENT

3/4" = 1'-0"
TYPICAL REINFORCEMENT NOT SHOWN

REGISTERED PROFESSIONAL ENGINEER
KAREN L DOLL
No. 68444
Exp. 09/30/2025
CIVIL
STATE OF CALIFORNIA

SPECS CREATIVE STRUCTURAL SOLUTIONS
1106 2ND ST., #636 ENCINITAS, CA 92024
PH: (858) 790-1445

KAREN L DOLL, R.C.E. 68444	DATE REGISTRATION EXPIRES 9-30-25	DESIGNED BY:
		KLD

RECORD PLAN

BY: _____ DATE: _____
NAME
R.C.E. _____
EXPIRES: _____

COUNTY APPROVED CHANGES

NO.	DESCRIPTION:	APPROVED BY:	DATE:

BENCH MARK

DESCRIPTION: FOUND 2" BRASS DISK MARKED "CALIF." "DEPT OF TRANSPORTATION" "SDGPS 03" "1991" "NE 15/76" & "1980"
LOCATION: BRASS DISK IN CONCRETE SIDEWALK ON NE CORNER BRIDGE ABUTMENT, 2.5' FROM FACE OF CURB & 2.5' FROM EXPANSION JOINT.
BRIDGE IS FOR HWY 76 AND SPANS INTERSTATE I-15.
RECORD FROM: ROS 21563
ELEVATION: 308.26
DATUM: NAVD 88

PRIVATE CONTRACT

SHEET 221	COUNTY OF SAN DIEGO DEPARTMENT OF PUBLIC WORKS	243 SHEETS

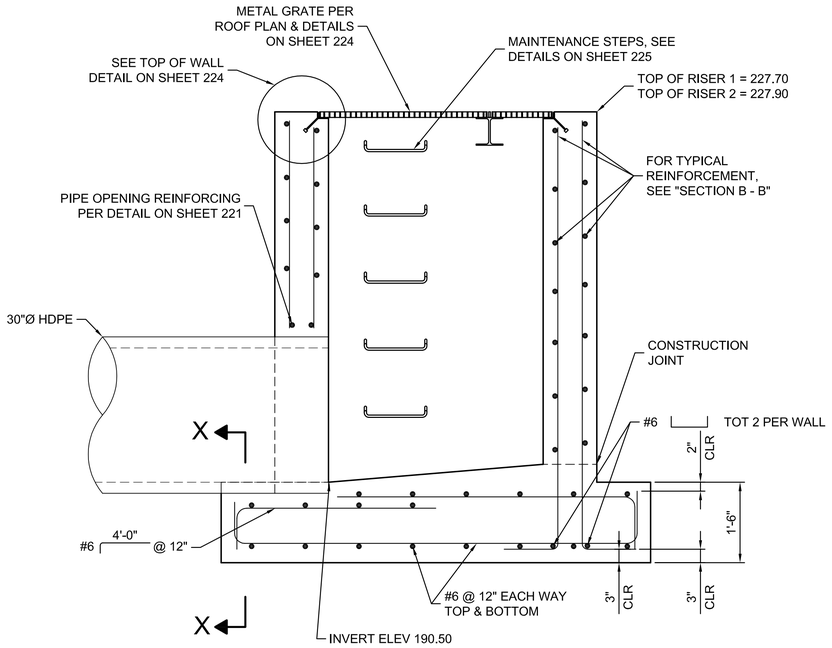
BMP DETAILS FOR:
OCEAN BREEZE RANCH-TM 5615

CALIFORNIA COORDINATE INDEX 410-1701,410-1707,410-1713 414-1703,414-1707,414-1719 418-1713,418-1719

APPROVED FOR: WILLIAM P. MORGAN, COUNTY ENGINEER
BY: _____ DATE: _____

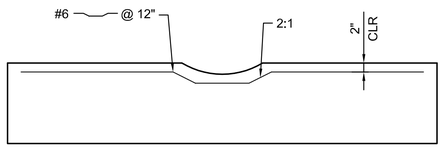
ENGINEER OF WORK
DATE:
KAREN L. DOLL, RCE NO. 68444, EXP. 09-30-25

PDS2020-LDGRMJ-30295
GRADING PERMIT NO:



SECTION U - U

3/4" = 1'-0"
RISER 2 SHOWN, RISER 1 SIMILAR



SECTION X - X

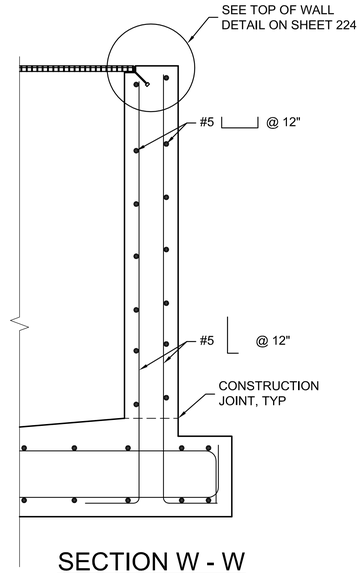
3/4" = 1'-0"

NOTES:
1. FOUR THREADED RODS WITH SADDLE CLIPS REQUIRED FOI FIXED GRATE. ADJUST AS NEEDED TO CENTER THREADED RO BETWEEN BEARING BARS.

2. LOCATE PAD LOCK PLATE BETWEEN GRATE BARS, TWO PEI REMOVABLE GRATE PLACED AT OPPOSITE CORNERS. SEE DE ON SHEET 224.

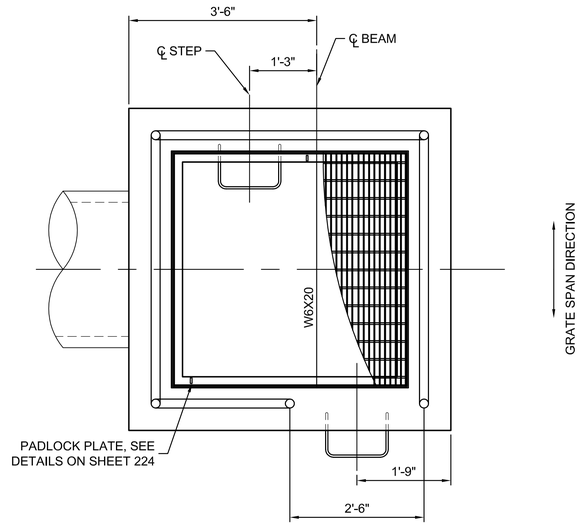
3. FOR LOCATION OF SECTIONS U - U AND W - W, SEE SHEET

4. ALL EXPOSED STEEL AND CONNECTIONS SHALL BE HOT DII GALVANIZED AFTER FABRICATION



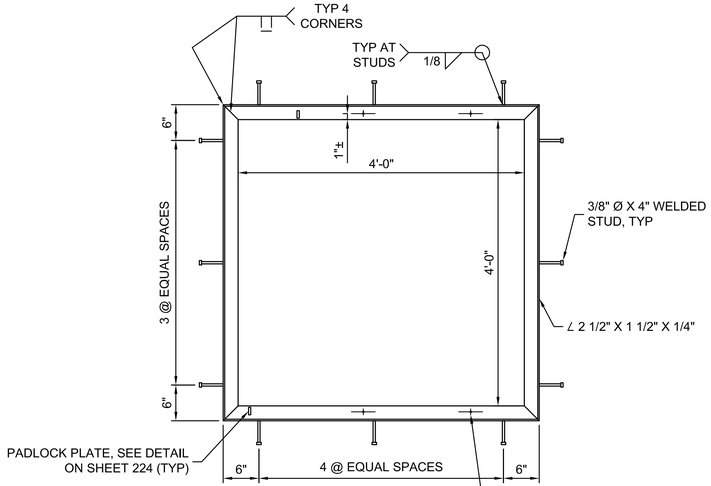
SECTION W - W

3/4" = 1'-0"



