File.... C:\Shap_Ass\Active Projects\Warner Ranch\3rd Submital\Pond Pack\BMP 7\5508RPL4-100 YR-BMP 7.PPW

USE DOWNSTREAM CHANNEL NORMAL DEPTH FOR TW...
Channel Type: Chn-Trapz.
Channel ID: Chn-Trapz - 1

Solution to Mannings Open Channel Flow Equation
(Computed values are based on normal depth.)

TRAPEZOIDAL CROSS SECTION

Slope	= .005000	ft/ft
Mannings n	= 0.02200	
Invert Elev.	= 352.00	ft
Top of Channel	= 355.00	ft
Base width	= 12.00	ft
Rt Side slope	= 3.000	horizontal :1 vert.
Lt Side slope	= 3.000	horizontal :1 vert.

Name.... BIORETENTION7
File.... C:\Shap_Ass\Active Projects\Warner Ranch\3rd Submital\Pond Pack\BMP 7\5508RPL4-100 YR-BMP 7.PPW

LEVEL POOL ROUTING DATA

HYG Dir = C:\Shap_Ass\Active Projects\Warner Ranch\3rd Submital\Pond Pack\BMP 7\
Inflow HYG file = NONE STORED - BIORETENTION7IN 100
Outflow HYG file = NONE STORED - BIORETENTION7OUT 100

Pond Node Data = BIORETENTION7
Pond Volume Data = BIORETENTION7
Pond Outlet Data = Outlet 1

Infiltration = .5000 in/hr

INITIAL CONDITIONS

Starting WS Elev	=	359.00 ft
Starting Volume	=	0 cu.ft
Starting Outflow	=	.00 cfs
Starting Infiltr.	=	.00 cfs
Starting Total Qout	=	.00 cfs
Time Increment	=	1.00 min

Elevation ft	Outflow cfs	Storage cu.ft	Area sq.ft	Infilt. cfs	Q Total cfs	2S/t + O cfs
359.00	.00	0	5700	.00	.00	.00
359.05	.00	205	5700	.07	.07	6.90
359.10	.00	410	5700	.07	.07	13.75
359.15	.00	616	5700	.07	.07	20.59
359.20	.00	821	5700	.07	.07	27.43
359.25	.00	1026	5700	.07	.07	34.27
359.30	.00	1231	5700	.07	.07	41.10
359.35	.00	1436	5700	.07	.07	47.95
359.40	.00	1642	5700	.07	.07	54.79
359.45	.00	1847	5700	.07	.07	61.63
359.50	.00	2052	5700	.07	.07	68.47
359.55	.00	2257	5700	.07	.07	75.30
359.60	.00	2462	5700	.07	.07	82.15
359.65	.00	2668	5700	.07	.07	88.98
359.70	.00	2873	5700	.07	.07	95.83
359.75	.00	3078	5700	.07	.07	102.67
359.80	.00	3283	5700	.07	.07	109.50
359.85	.00	3488	5700	.07	.07	116.35
359.90	.00	3694	5700	.07	.07	123.18
359.95	.00	3899	5700	.07	.07	130.03

S/N:
PondPack Ver: Compute Time: Date:

Name.... BIORETENTION7
File.... C:\Shap_Ass\Active Projects\Warner Ranch\3rd Submital\Pond Pack\BMP 7\5508RPL4-100 YR-BMP 7.PPW

LEVEL POOL ROUTING DATA

HYG Dir = C:\Shap_Ass\Active Projects\Warner Ranch\3rd Submital\Pond Pack\BMP 7\
Inflow HYG file = NONE STORED - BIORETENTION7IN 100
Outflow HYG file = NONE STORED - BIORETENTION7OUT 100

Pond Node Data = BIORETENTION7
Pond Volume Data = BIORETENTION7
Pond Outlet Data = Outlet 1

Infiltration = .5000 in/hr

INITIAL CONDITIONS

Starting WS Elev = 359.00 ft
Starting Volume = 0 cu.ft
Starting Outflow = .00 cfs
Starting Infiltr. = .00 cfs
Starting Total Qout= .00 cfs
Time Increment = 1.00 min

Elevation ft	Outflow cfs	Storage cu.ft	Area sq.ft	Infilt. cfs	Q Total cfs	2S/t + O cfs
360.00	.00	4104	5700	.07	.07	136.87
360.05	.00	4309	5700	.07	.07	143.70
360.10	.00	4514	5700	.07	.07	150.55
360.15	.00	4720	5700	.07	.07	157.38
360.20	.00	4925	5700	.07	.07	164.23
360.25	.00	5130	5700	.07	.07	171.07
360.30	.00	5335	5700	.07	.07	177.90
360.35	.00	5540	5700	.07	.07	184.75
360.40	.00	5746	5700	.07	.07	191.58
360.45	.00	5951	5700	.07	.07	198.43
360.50	.00	6156	5700	.07	.07	205.27
360.55	.00	6362	5773	.07	.07	212.15
360.60	.00	6572	5846	.07	.07	219.12
360.65	.00	6783	5920	.07	.07	226.18
360.70	.00	6998	5994	.07	.07	233.33
360.75	.00	7215	6069	.07	.07	240.57
360.80	.00	7435	6144	.07	.07	247.90
360.85	.00	7657	6220	.07	.07	255.32
360.90	.00	7883	6296	.07	.07	262.83
360.95	.00	8111	6373	.07	.07	270.44

LEVEL POOL ROUTING DATA

HYG Dir = C:\Shap_Ass\Active Projects\Warner Ranch\3rd Submital\Pond Pack\BMP 7\
Inflow HYG file = NONE STORED - BIORETENTION7IN 100
Outflow HYG file = NONE STORED - BIORETENTION7OUT 100

Pond Node Data = BIORETENTION7
Pond Volume Data = BIORETENTION7
Pond Outlet Data = Outlet 1

Infiltration = .5000 in/hr

INITIAL CONDITIONS

Starting WS Elev	=	359.00 ft
Starting Volume	=	0 cu.ft
Starting Outflow	=	.00 cfs
Starting Infiltr.	=	.00 cfs
Starting Total Qout	=	.00 cfs
Time Increment	=	1.00 min