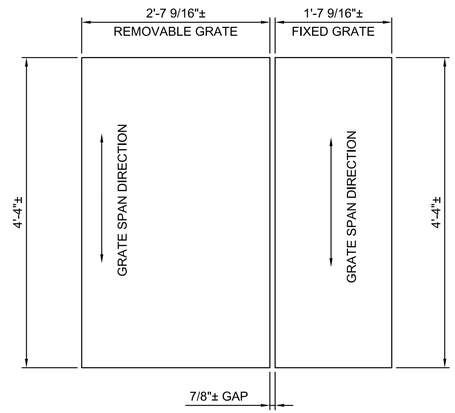
BMP 3D ROOF PLAN

3/4" = 1'-0"
*1 RISER SHOWN, 2 RISERS TOTAL



3D GRATE FRAME

1" = 1'-0"



3D GRATE PLAN

1" = 1'-0"

KAREN L DOLL
No. 68444
Exp. 09/30/2025
CIVIL
REGISTERED PROFESSIONAL ENGINEER
STATE OF CALIFORNIA

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PH: (858) 790-1445

KAREN L DOLL, R.C.E. 68444	DATE REGISTRATION EXPIRES 9-30-25	DESIGNED BY: KLD

RECORD PLAN

BY: _____ DATE: _____
NAME
R.C.E. _____
EXPIRES: _____

COUNTY APPROVED CHANGES

NO.	DESCRIPTION:	APPROVED BY:	DATE:

BENCH MARK

DESCRIPTION: FOUND 2" BRASS DISK MARKED "CALIF." "DEPT OF TRANSPORTATION" "SDGPS 03" "1991" "NE 15/76" & "1980"
LOCATION: BRASS DISK IN CONCRETE SIDEWALK ON NE CORNER BRIDGE ABUTMENT, 2.5' FROM FACE OF CURB & 2.5' FROM EXPANSION JOINT.
BRIDGE IS FOR HWY 76 AND SPANS INTERSTATE I-15.
RECORD FROM: ROS 21563
ELEVATION: 308.26
DATUM: NAVD 88

PRIVATE CONTRACT

SHEET 222	COUNTY OF SAN DIEGO DEPARTMENT OF PUBLIC WORKS	243 SHEETS

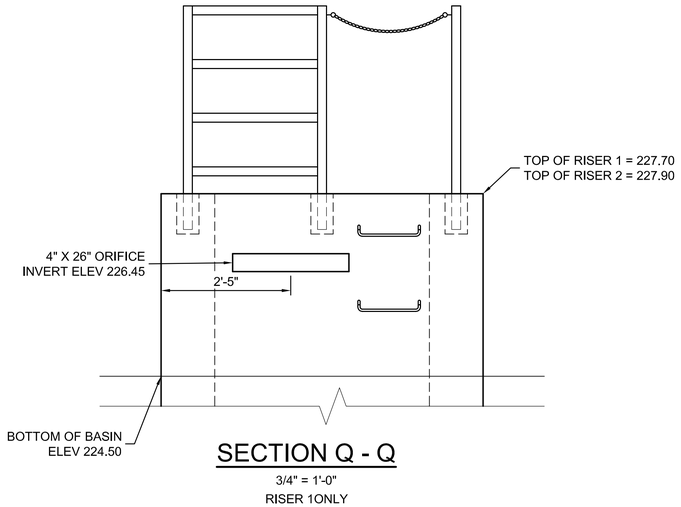
BMP DETAILS FOR:
OCEAN BREEZE RANCH-TM 5615

CALIFORNIA COORDINATE INDEX 410-1701,410-1707,410-1713 414-1703,414-1707,414-1719 418-1713,418-1719

APPROVED FOR: WILLIAM P. MORGAN, COUNTY ENGINEER
BY: _____ DATE: _____

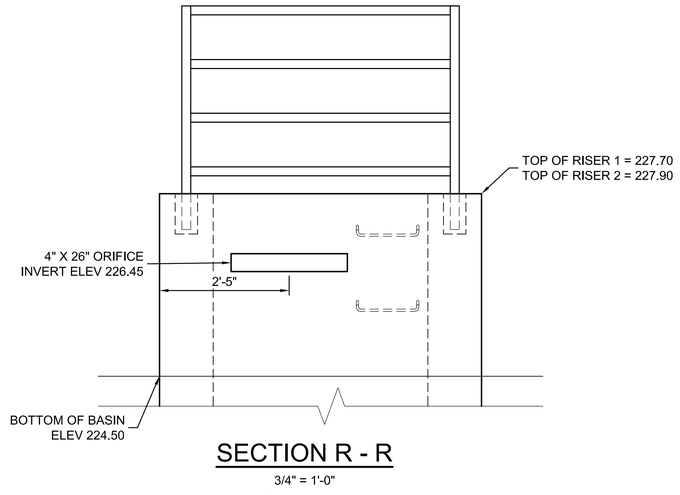
ENGINEER OF WORK
DATE: _____
KAREN L. DOLL, RCE NO. 68444, EXP. 09-30-25

PDS2020-LDGRMJ-30295
GRADING PERMIT NO:



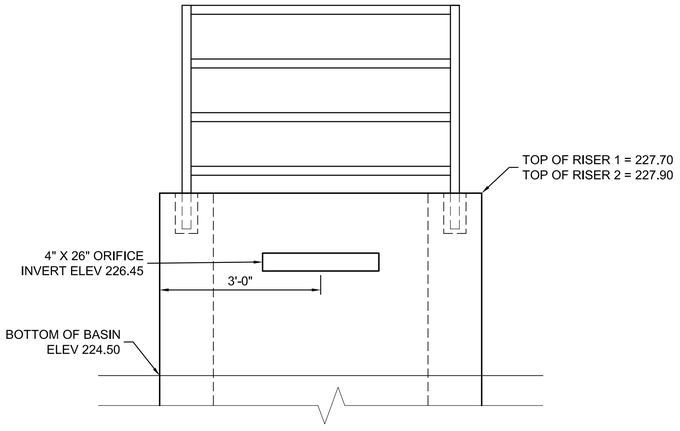
SECTION Q - Q

3/4" = 1'-0"
RISER 1ONLY



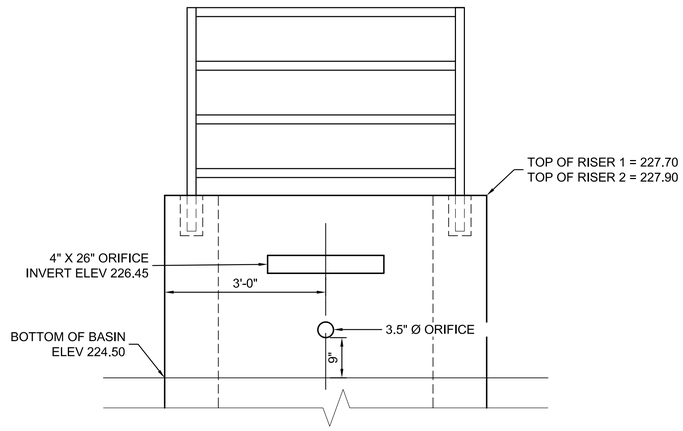
SECTION R - R

3/4" = 1'-0"
RISER 1 ONLY



SECTION S - S

3/4" = 1'-0"
RISER 1 & 2



SECTION T - T

3/4" = 1'-0"
RISER 1 ONLY

REGISTERED PROFESSIONAL ENGINEER
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KAREN L DOLL, R.C.E. 68444	DATE REGISTRATION EXPIRES 9-30-25	DESIGNED BY:
		KLD

RECORD PLAN

BY: _____ DATE: _____
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EXPIRES: _____

COUNTY APPROVED CHANGES

NO.	DESCRIPTION:	APPROVED BY:	DATE:

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RECORD FROM: ROS 21563
ELEVATION: 308.26
DATUM: NAVD 88

PRIVATE CONTRACT

SHEET 223	COUNTY OF SAN DIEGO DEPARTMENT OF PUBLIC WORKS	243 SHEETS

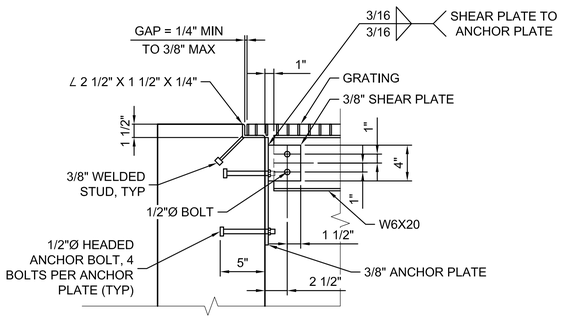
BMP DETAILS FOR:
OCEAN BREEZE RANCH-TM 5615

CALIFORNIA COORDINATE INDEX 410-1701,410-1707,410-1713 414-1703,414-1707,414-1719 418-1713,418-1719

APPROVED FOR: WILLIAM P. MORGAN, COUNTY ENGINEER
BY: _____ DATE: _____

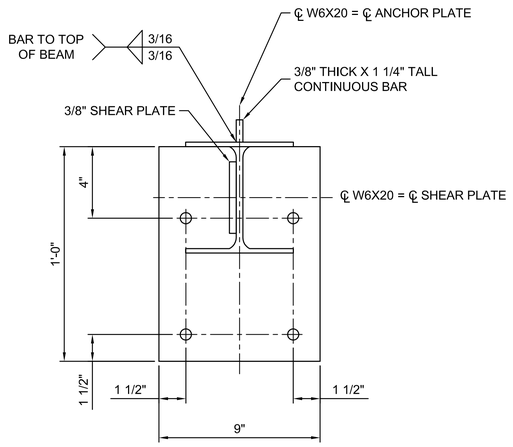
ENGINEER OF WORK
DATE: _____
KAREN L. DOLL, RCE NO. 68444, EXP. 09-30-25

PDS2020-LDGRMJ-30295
GRADING PERMIT NO:



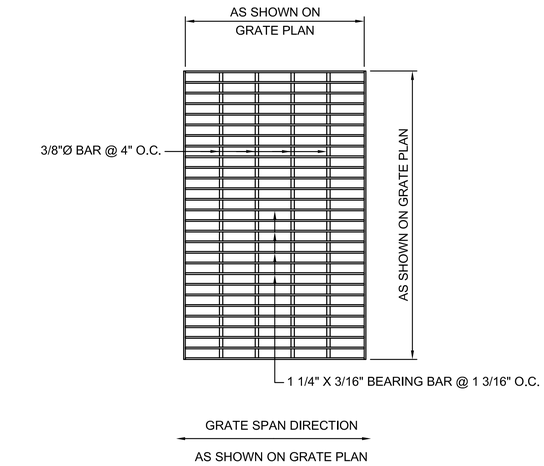
DETAIL 1

1 1/2" = 1'-0"



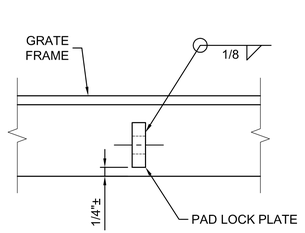
ANCHOR PLATE

3" = 1'-0"

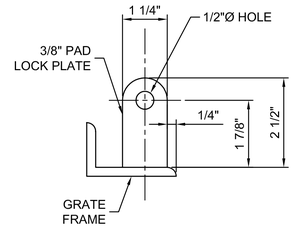


GRATING DETAIL

1 1/2" = 1'-0"



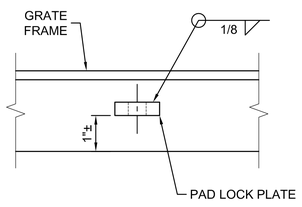
PLAN



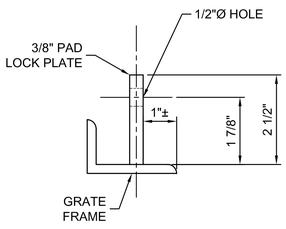
SECTION

PAD LOCK PLATE FOR FRAME PERPENDICULAR TO BEARING BARS

6" = 1'-0"



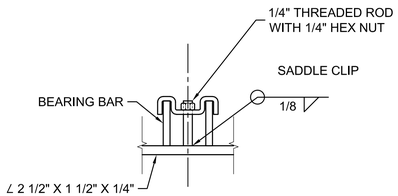
PLAN



SECTION

PAD LOCK PLATE FOR FRAME PARALLEL TO BEARING BARS

6" = 1'-0"



SADDLE CLIP FASTENER

6" = 1'-0"

REGISTERED PROFESSIONAL ENGINEER
KAREN L DOLL
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PH: (858) 790-1445

KAREN L DOLL, R.C.E. 68444	DATE REGISTRATION EXPIRES 9-30-25	DESIGNED BY:
		KLD

RECORD PLAN

BY: _____ DATE: _____
NAME
R.C.E. _____
EXPIRES: _____

COUNTY APPROVED CHANGES

NO.	DESCRIPTION:	APPROVED BY:	DATE:

BENCH MARK

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RECORD FROM: ROS 21563
ELEVATION: 308.26
DATUM: NAVD 88

PRIVATE CONTRACT

SHEET 224	COUNTY OF SAN DIEGO DEPARTMENT OF PUBLIC WORKS	243 SHEETS

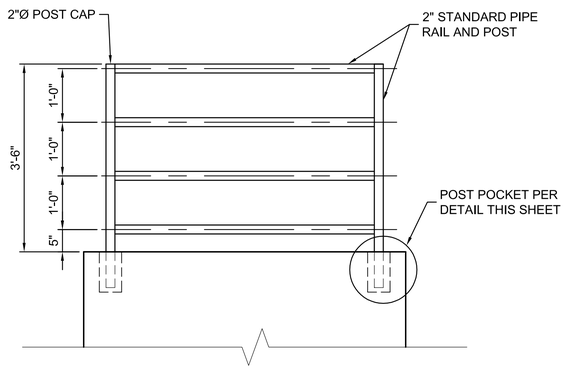
BMP DETAILS FOR:
OCEAN BREEZE RANCH-TM 5615

CALIFORNIA COORDINATE INDEX: 410-1701,410-1707,410-1713 414-1703,414-1707,414-1719 418-1713,418-1719

APPROVED FOR: WILLIAM P. MORGAN, COUNTY ENGINEER
BY: _____ DATE: _____

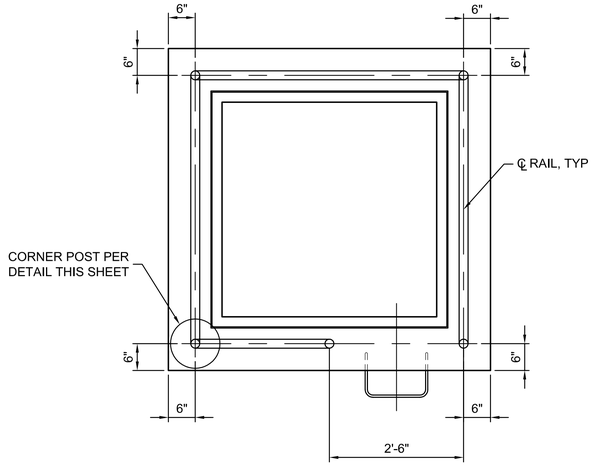
ENGINEER OF WORK
DATE:
KAREN L DOLL, RCE NO. 68444, EXP. 09-30-25

PDS2020-LDGRMJ-30295
GRADING PERMIT NO:



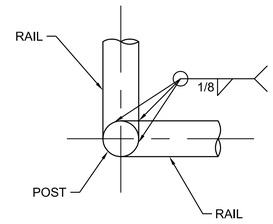
RAILING ELEVATION

3/4" = 1'-0"