Elevation ft	Outflow cfs	Storage cu.ft	Area sq.ft	Infilt. cfs	Q Total cfs	2S/t + O cfs
361.00	.00	8342	6450	.07	.07	278.13
361.05	.00	8575	6519	.08	.08	285.91
361.10	.00	8811	6588	.08	.08	293.78
361.15	.00	9049	6658	.08	.08	301.72
361.20	.00	9290	6728	.08	.08	309.76
361.25	.00	9534	6799	.08	.08	317.87
361.30	.33	9780	6870	.08	.41	326.40
361.35	.92	10029	6941	.08	1.00	335.29
361.40	1.70	10280	7012	.08	1.78	344.43
361.45	2.54	10533	7084	.08	2.62	353.73
361.50	2.84	10790	7157	.08	2.92	362.57
361.55	3.11	11049	7229	.08	3.19	371.48
361.60	3.35	11310	7302	.08	3.44	380.45
361.65	3.59	11574	7376	.09	3.67	389.49
361.70	3.80	11841	7450	.09	3.89	398.60
361.75	4.01	12111	7524	.09	4.10	407.79
361.80	4.20	12383	7598	.09	4.29	417.05
361.85	4.39	12658	7673	.09	4.48	426.41
361.90	4.57	12935	7748	.09	4.66	435.84
361.95	4.74	13216	7824	.09	4.83	445.36

LEVEL POOL ROUTING DATA

HYG Dir = C:\Shap_Ass\Active Projects\Warner Ranch\3rd Submital\Pond Pack\BMP 7\
Inflow HYG file = NONE STORED - BIORETENTION7IN 100
Outflow HYG file = NONE STORED - BIORETENTION7OUT 100

Pond Node Data = BIORETENTION7
Pond Volume Data = BIORETENTION7
Pond Outlet Data = Outlet 1

Infiltration = .5000 in/hr

INITIAL CONDITIONS

Starting WS Elev	=	359.00 ft
Starting Volume	=	0 cu.ft
Starting Outflow	=	.00 cfs
Starting Infiltr.	=	.00 cfs
Starting Total Qout	=	.00 cfs
Time Increment	=	1.00 min

Elevation ft	Outflow cfs	Storage cu.ft	Area sq.ft	Infilt. cfs	Q Total cfs	2S/t + O cfs
362.00	4.91	13499	7900	.09	5.00	454.96

S/N:
PondPack Ver: Compute Time: Date:

LEVEL POOL ROUTING SUMMARY

HYG Dir = C:\Shap_Ass\Active Projects\Warner Ranch\3rd Submital\Pond Pack\BMP 7\
Inflow HYG file = NONE STORED - BIORETENTION7IN 100
Outflow HYG file = NONE STORED - BIORETENTION7OUT 100

Pond Node Data = BIORETENTION7
Pond Volume Data = BIORETENTION7
Pond Outlet Data = Outlet 1

Infiltration = .5000 in/hr

INITIAL CONDITIONS

Starting WS Elev	=	359.00 ft
Starting Volume	=	0 cu.ft
Starting Outflow	=	.00 cfs
Starting Infiltr.	=	.00 cfs
Starting Total Qout	=	.00 cfs
Time Increment	=	1.00 min

INFLOW/OUTFLOW HYDROGRAPH SUMMARY

Peak Inflow	=	8.91 cfs	at	248.00 min
Peak Outflow	=	4.39 cfs	at	253.00 min
Peak Infiltration	=	.09 cfs	at	253.00 min
Peak Elevation	=	361.85 ft		
Peak Storage	=	12649 cu.ft		

MASS BALANCE (cu.ft)

+ Initial Vol	=	0
+ HYG Vol IN	=	22133
- Infiltration	=	8335
- HYG Vol OUT	=	10945
- Retained Vol	=	2854
Unrouted Vol	=	0 cu.ft (.000% of Inflow Volume)

DETENTION TIMES SUMMARY

HYG Dir = C:\Shap_Ass\Active Projects\Warner Ranch\3rd Submital\Pond Pack\BMP 7\
Inflow HYG file = NONE STORED - BIORETENTION7IN 100
Outflow HYG file = NONE STORED - BIORETENTION7OUT 100

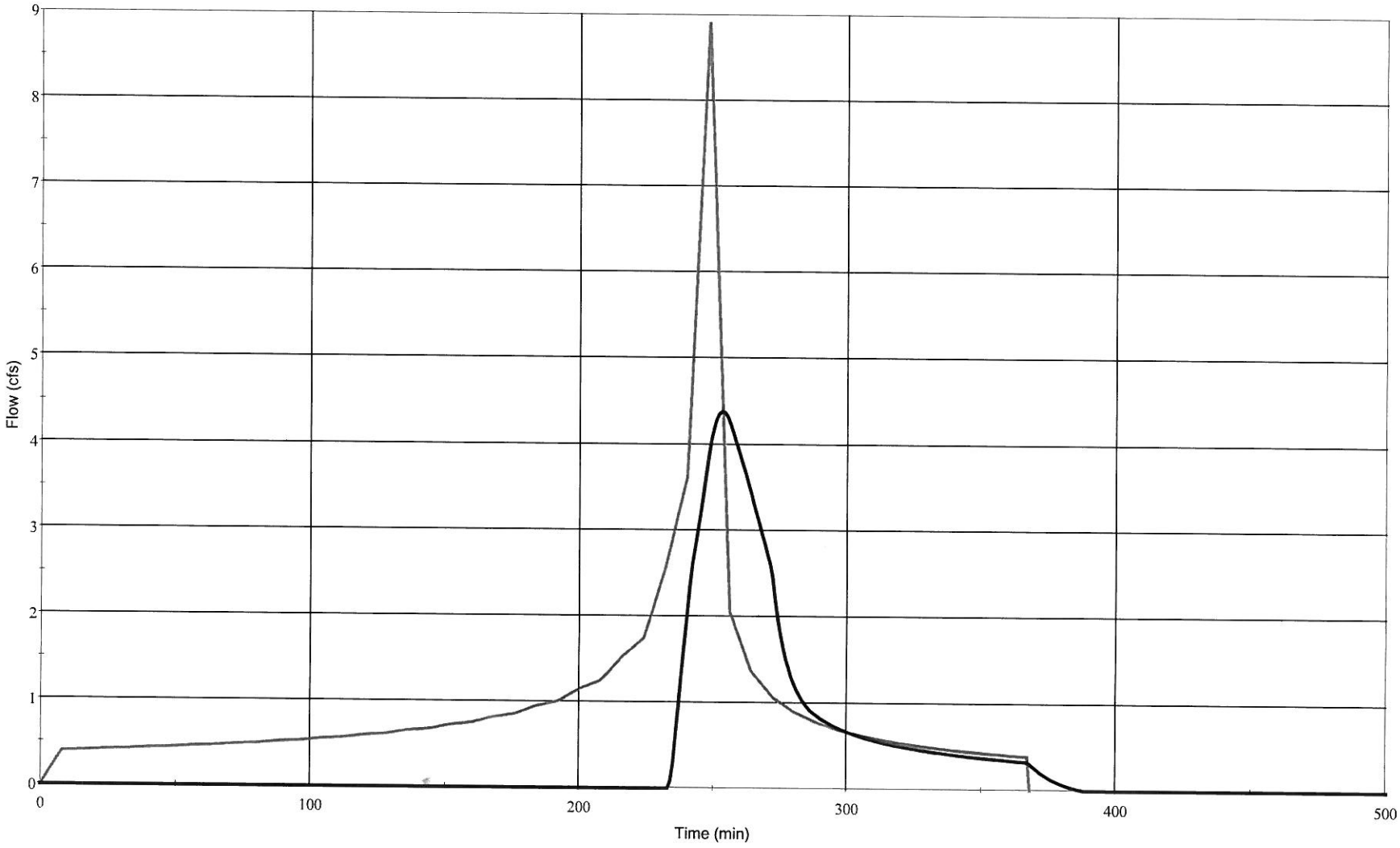
Pond Node Data = BIORETENTION7
Pond Volume Data = BIORETENTION7
Pond Outlet Data = Outlet 1