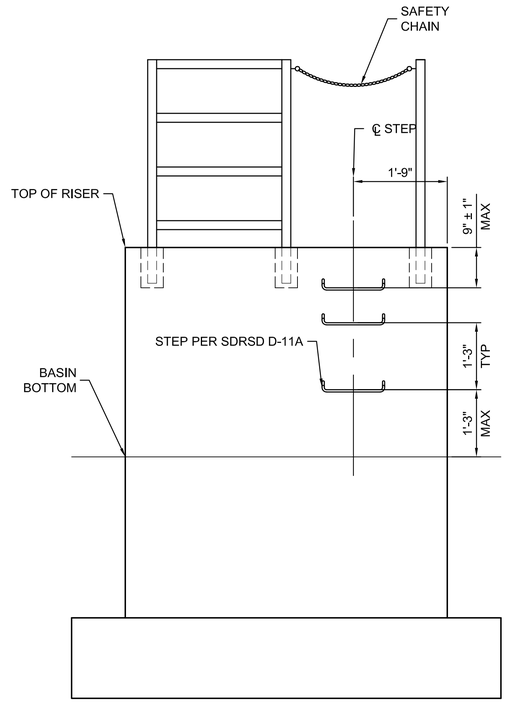
RAILING PLAN

3/4" = 1'-0"



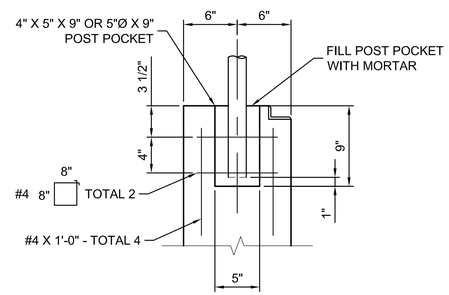
CORNER POST

3" = 1'-0"



MAINTENANCE ACCESS ELEVATION

3/4" = 1'-0"



POST POCKET DETAIL

1 1/2" = 1'-0"

REGISTERED PROFESSIONAL ENGINEER
KAREN L DOLL
No. 68444
Exp. 09/30/2025
CIVIL
STATE OF CALIFORNIA

SPECS CREATIVE STRUCTURAL SOLUTIONS

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KAREN L DOLL, R.C.E. 68444	DATE REGISTRATION EXPIRES 9-30-25	DESIGNED BY: KLD

RECORD PLAN

BY: _____ DATE: _____
NAME

R.C.E. _____

EXPIRES: _____

COUNTY APPROVED CHANGES

NO.	DESCRIPTION:	APPROVED BY:	DATE:

BENCH MARK

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BRIDGE IS FOR HWY 76 AND SPANS INTERSTATE I-15.
RECORD FROM: ROS 21563
ELEVATION: 308.26
DATUM: NAVD 88

PRIVATE CONTRACT

SHEET 225	COUNTY OF SAN DIEGO DEPARTMENT OF PUBLIC WORKS	243 SHEETS

BMP DETAILS FOR:
OCEAN BREEZE RANCH-TM 5615

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BY: _____ DATE: _____

ENGINEER OF WORK
DATE: _____
KAREN L. DOLL, RCE NO. 68444, EXP. 09-30-25

PDS2020-LDGRMJ-30295
GRADING PERMIT NO:

OBR

SEDIMENT TRAP (SE-3) SIZING CALCULATIONS

VOLUME RANGE

SUM

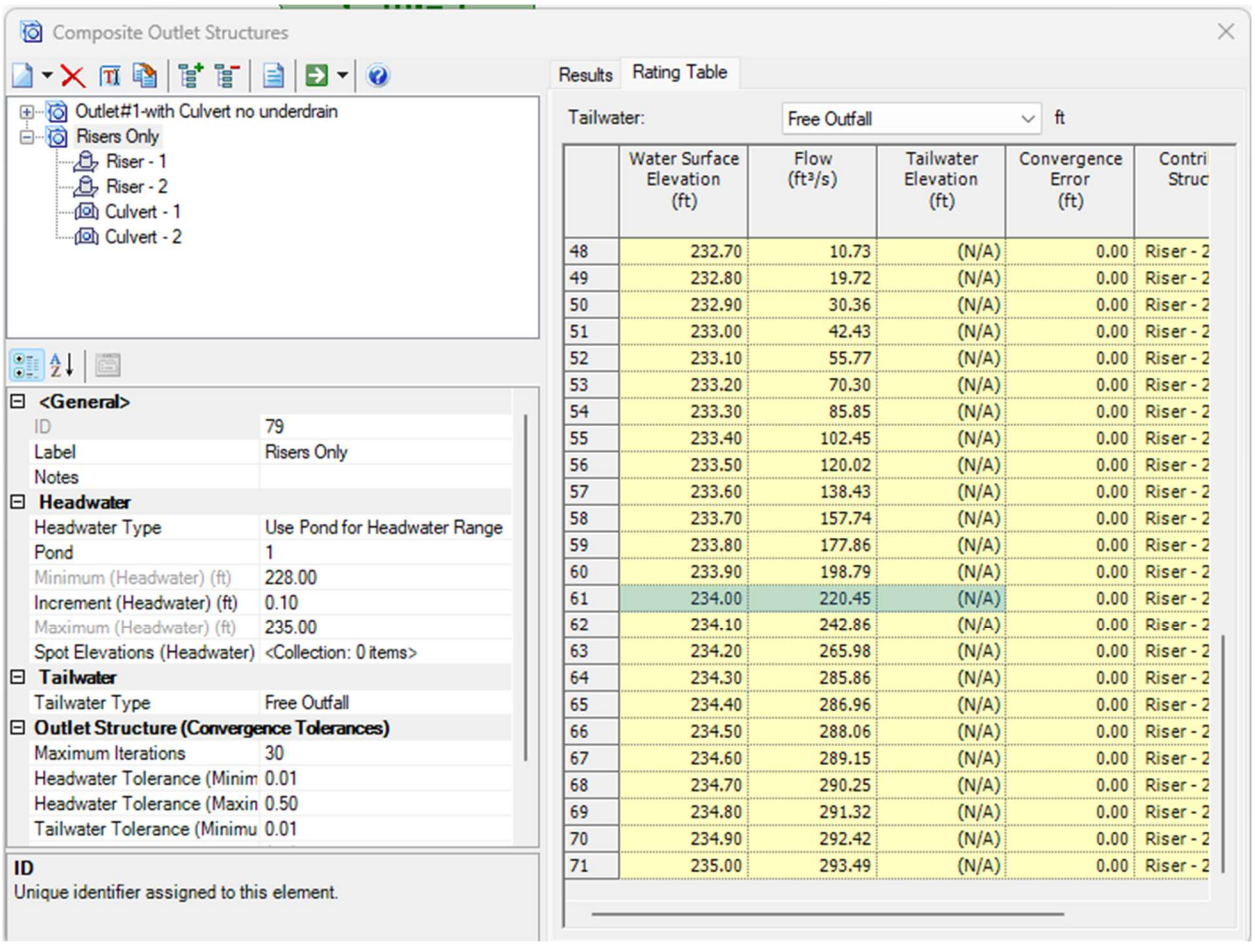
Trap Name	**Drainage Area (ac)**	**Trap Bottom Area (sf)**	**L/W ratio**	**W (reqd)**	**L (reqd)**	Q100 (cfs)	Riser Diameter (in)	Weir Head (ft)	A Orifice (ft^2)	Orifice Head (ft)	H T (ft)	Control Head (ft)
1	4.7	3828	3.0	36	107	14.90	36	0.65	7.07	0.19	1.20	0.65
2-13	1.4	1080	3.0	19	57	5.50	36	0.34	7.07	0.03	1.20	0.34
14	3.5	2700	3.0	30	90	12.69	36	0.59	7.07	0.14	1.20	0.59
15	2.4	2099	3.0	26	79	8.71	36	0.46	7.07	0.07	1.20	0.46
16	2.4	2099	3.0	26	79	8.71	36	0.46	7.07	0.07	1.20	0.46

APPENDIX 9

Emergency Overflow Calculations

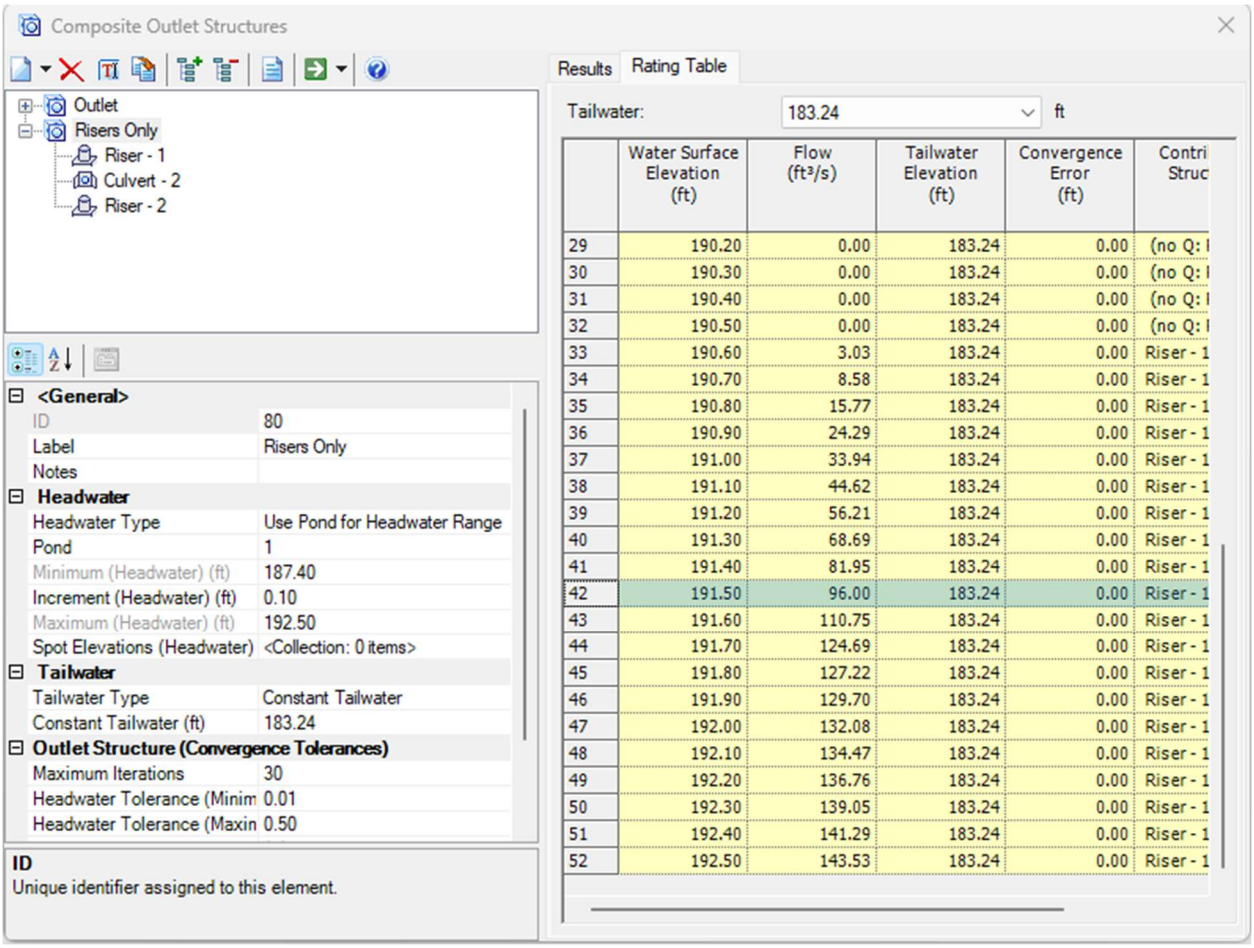
Emergency Overflow Calcs for Basins with Detention. Rating Table of Risers only showing freeboard and compliance of conveys 100 Year Flows.

Basin 1A



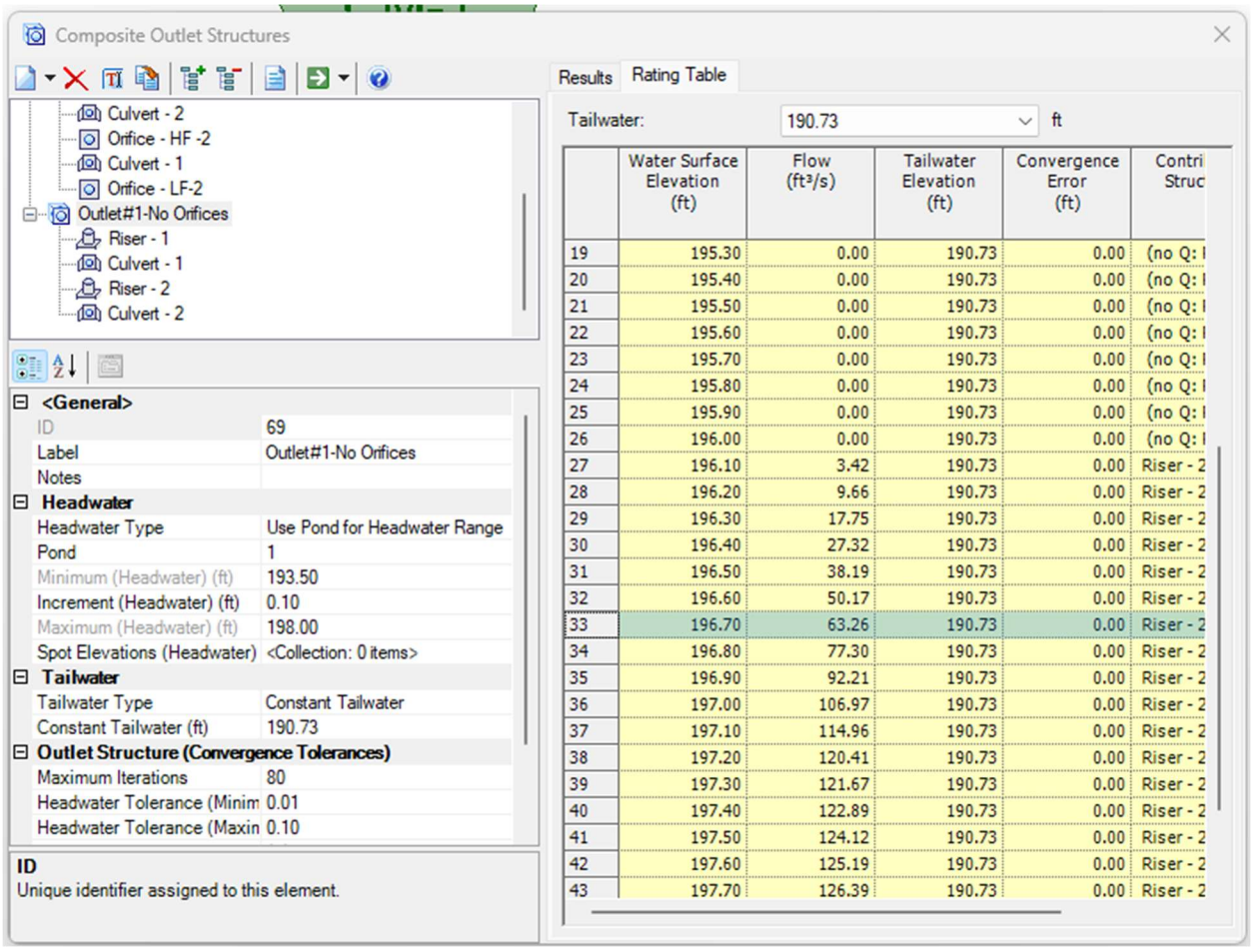
	Water Surface Elevation (ft)	Flow (ft³/s)	Tailwater Elevation (ft)	Convergence Error (ft)	Contri Struc
48	232.70	10.73	(N/A)	0.00	Riser - 2
49	232.80	19.72	(N/A)	0.00	Riser - 2
50	232.90	30.36	(N/A)	0.00	Riser - 2
51	233.00	42.43	(N/A)	0.00	Riser - 2
52	233.10	55.77	(N/A)	0.00	Riser - 2
53	233.20	70.30	(N/A)	0.00	Riser - 2
54	233.30	85.85	(N/A)	0.00	Riser - 2
55	233.40	102.45	(N/A)	0.00	Riser - 2
56	233.50	120.02	(N/A)	0.00	Riser - 2
57	233.60	138.43	(N/A)	0.00	Riser - 2
58	233.70	157.74	(N/A)	0.00	Riser - 2
59	233.80	177.86	(N/A)	0.00	Riser - 2
60	233.90	198.79	(N/A)	0.00	Riser - 2
61	234.00	220.45	(N/A)	0.00	Riser - 2
62	234.10	242.86	(N/A)	0.00	Riser - 2
63	234.20	265.98	(N/A)	0.00	Riser - 2
64	234.30	285.86	(N/A)	0.00	Riser - 2
65	234.40	286.96	(N/A)	0.00	Riser - 2
66	234.50	288.06	(N/A)	0.00	Riser - 2
67	234.60	289.15	(N/A)	0.00	Riser - 2
68	234.70	290.25	(N/A)	0.00	Riser - 2
69	234.80	291.32	(N/A)	0.00	Riser - 2
70	234.90	292.42	(N/A)	0.00	Riser - 2
71	235.00	293.49	(N/A)	0.00	Riser - 2