Infiltration = .5000 in/hr

APPROXIMATE DETENTION TIME

Tp, Outflow + Infilt.	=	253.00 min
Tp, Total Inflow	=	248.00 min
Peak to Peak	=	5.00 min
Qout+Infilt. Centroid	=	578.53 min
Inflow Centroid	=	212.20 min
Centroid to Centroid	=	366.32 min
Weighted Avg. Plug Time	=	560.96 min
Max.Plug Vol. Plug Time	=	600.12 min
Max.Inflow Plug Volume	=	515 cu.ft (From 247.00 to 248.00 min)

NODE 76 - BIORETENTION - BMP 7
INFLOW/OUTFLOW HYDROGRAPH
100-YEAR STORM EVENT



Bio-Retention Pond-8

100-year Development Conditions

San Diego County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c)1991-2003 Version 7.3

Rational method hydrology program based on
San Diego County Flood Control Division 2003 hydrology manual
Rational Hydrology Study Date: 11/14/12

********* Hydrology Study Control Information **********

WARNER RANCH
100-YEAR STORM EVENT DEVELOPMENT CONDITIONS
BIO-RETENTION POND 8

Shapouri & Associates, Rancho Santa Fe, CA - S/N 968

Rational hydrology study storm event year is 100.0
English (in-lb) input data Units used

Map data precipitation entered:
6 hour, precipitation(inches) = 3.500
24 hour precipitation(inches) = 6.000
P6/P24 = 58.3%
San Diego hydrology manual 'C' values used

++
Process from Point/Station 101.100 to Point/Station 101.200
**** INITIAL AREA EVALUATION ****

Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.400
Decimal fraction soil group C = 0.600
Decimal fraction soil group D = 0.000
[HIGH DENSITY RESIDENTIAL]
(24.0 DU/A or Less)
Impervious value, Ai = 0.650
Sub-Area C Value = 0.682
Initial subarea total flow distance = 393.600(Ft.)
Highest elevation = 412.500(Ft.)
Lowest elevation = 402.000(Ft.)
Elevation difference = 10.500(Ft.) Slope = 2.668 %
Top of Initial Area Slope adjusted by User to 1.000 %
Bottom of Initial Area Slope adjusted by User to 6.000 %
INITIAL AREA TIME OF CONCENTRATION CALCULATIONS:
The maximum overland flow distance is 65.00 (Ft)
for the top area slope value of 1.00 %, in a development type of
24.0 DU/A or Less
In Accordance With Figure 3-3
Initial Area Time of Concentration = 6.07 minutes
TC = [1.8*(1.1-C)*distance(Ft.)^.5)/(% slope^(1/3)]
TC = [1.8*(1.1-0.6820)*(65.000^.5)/(1.000^(1/3)]= 6.07
The initial area total distance of 393.60 (Ft.) entered leaves a
remaining distance of 328.60 (Ft.)
Using Figure 3-4, the travel time for this distance is 2.00 minutes
for a distance of 328.60 (Ft.) and a slope of 6.00 %
with an elevation difference of 19.72(Ft.) from the end of the top area
Tt = [11.9*length(Mi)^3)/(elevation change(Ft.))]^.385 *60(min/hr)
= 1.999 Minutes
Tt=[(11.9*0.0622^3)/(19.72)]^.385= 2.00
Total initial area Ti = 6.07 minutes from Figure 3-3 formula plus
2.00 minutes from the Figure 3-4 formula = 8.07 minutes
Rainfall intensity (I) = 6.774(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.682
Subarea runoff = 6.561(CFS)
Total initial stream area = 1.420(Ac.)

++
Process from Point/Station 101.200 to Point/Station 101.200
**** 6 HOUR HYDROGRAPH ****
++

Hydrograph Data - Section 6, San Diego County Hydrology manual, June 2003

Time of Concentration = 8.07
Basin Area = 1.42 Acres
6 Hour Rainfall = 3.500 Inches
Runoff Coefficient = 0.682
Peak Discharge = 6.56 CFS

Time (Min)	Discharge (CFS)
0	0.000
8	0.202
16	0.205
24	0.212
32	0.215
40	0.222
48	0.226
56	0.234
64	0.239
72	0.248
80	0.253
88	0.264
96	0.270
104	0.283
112	0.290
120	0.306
128	0.314
136	0.334
144	0.345
152	0.370
160	0.384
168	0.417
176	0.437
184	0.485
192	0.514
200	0.589
208	0.639
216	0.781
224	0.889
232	1.306
240	1.840
248	6.561
256	1.047
264	0.701
272	0.548
280	0.459
288	0.400
296	0.357
304	0.324
312	0.297
320	0.276
328	0.258
336	0.243
344	0.230
352	0.219
360	0.209
368	0.200

Job File: C:\Shap_Ass\Active Projects\Warner Ranch\3rd Submital\Pond Pack\BMP 8\5508RPL4-100 YR-BMP 8.PPW
Rain Dir: C:\Shap_Ass\Active Projects\Warner Ranch\3rd Submital\Pond Pack\BMP 8\

==========
JOB TITLE
==========

Project Date: 11/23/2012
Project Engineer: Shapouri & Associates
Project Title: 5508rpl4
Project Comments: **NODE 101.2**
5508rpl4 - Bioretention - BMP 8

S/N:
PondPack Ver: Compute Time: Date:

Table of Contents

Table of Contents (continued)

S/N:
PondPack Ver: Compute Time: Date:

MASTER DESIGN STORM SUMMARY

Hydrograph Queue Only Network

MASTER NETWORK SUMMARY
SCS Unit Hydrograph Method
Hydrograph File Import Option Used For 1 node(s)

(*Node=Outfall; +Node=Diversion;)
(Trun= HYG Truncation: Blank=None; L=Left; R=Rt; LR=Left&Rt)