Basin 2A



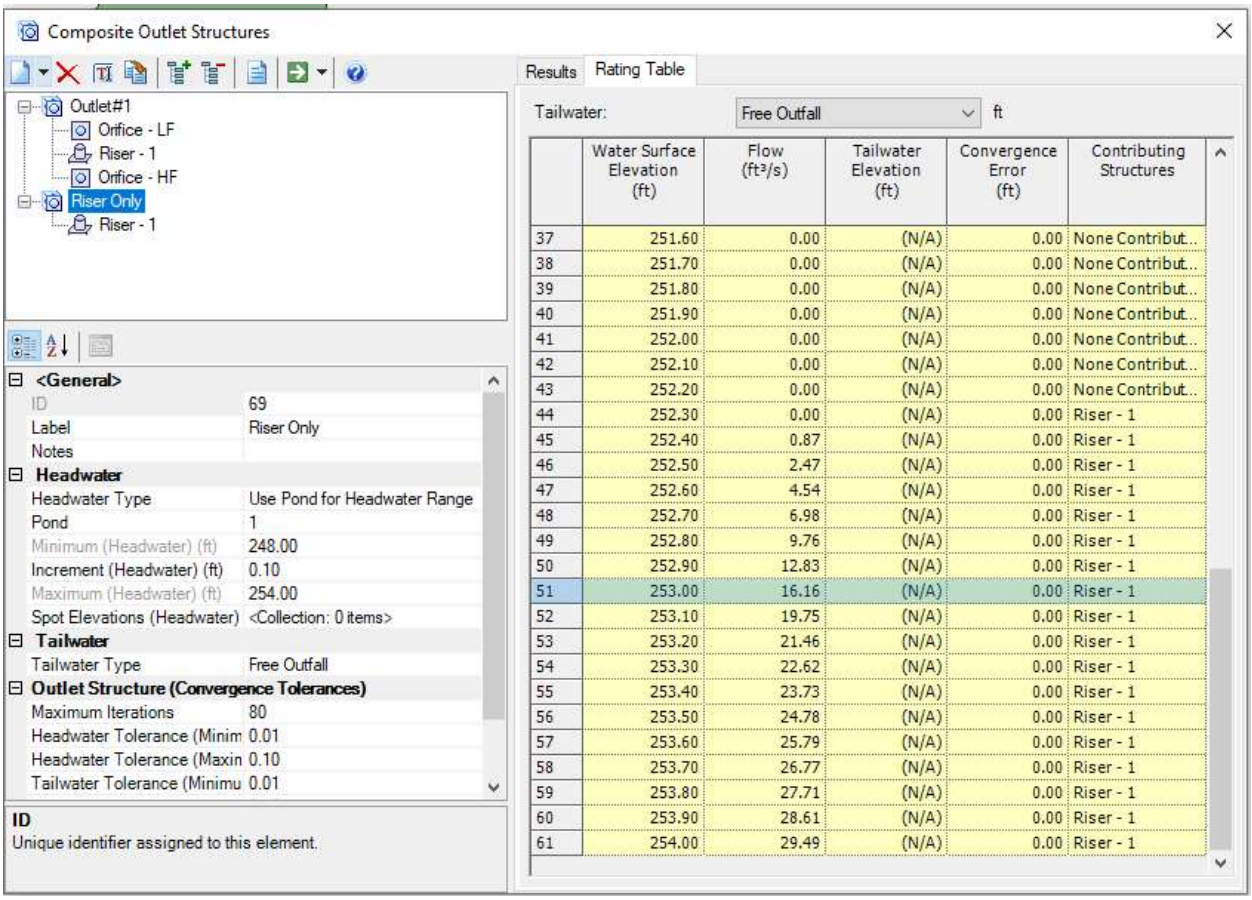
	Water Surface Elevation (ft)	Flow (ft³/s)	Tailwater Elevation (ft)	Convergence Error (ft)	Contri Struc
29	190.20	0.00	183.24	0.00	(no Q:
30	190.30	0.00	183.24	0.00	(no Q:
31	190.40	0.00	183.24	0.00	(no Q:
32	190.50	0.00	183.24	0.00	(no Q:
33	190.60	3.03	183.24	0.00	Riser - 1
34	190.70	8.58	183.24	0.00	Riser - 1
35	190.80	15.77	183.24	0.00	Riser - 1
36	190.90	24.29	183.24	0.00	Riser - 1
37	191.00	33.94	183.24	0.00	Riser - 1
38	191.10	44.62	183.24	0.00	Riser - 1
39	191.20	56.21	183.24	0.00	Riser - 1
40	191.30	68.69	183.24	0.00	Riser - 1
41	191.40	81.95	183.24	0.00	Riser - 1
42	191.50	96.00	183.24	0.00	Riser - 1
43	191.60	110.75	183.24	0.00	Riser - 1
44	191.70	124.69	183.24	0.00	Riser - 1
45	191.80	127.22	183.24	0.00	Riser - 1
46	191.90	129.70	183.24	0.00	Riser - 1
47	192.00	132.08	183.24	0.00	Riser - 1
48	192.10	134.47	183.24	0.00	Riser - 1
49	192.20	136.76	183.24	0.00	Riser - 1
50	192.30	139.05	183.24	0.00	Riser - 1
51	192.40	141.29	183.24	0.00	Riser - 1
52	192.50	143.53	183.24	0.00	Riser - 1

Basin 2B



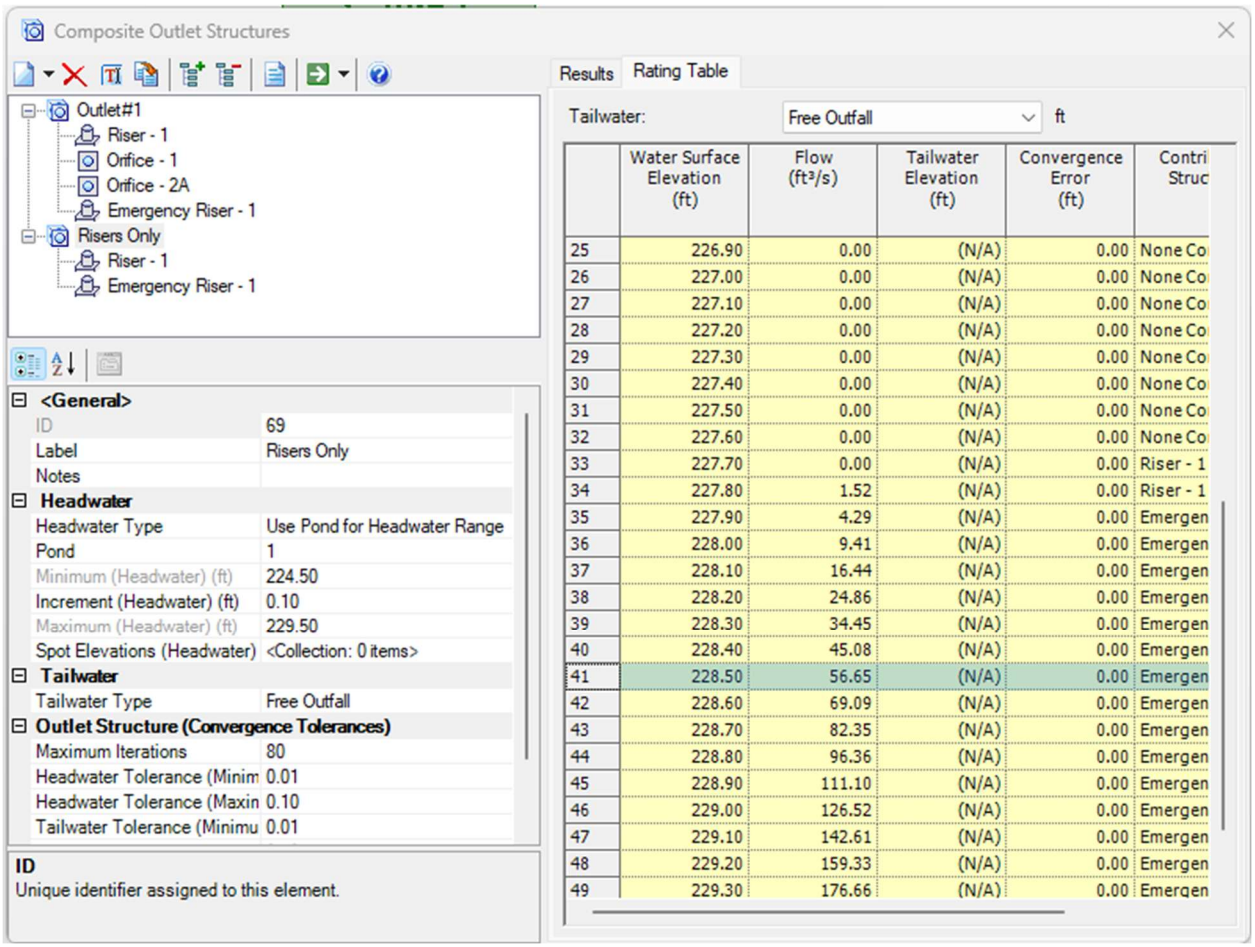
	Water Surface Elevation (ft)	Flow (ft³/s)	Tailwater Elevation (ft)	Convergence Error (ft)	Contri Struc
19	195.30	0.00	190.73	0.00	(no Q:
20	195.40	0.00	190.73	0.00	(no Q:
21	195.50	0.00	190.73	0.00	(no Q:
22	195.60	0.00	190.73	0.00	(no Q:
23	195.70	0.00	190.73	0.00	(no Q:
24	195.80	0.00	190.73	0.00	(no Q:
25	195.90	0.00	190.73	0.00	(no Q:
26	196.00	0.00	190.73	0.00	(no Q:
27	196.10	3.42	190.73	0.00	Riser - 2
28	196.20	9.66	190.73	0.00	Riser - 2
29	196.30	17.75	190.73	0.00	Riser - 2
30	196.40	27.32	190.73	0.00	Riser - 2
31	196.50	38.19	190.73	0.00	Riser - 2
32	196.60	50.17	190.73	0.00	Riser - 2
33	196.70	63.26	190.73	0.00	Riser - 2
34	196.80	77.30	190.73	0.00	Riser - 2
35	196.90	92.21	190.73	0.00	Riser - 2
36	197.00	106.97	190.73	0.00	Riser - 2
37	197.10	114.96	190.73	0.00	Riser - 2
38	197.20	120.41	190.73	0.00	Riser - 2
39	197.30	121.67	190.73	0.00	Riser - 2
40	197.40	122.89	190.73	0.00	Riser - 2
41	197.50	124.12	190.73	0.00	Riser - 2
42	197.60	125.19	190.73	0.00	Riser - 2
43	197.70	126.39	190.73	0.00	Riser - 2