Storage Node ID	Type	Return Event	HYG Vol cu.ft	Trun	Qpeak min	Qpeak cfs	Max WSEL ft	Max Pond cu.ft
BIORETENTION8IN	POND	100	12254		248.00	6.56		
BIORETENTION8OUT	POND	100	5434		253.00	3.30	403.74	7403
HYD 8	HYG	100	12260	R	248.00	6.56		
*OUT 8 - N86	JCT	100	5434		253.00	3.30		

S/N:
PondPack Ver: Compute Time: Date:

NETWORK SUMMARY -- NODES
(Trun.= HYG Truncation: Blank=None; L=Left; R=Rt; LR=Left & Rt)

Node ID	Type	HYG Vol cu.ft	Trun.	Qpeak min	Qpeak cfs	Max WSEL ft
BIORETENTION8IN	POND	12254		248.00	6.56	
BIORETENTION8OUT	POND	5434		253.00	3.30	403.74
HYD 8	HYG	12260	R	248.00	6.56	
Outfall OUT 8 - N86	JCT	5434		253.00	3.30	

S/N:
PondPack Ver: Compute Time: Date:

HYG file =
HYG ID = HYG 8
HYG Tag = N101.2

Peak Discharge =	6.56 cfs
Time to Peak =	248.00 min
HYG Volume =	12260 cu.ft

HYDROGRAPH ORDINATES (cfs)
Output Time increment = 8.00 min
Time on left represents time for first value in each row.

Time min					
.00	.00	.20	.21	.21	.22
40.00	.22	.23	.23	.24	.25
80.00	.25	.26	.27	.28	.29
120.00	.31	.31	.33	.35	.37
160.00	.38	.42	.44	.49	.51
200.00	.59	.64	.78	.89	1.31
240.00	1.84	6.56	1.05	.70	.55
280.00	.46	.40	.36	.32	.30
320.00	.28	.26	.24	.23	.22
360.00	.21	.20			

File.... C:\Shap_Ass\Active Projects\Warner Ranch\3rd Submital\Pond Pack\BMP 8\5508RPL4-100 YR-BMP 8.PPW

Elevation (ft)	Planimeter (sq.in)	Area (sq.ft)	A1+A2+sqr(A1*A2) (sq.ft)	Volume (cu.ft)	Volume Sum (cu.ft)
401.00	-----	3450	0	0	0
402.50	-----	3450	10350	5175	5175
403.00	-----	3900	11018	1836	7011
404.00	-----	4850	13099	4366	11378

S/N:
PondPack Ver: Compute Time: Date:

File.... C:\Shap_Ass\Active Projects\Warner Ranch\3rd Submital\Pond Pack\BMP 8\5508RPL4-100 YR-BMP 8.PPW

VOLUME COMPLETELY FILLED WITH MATERIAL
(Adjust Volumes for Voids)

Void Spaces = 73.00000 %

HW Elv, ft	Total, cu.ft	Adjusted,cu.ft
401.00	0	0
402.50	5175	3778
403.00	7011	5118
404.00	11378	8306

S/N:
PondPack Ver: Compute Time: Date:

File.... C:\Shap_Ass\Active Projects\Warner Ranch\3rd Submital\Pond Pack\BMP 8\5508RPL4-100 YR-BMP 8.PPW

REQUESTED POND WS ELEVATIONS:

Min. Elev.= 401.00 ft
Increment = .05 ft
Max. Elev.= 404.00 ft

****
OUTLET CONNECTIVITY
****

---> Forward Flow Only (UpStream to DnStream)
<--- Reverse Flow Only (DnStream to UpStream)
<---> Forward and Reverse Both Allowed

Structure	No.		Outfall	E1, ft	E2, ft
Stand Pipe	R2	--->	CV	403.250	404.000
Stand Pipe	R4	--->	CV	403.250	404.000
Stand Pipe	R1	--->	CV	403.250	372.000
Stand Pipe	R5	--->	CV	403.250	404.000
Stand Pipe	R0	--->	CV	403.250	372.000
Stand Pipe	R3	--->	CV	403.250	404.000
Stand Pipe	RP	--->	CV	403.250	372.000
Stand Pipe	R6	--->	CV	403.250	404.000
Culvert-Circular	CV	--->	TW	396.750	404.000
TW SETUP, DS Channel					

OUTLET STRUCTURE INPUT DATA

Structure ID	= R2	
Structure Type	= Stand Pipe	
# of Openings	= 1	
Invert Elev.	= 403.25	ft
Diameter	= .5000	ft
Orifice Area	= .1963	sq.ft
Orifice Coeff.	= .600	
Weir Length	= 1.57	ft
Weir Coeff.	= 3.100	
K, Reverse	= 1.000	
Mannings n	= .0000	
Kev,Charged Riser	= .000	
Weir Submergence	= No	

Structure ID	= R4	
Structure Type	= Stand Pipe	
# of Openings	= 1	
Invert Elev.	= 403.25	ft
Diameter	= .5000	ft
Orifice Area	= .1963	sq.ft
Orifice Coeff.	= .600	
Weir Length	= 1.57	ft
Weir Coeff.	= 3.100	
K, Reverse	= 1.000	
Mannings n	= .0000	
Kev,Charged Riser	= .000	
Weir Submergence	= No	

File.... C:\Shap_Ass\Active Projects\Warner Ranch\3rd Submital\Pond Pack\BMP 8\5508RPL4-100 YR-BMP 8.PPW

OUTLET STRUCTURE INPUT DATA

Structure ID	= R1	
Structure Type	= Stand Pipe	
# of Openings	= 1	
Invert Elev.	= 403.25	ft
Diameter	= .5000	ft
Orifice Area	= .1963	sq.ft
Orifice Coeff.	= .600	
Weir Length	= 1.57	ft
Weir Coeff.	= 3.100	
K, Reverse	= 1.000	
Mannings n	= .0000	
Kev,Charged Riser	= .000	
Weir Submergence	= No	

Structure ID	= R5	
Structure Type	= Stand Pipe	
# of Openings	= 1	
Invert Elev.	= 403.25	ft
Diameter	= .5000	ft
Orifice Area	= .1963	sq.ft
Orifice Coeff.	= .600	
Weir Length	= 1.57	ft
Weir Coeff.	= 3.100	
K, Reverse	= 1.000	
Mannings n	= .0000	
Kev,Charged Riser	= .000	
Weir Submergence	= No	

OUTLET STRUCTURE INPUT DATA

Structure ID	= R0	
Structure Type	= Stand Pipe	
# of Openings	=	1
Invert Elev.	=	403.25 ft
Diameter	=	.5000 ft
Orifice Area	=	.1963 sq.ft
Orifice Coeff.	=	.600
Weir Length	=	1.57 ft
Weir Coeff.	=	3.100
K, Reverse	=	1.000
Mannings n	=	.0000
Kev,Charged Riser	=	.000
Weir Submergence	= No	

Structure ID	= R3	
Structure Type	= Stand Pipe	
# of Openings	=	1
Invert Elev.	=	403.25 ft
Diameter	=	.5000 ft
Orifice Area	=	.1963 sq.ft
Orifice Coeff.	=	.600
Weir Length	=	1.57 ft
Weir Coeff.	=	3.100
K, Reverse	=	1.000
Mannings n	=	.0000
Kev,Charged Riser	=	.000
Weir Submergence	= No	

File.... C:\Shap_Ass\Active Projects\Warner Ranch\3rd Submital\Pond Pack\BMP 8\5508RPL4-100 YR-BMP 8.PPW

OUTLET STRUCTURE INPUT DATA

Structure ID	= RP	
Structure Type	= Stand Pipe	
# of Openings	= 1	
Invert Elev.	= 403.25	ft
Diameter	= .5000	ft
Orifice Area	= .1963	sq.ft
Orifice Coeff.	= .600	
Weir Length	= 1.57	ft
Weir Coeff.	= 3.100	
K, Reverse	= 1.000	
Mannings n	= .0000	
Kev,Charged Riser	= .000	
Weir Submergence	= No	

Structure ID	= R6	
Structure Type	= Stand Pipe	
# of Openings	= 1	
Invert Elev.	= 403.25	ft
Diameter	= .5000	ft
Orifice Area	= .1963	sq.ft
Orifice Coeff.	= .600	
Weir Length	= 1.57	ft
Weir Coeff.	= 3.100	
K, Reverse	= 1.000	
Mannings n	= .0000	
Kev,Charged Riser	= .000	
Weir Submergence	= No	

File.... C:\Shap_Ass\Active Projects\Warner Ranch\3rd Submital\Pond Pack\BMP 8\5508RPL4-100 YR-BMP 8.PPW

OUTLET STRUCTURE INPUT DATA

Structure ID	=	CV	
Structure Type	=	Culvert-Circular	
No. Barrels	=	1	
Barrel Diameter	=	1.5000	ft
Upstream Invert	=	396.75	ft
Dnstream Invert	=	396.00	ft
Horiz. Length	=	39.45	ft
Barrel Length	=	39.46	ft
Barrel Slope	=	.01901	ft/ft

OUTLET CONTROL DATA...

Mannings n	=	.0130	
Ke	=	.5000	(forward entrance loss)
Kb	=	.018213	(per ft of full flow)
Kr	=	.5000	(reverse entrance loss)
HW Convergence	=	.001	+/- ft

INLET CONTROL DATA...

Equation form	=	1	
Inlet Control K	=	.0078	
Inlet Control M	=	2.0000	
Inlet Control c	=	.03790	
Inlet Control Y	=	.6900	
T1 ratio (HW/D)	=	1.126	
T2 ratio (HW/D)	=	1.287	
Slope Factor	=	-.500	

Use unsubmerged inlet control Form 1 equ. below T1 elev.
Use submerged inlet control Form 1 equ. above T2 elev.

In transition zone between unsubmerged and submerged inlet control, interpolate between flows at T1 & T2...
At T1 Elev = 398.44 ft ---> Flow = 7.58 cfs
At T2 Elev = 398.68 ft ---> Flow = 8.66 cfs

OUTLET STRUCTURE INPUT DATA

Structure ID = TW
Structure Type = TW SETUP, DS Channel

USE DOWNSTREAM CHANNEL NORMAL DEPTH FOR TW...
Channel Type: Chn-Circular
Channel ID: Chn-Cir - 1

CONVERGENCE TOLERANCES...
Maximum Iterations= 40
Min. TW tolerance = .01 ft
Max. TW tolerance = .01 ft
Min. HW tolerance = .01 ft
Max. HW tolerance = .01 ft
Min. Q tolerance = .00 cfs
Max. Q tolerance = .00 cfs

USE DOWNSTREAM CHANNEL NORMAL DEPTH FOR TW...
Channel Type: Chn-Circular
Channel ID: Chn-Cir - 1

Solution to Mannings Open Channel Flow Equation
(Computed values are based on normal depth.)

CIRCULAR CROSS SECTION

Slope = .017100 ft/ft
Mannings n = 0.01300
Invert Elev. = 373.00 ft
Top of Channel = 375.00 ft
Diameter = 2.0000 ft

Name.... BIORETENTION8
File.... C:\Shap_Ass\Active Projects\Warner Ranch\3rd Submital\Pond Pack\BMP 8\5508RPL4-100 YR-BMP 8.PPW

LEVEL POOL ROUTING DATA

HYG Dir = C:\Shap_Ass\Active Projects\Warner Ranch\3rd Submital\Pond Pack\BMP 8\
Inflow HYG file = NONE STORED - BIORETENTION8IN 100
Outflow HYG file = NONE STORED - BIORETENTION8OUT 100

Pond Node Data = BIORETENTION8
Pond Volume Data = BIORETENTION8
Pond Outlet Data = Outlet 1

Infiltration = .5000 in/hr

INITIAL CONDITIONS

Starting WS Elev	=	401.00 ft
Starting Volume	=	0 cu.ft
Starting Outflow	=	.00 cfs
Starting Infiltr.	=	.00 cfs
Starting Total Qout	=	.00 cfs
Time Increment	=	1.00 min

Elevation ft	Outflow cfs	Storage cu.ft	Area sq.ft	Infilt. cfs	Q Total cfs	2S/t + O cfs
401.00	.00	0	3450	.00	.00	.00
401.05	.00	126	3450	.04	.04	4.24
401.10	.00	252	3450	.04	.04	8.44
401.15	.00	378	3450	.04	.04	12.63
401.20	.00	504	3450	.04	.04	16.83
401.25	.00	630	3450	.04	.04	21.03
401.30	.00	756	3450	.04	.04	25.22
401.35	.00	881	3450	.04	.04	29.42
401.40	.00	1007	3450	.04	.04	33.62
401.45	.00	1133	3450	.04	.04	37.82
401.50	.00	1259	3450	.04	.04	42.01
401.55	.00	1385	3450	.04	.04	46.21
401.60	.00	1511	3450	.04	.04	50.41
401.65	.00	1637	3450	.04	.04	54.61
401.70	.00	1763	3450	.04	.04	58.81
401.75	.00	1889	3450	.04	.04	63.00
401.80	.00	2015	3450	.04	.04	67.20
401.85	.00	2141	3450	.04	.04	71.40
401.90	.00	2267	3450	.04	.04	75.59
401.95	.00	2393	3450	.04	.04	79.79