Basin 3A

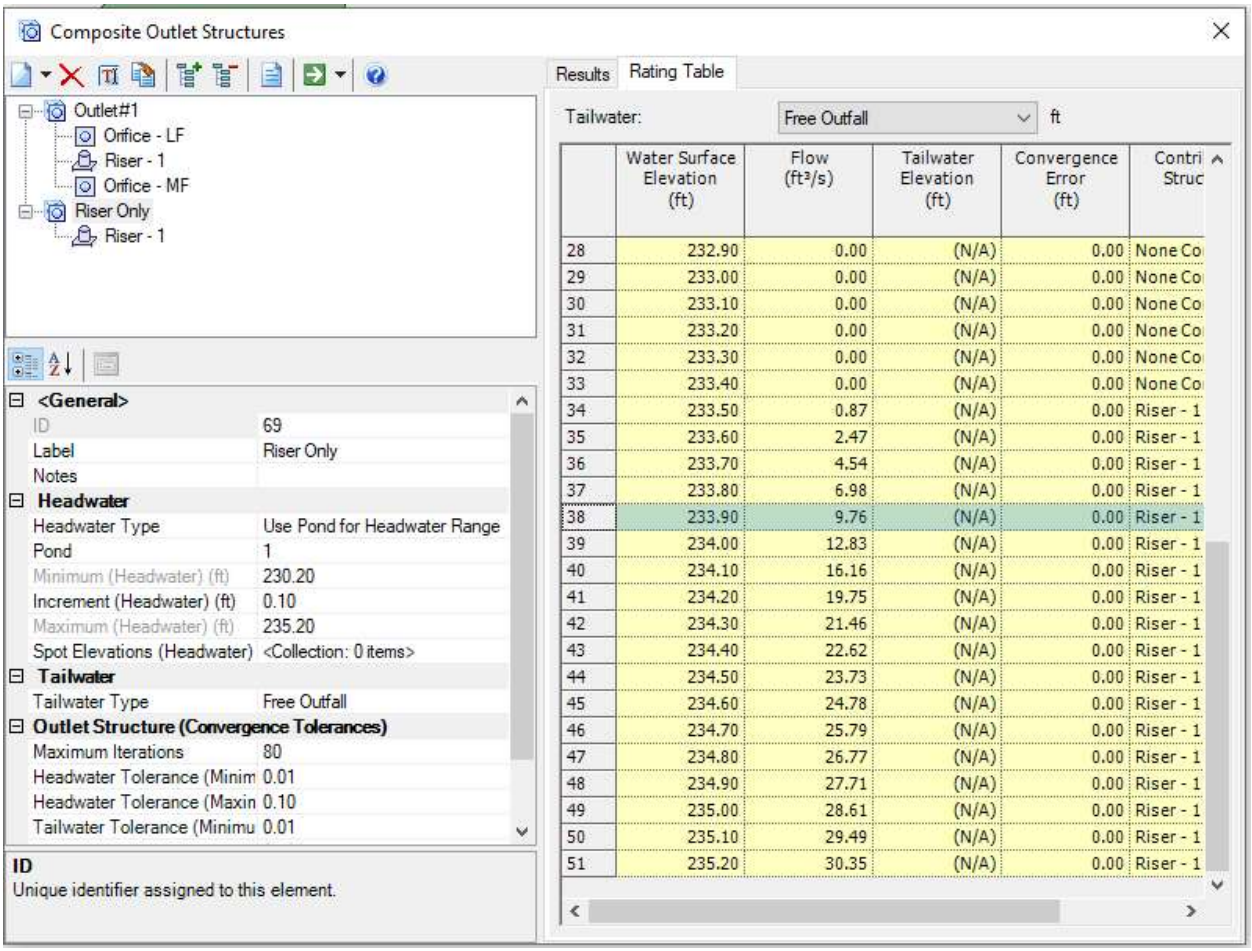


	Water Surface Elevation (ft)	Flow (ft³/s)	Tailwater Elevation (ft)	Convergence Error (ft)	Contributing Structures
37	251.60	0.00	(N/A)	0.00	None Contribut...
38	251.70	0.00	(N/A)	0.00	None Contribut...
39	251.80	0.00	(N/A)	0.00	None Contribut...
40	251.90	0.00	(N/A)	0.00	None Contribut...
41	252.00	0.00	(N/A)	0.00	None Contribut...
42	252.10	0.00	(N/A)	0.00	None Contribut...
43	252.20	0.00	(N/A)	0.00	None Contribut...
44	252.30	0.00	(N/A)	0.00	Riser - 1
45	252.40	0.87	(N/A)	0.00	Riser - 1
46	252.50	2.47	(N/A)	0.00	Riser - 1
47	252.60	4.54	(N/A)	0.00	Riser - 1
48	252.70	6.98	(N/A)	0.00	Riser - 1
49	252.80	9.76	(N/A)	0.00	Riser - 1
50	252.90	12.83	(N/A)	0.00	Riser - 1
51	253.00	16.16	(N/A)	0.00	Riser - 1
52	253.10	19.75	(N/A)	0.00	Riser - 1
53	253.20	21.46	(N/A)	0.00	Riser - 1
54	253.30	22.62	(N/A)	0.00	Riser - 1
55	253.40	23.73	(N/A)	0.00	Riser - 1
56	253.50	24.78	(N/A)	0.00	Riser - 1
57	253.60	25.79	(N/A)	0.00	Riser - 1
58	253.70	26.77	(N/A)	0.00	Riser - 1
59	253.80	27.71	(N/A)	0.00	Riser - 1
60	253.90	28.61	(N/A)	0.00	Riser - 1
61	254.00	29.49	(N/A)	0.00	Riser - 1

Basin 3D


Composite Outlet Structures
Outlet#1
Riser - 1
Orifice - 1
Orifice - 2A
Emergency Riser - 1
Risers Only
Riser - 1
Emergency Riser - 1
<General>
ID 69
Label Risers Only
Notes
Headwater
Headwater Type Use Pond for Headwater Range
Pond 1
Minimum (Headwater) (ft) 224.50
Increment (Headwater) (ft) 0.10
Maximum (Headwater) (ft) 229.50
Spot Elevations (Headwater) <Collection: 0 items>
Tailwater
Tailwater Type Free Outfall
Outlet Structure (Convergence Tolerances)
Maximum Iterations 80
Headwater Tolerance (Minim 0.01
Headwater Tolerance (Maxin 0.10
Tailwater Tolerance (Minimu 0.01
ID
Unique identifier assigned to this element.
Results
Rating Table
Tailwater:
Free Outfall
ft
Water Surface Elevation (ft)
Flow (ft³/s)
Tailwater Elevation (ft)
Convergence Error (ft)
Contri Struc
25 226.90 0.00 (N/A) 0.00 None Co
26 227.00 0.00 (N/A) 0.00 None Co
27 227.10 0.00 (N/A) 0.00 None Co
28 227.20 0.00 (N/A) 0.00 None Co
29 227.30 0.00 (N/A) 0.00 None Co
30 227.40 0.00 (N/A) 0.00 None Co
31 227.50 0.00 (N/A) 0.00 None Co
32 227.60 0.00 (N/A) 0.00 None Co
33 227.70 0.00 (N/A) 0.00 Riser - 1
34 227.80 1.52 (N/A) 0.00 Riser - 1
35 227.90 4.29 (N/A) 0.00 Emergen
36 228.00 9.41 (N/A) 0.00 Emergen
37 228.10 16.44 (N/A) 0.00 Emergen
38 228.20 24.86 (N/A) 0.00 Emergen
39 228.30 34.45 (N/A) 0.00 Emergen
40 228.40 45.08 (N/A) 0.00 Emergen
41 228.50 56.65 (N/A) 0.00 Emergen
42 228.60 69.09 (N/A) 0.00 Emergen
43 228.70 82.35 (N/A) 0.00 Emergen
44 228.80 96.36 (N/A) 0.00 Emergen
45 228.90 111.10 (N/A) 0.00 Emergen
46 229.00 126.52 (N/A) 0.00 Emergen
47 229.10 142.61 (N/A) 0.00 Emergen
48 229.20 159.33 (N/A) 0.00 Emergen
49 229.30 176.66 (N/A) 0.00 Emergen

Basin 3E



	Water Surface Elevation (ft)	Flow (ft³/s)	Tailwater Elevation (ft)	Convergence Error (ft)	Contri Struc
28	232.90	0.00	(N/A)	0.00	None Co
29	233.00	0.00	(N/A)	0.00	None Co
30	233.10	0.00	(N/A)	0.00	None Co
31	233.20	0.00	(N/A)	0.00	None Co
32	233.30	0.00	(N/A)	0.00	None Co
33	233.40	0.00	(N/A)	0.00	None Co
34	233.50	0.87	(N/A)	0.00	Riser - 1
35	233.60	2.47	(N/A)	0.00	Riser - 1
36	233.70	4.54	(N/A)	0.00	Riser - 1
37	233.80	6.98	(N/A)	0.00	Riser - 1
38	233.90	9.76	(N/A)	0.00	Riser - 1
39	234.00	12.83	(N/A)	0.00	Riser - 1
40	234.10	16.16	(N/A)	0.00	Riser - 1
41	234.20	19.75	(N/A)	0.00	Riser - 1
42	234.30	21.46	(N/A)	0.00	Riser - 1
43	234.40	22.62	(N/A)	0.00	Riser - 1
44	234.50	23.73	(N/A)	0.00	Riser - 1
45	234.60	24.78	(N/A)	0.00	Riser - 1
46	234.70	25.79	(N/A)	0.00	Riser - 1
47	234.80	26.77	(N/A)	0.00	Riser - 1
48	234.90	27.71	(N/A)	0.00	Riser - 1
49	235.00	28.61	(N/A)	0.00	Riser - 1
50	235.10	29.49	(N/A)	0.00	Riser - 1
51	235.20	30.35	(N/A)	0.00	Riser - 1

GRATE INLET SIZING

	C_W=	3	C_O=	0.6	
Riser Grate Inlets with no Detention	C_L=	0	C_A=	0	

Inlet Location	Node	Proposed Condition 100 Year Discharge (cfs)	Actual Grate Perimeter	Effective grate perimeter length	d	Qweir	Area of grate, A	Effective Grate Area, Ae	Qorifice	Qcapacity= Min(Qweir, Qorifice)	Comment
1B		13.5	15.6	15.6	0.44	13.5	14.1	14.1	44.8	13.5	G-3
2D		12.5	12.4	12.4	0.49	12.8	9.4	9.4	31.7	12.8	G-2
2E		9.8	15.6	15.6	0.36	10.1	14.1	14.1	40.7	10.1	G-3
2F		11.8	15.6	15.6	0.4	11.8	14.1	14.1	42.9	11.8	G-3
2G		16.6	15.6	15.6	0.5	16.5	14.1	14.1	48.0	16.5	G-3
2I		11.2	15.6	15.6	0.39	11.2	14.1	14.1	42.1	11.2	G-2
3B		5.1	9.2	9.2	0.33	5.1	4.7	4.7	12.9	5.1	G-1
3F		9.1	9.2	9.2	0.48	9.1	4.7	4.7	15.6	9.1	G-1
3H		6.2	15.6	15.6	0.26	6.2	4.7	4.7	11.5	6.2	G-1
3J		3.0	9.2	9.2	0.23	3.0	4.7	4.7	10.9	3.0	G-1
3K		3.5	9.2	9.2	0.25	3.5	4.7	4.7	11.3	3.5	G-1
3I		9.4	15.6	15.6	0.35	9.7	14.1	14.1	40.2	9.7	G-3