S/N:
PondPack Ver: Compute Time: Date:

Name.... BIORETENTION8
File.... C:\Shap_Ass\Active Projects\Warner Ranch\3rd Submital\Pond Pack\BMP 8\5508RPL4-100 YR-BMP 8.PPW

LEVEL POOL ROUTING DATA

HYG Dir = C:\Shap_Ass\Active Projects\Warner Ranch\3rd Submital\Pond Pack\BMP 8\
Inflow HYG file = NONE STORED - BIORETENTION8IN 100
Outflow HYG file = NONE STORED - BIORETENTION8OUT 100

Pond Node Data = BIORETENTION8
Pond Volume Data = BIORETENTION8
Pond Outlet Data = Outlet 1

Infiltration = .5000 in/hr

INITIAL CONDITIONS

Starting WS Elev	=	401.00 ft
Starting Volume	=	0 cu.ft
Starting Outflow	=	.00 cfs
Starting Infiltr.	=	.00 cfs
Starting Total Qout	=	.00 cfs
Time Increment	=	1.00 min

Elevation ft	Outflow cfs	Storage cu.ft	Area sq.ft	Infilt. cfs	Q Total cfs	2S/t + O cfs
402.00	.00	2519	3450	.04	.04	83.99
402.05	.00	2644	3450	.04	.04	88.19
402.10	.00	2770	3450	.04	.04	92.39
402.15	.00	2896	3450	.04	.04	96.58
402.20	.00	3022	3450	.04	.04	100.78
402.25	.00	3148	3450	.04	.04	104.98
402.30	.00	3274	3450	.04	.04	109.17
402.35	.00	3400	3450	.04	.04	113.37
402.40	.00	3526	3450	.04	.04	117.57
402.45	.00	3652	3450	.04	.04	121.77
402.50	.00	3778	3450	.04	.04	125.96
402.55	.00	3904	3494	.04	.04	130.19
402.60	.00	4033	3538	.04	.04	134.47
402.65	.00	4163	3582	.04	.04	138.80
402.70	.00	4294	3627	.04	.04	143.19
402.75	.00	4427	3672	.04	.04	147.63
402.80	.00	4562	3717	.04	.04	152.12
402.85	.00	4699	3762	.04	.04	156.67
402.90	.00	4837	3808	.04	.04	161.28
402.95	.00	4977	3854	.04	.04	165.94

Name.... BIORETENTION8
File.... C:\Shap_Ass\Active Projects\Warner Ranch\3rd Submital\Pond Pack\BMP 8\5508RPL4-100 YR-BMP 8.PPW

LEVEL POOL ROUTING DATA

HYG Dir = C:\Shap_Ass\Active Projects\Warner Ranch\3rd Submital\Pond Pack\BMP 8\
Inflow HYG file = NONE STORED - BIORETENTION8IN 100
Outflow HYG file = NONE STORED - BIORETENTION8OUT 100

Pond Node Data = BIORETENTION8
Pond Volume Data = BIORETENTION8
Pond Outlet Data = Outlet 1

Infiltration = .5000 in/hr

INITIAL CONDITIONS

Starting WS Elev	=	401.00 ft
Starting Volume	=	0 cu.ft
Starting Outflow	=	.00 cfs
Starting Infiltr.	=	.00 cfs
Starting Total Qout	=	.00 cfs
Time Increment	=	1.00 min

Elevation ft	Outflow cfs	Storage cu.ft	Area sq.ft	Infilt. cfs	Q Total cfs	2S/t + O cfs
403.00	.00	5118	3900	.05	.05	170.65
403.05	.00	5261	3945	.05	.05	175.43
403.10	.00	5406	3990	.05	.05	180.26
403.15	.00	5553	4036	.05	.05	185.14
403.20	.00	5701	4082	.05	.05	190.08
403.25	.00	5851	4128	.05	.05	195.07
403.30	.27	6002	4174	.05	.32	200.39
403.35	.77	6155	4221	.05	.82	206.00
403.40	1.41	6310	4268	.05	1.46	211.81
403.45	2.11	6467	4315	.05	2.16	217.73
403.50	2.36	6625	4362	.05	2.42	223.26
403.55	2.59	6785	4410	.05	2.64	228.82
403.60	2.80	6947	4458	.05	2.85	234.42
403.65	2.99	7111	4506	.05	3.04	240.07
403.70	3.17	7276	4554	.05	3.22	245.76
403.75	3.34	7443	4603	.05	3.39	251.50
403.80	3.50	7612	4652	.05	3.56	257.29
403.85	3.66	7783	4701	.05	3.71	263.14
403.90	3.81	7955	4750	.05	3.86	269.04
403.95	3.95	8130	4800	.06	4.01	275.00

S/N:
PondPack Ver: Compute Time: Date:

Name.... BIORETENTION8
File.... C:\Shap_Ass\Active Projects\Warner Ranch\3rd Submital\Pond Pack\BMP 8\5508RPL4-100 YR-BMP 8.PPW

LEVEL POOL ROUTING DATA

HYG Dir = C:\Shap_Ass\Active Projects\Warner Ranch\3rd Submital\Pond Pack\BMP 8\
Inflow HYG file = NONE STORED - BIORETENTION8IN 100
Outflow HYG file = NONE STORED - BIORETENTION8OUT 100

Pond Node Data = BIORETENTION8
Pond Volume Data = BIORETENTION8
Pond Outlet Data = Outlet 1

Infiltration = .5000 in/hr

INITIAL CONDITIONS

Starting WS Elev	= 401.00	ft
Starting Volume	= 0	cu.ft
Starting Outflow	= .00	cfs
Starting Infiltr.	= .00	cfs
Starting Total Qout	= .00	cfs
Time Increment	= 1.00	min

Elevation ft	Outflow cfs	Storage cu.ft	Area sq.ft	Infilt. cfs	Q Total cfs	2S/t + O cfs
404.00	4.09	8306	4850	.06	4.15	281.01

S/N:
PondPack Ver: Compute Time: Date:

LEVEL POOL ROUTING SUMMARY

HYG Dir = C:\Shap_Ass\Active Projects\Warner Ranch\3rd Submital\Pond Pack\BMP 8\
Inflow HYG file = NONE STORED - BIORETENTION8IN 100
Outflow HYG file = NONE STORED - BIORETENTION8OUT 100

Pond Node Data = BIORETENTION8
Pond Volume Data = BIORETENTION8
Pond Outlet Data = Outlet 1

Infiltration = .5000 in/hr

INITIAL CONDITIONS

Starting WS Elev	=	401.00 ft
Starting Volume	=	0 cu.ft
Starting Outflow	=	.00 cfs
Starting Infiltr.	=	.00 cfs
Starting Total Qout	=	.00 cfs
Time Increment	=	1.00 min

INFLOW/OUTFLOW HYDROGRAPH SUMMARY

Peak Inflow	=	6.56 cfs	at	248.00 min
Peak Outflow	=	3.30 cfs	at	253.00 min
Peak Infiltration	=	.05 cfs	at	253.00 min
Peak Elevation	=	403.74 ft		
Peak Storage	=	7403 cu.ft		

MASS BALANCE (cu.ft)

+ Initial Vol	=	0
+ HYG Vol IN	=	12254
- Infiltration	=	5032
- HYG Vol OUT	=	5434
- Retained Vol	=	1788
Unrouted Vol	= -	cu.ft (.001% of Inflow Volume)

DETENTION TIMES SUMMARY

HYG Dir = C:\Shap_Ass\Active Projects\Warner Ranch\3rd Submital\Pond Pack\BMP 8\
Inflow HYG file = NONE STORED - BIORETENTION8IN 100
Outflow HYG file = NONE STORED - BIORETENTION8OUT 100

Pond Node Data = BIORETENTION8
Pond Volume Data = BIORETENTION8
Pond Outlet Data = Outlet 1

Infiltration = .5000 in/hr

APPROXIMATE DETENTION TIME

Tp, Outflow + Infilt.	=	253.00 min
Tp, Total Inflow	=	248.00 min
Peak to Peak	=	5.00 min
Qout+Infilt. Centroid	=	613.37 min
Inflow Centroid	=	215.03 min
Centroid to Centroid	=	398.33 min
Weighted Avg. Plug Time	=	617.19 min
Max.Plug Vol. Plug Time	=	713.48 min
Max.Inflow Plug Volume	=	376 cu.ft (From 247.00 to 248.00 min)

NODE 101.2 - BIORETENTION - BMP 8
INFLOW/OUTFLOW HYDROGRAPH
100-YEAR STORM EVENT

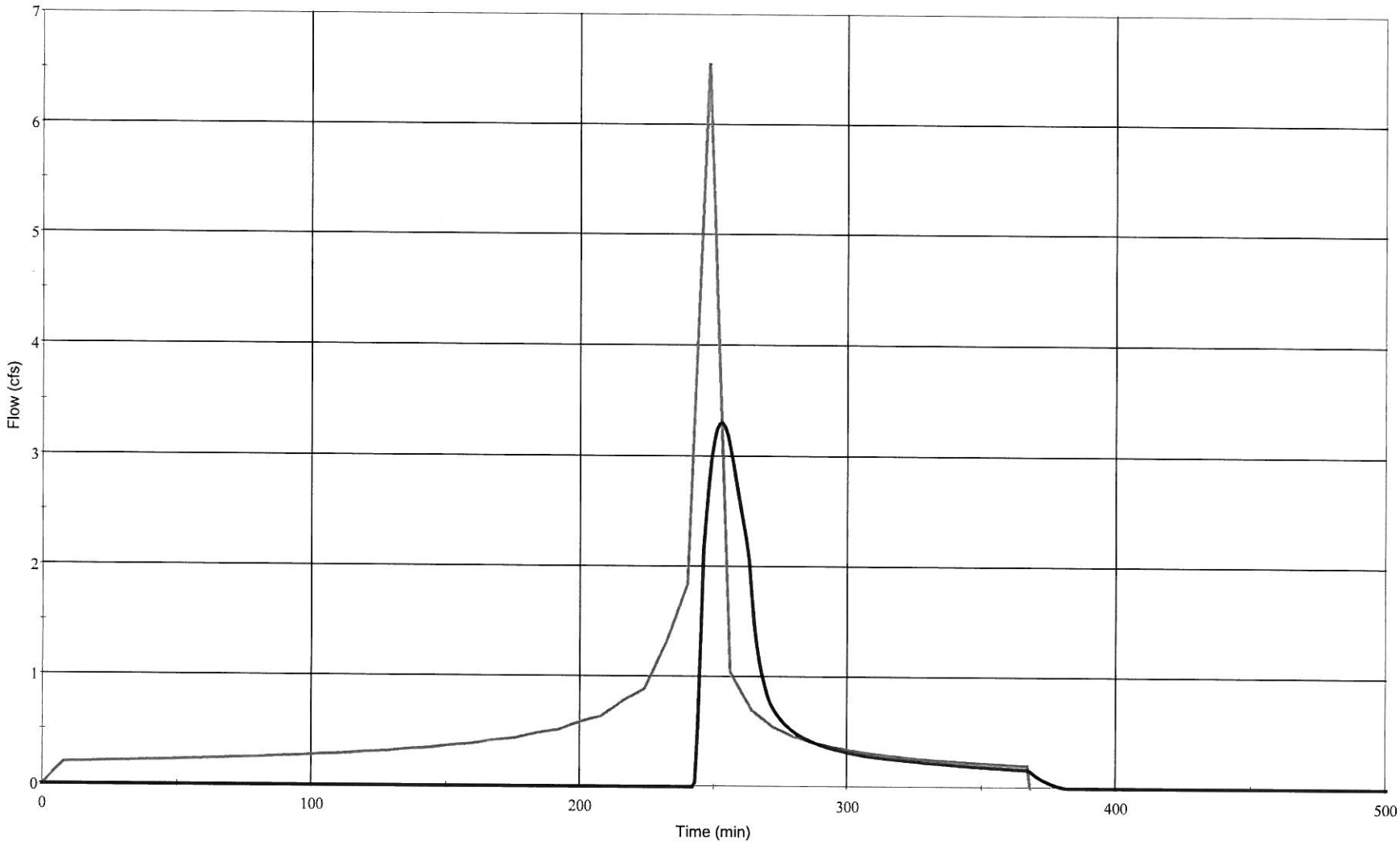


Table "A"

Existing Vs. Proposed Condition Design Point 1

TABLE "A"

Existing Vs. Proposed Conditions

Existing Condition:

Design Point No.	Event (year)	"C"	TC (min.)	Intensity (in/hr)	Area (acres)	Run-Off (cfs)
1	100	0.35	48	3.96	4,115.20	5,697.19
Total					**4,115**	**5,697.19**

Development Condition:

Design Point No.	Event (year)	"C"	TC (min.)	Intensity (in/hr)	Area (acres)	Run-Off (cfs)
1	100	0.41	48	3.20	4,117.25	5,402.56
Total					**4,117**	**5,402.56**

Hec-Ras Analysis

Gomez Creek 100 year Floodplain Existing Condition Analysis

HEC-RAS Version 4.1.0 Jan 2010
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: WR-GOMEZ CREEK PRE-1
Project File : WR-GOMEZCREEKPRE-.prj
Run Date and Time: 11/20/2012 4:07:35 PM

Project in English units

Project Description:
******* Autodesk, Inc. HEC-2 Input Data file ********
****
Minimum Data Input **********

****

****

PLAN DATA

Plan Summary Information:

Number of:	Cross Sections =	144	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: Supercritical Flow

****

FLOW DATA

Flow Title: Imported Flow 01
Flow File : C:\Shapouri&Associates\Active Projects\Warner Ranch\Hydrology\Hecras 2012\Hecras Gomez Creek Pre\Revised Gomez Creek Pre-1\WR-GOMEZCREEKPRE-.f01

Flow Data (cfs)

River	Reach	RS	PF 1
RIVER-1	Reach-1	152	5697.9

CROSS SECTION
REACH: Reach-1 RS: 150

INPUT
Description: 4
Station Elevation Data num= 39

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	396.29	6.96	394.21	14.42	392	22.34	389.59	26.34	388.39
28.57	387.8	36.42	386	45.4	384.01	51.02	382.69	57.53	381.3
63.28	380	67.32	379.13	72.33	378	81.38	375.94	84.62	375.07
88.17	374	93.63	372.3	94.28	372	99.31	369.8	102.35	368.45
102.54	368.32	103.03	368.3	103.42	368.39	107.14	370	111.27	372
120.57	373.75	122.31	374	130.01	375.26	134.46	376	137.83	376.74
143.29	378	145.19	378.42	148.68	379.13	153.48	380	160.84	381.29
164.51	382	167.1	382.37	169.06	382.5	172.03	382.8		

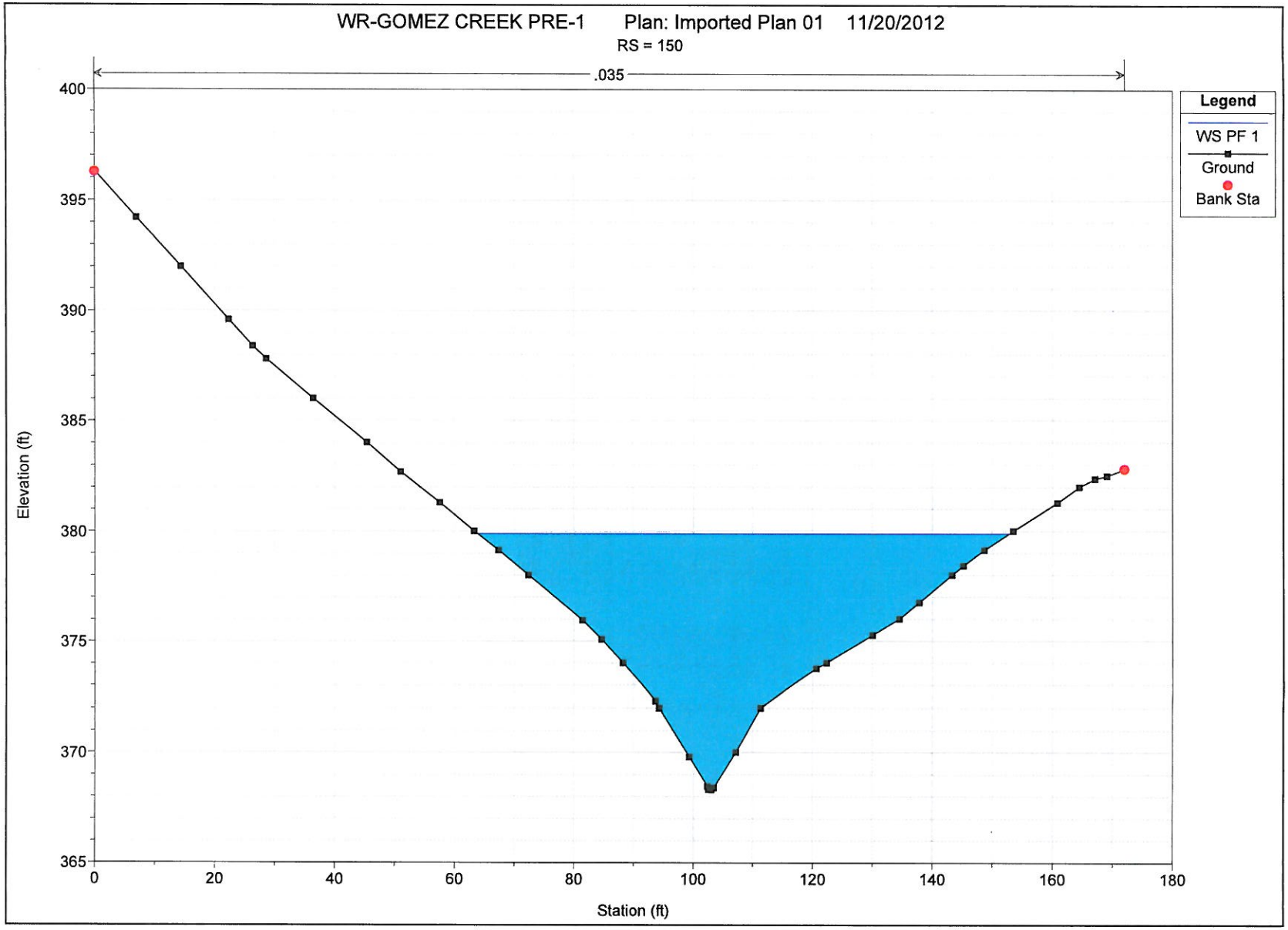
Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.035	0	.035	172.03	.035

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	172.03	25	25 1755.66	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	382.43	Element	Left OB	Channel	Right OB
Vel Head (ft)	2.53	Wt. n-Val.		0.035	
W.S. Elev (ft)	379.89	Reach Len. (ft)	25.00	25.00	1755.66
Crit W.S. (ft)	379.89	Flow Area (sq ft)		446.10	
E.G. Slope (ft/ft)	0.011109	Area (sq ft)		446.10	
Q Total (cfs)	5697.90	Flow (cfs)		5697.90	
Top Width (ft)	89.13	Top Width (ft)		89.13	
Vel Total (ft/s)	12.77	Avg. Vel. (ft/s)		12.77	
Max Chl Dpth (ft)	11.59	Hydr. Depth (ft)		5.01	
Conv. Total (cfs)	54060.0	Conv. (cfs)		54060.0	
Length Wtd. (ft)	25.00	Wetted Per. (ft)		92.50	
Min Ch El (ft)	368.30	Shear (lb/sq ft)		3.34	
Alpha	1.00	Stream Power (lb/ft s)	172.03	0.00	0.00
Frctn Loss (ft)		Cum Volume (acre-ft)		60.06	
C & E Loss (ft)		Cum SA (acres)		38.63	


WR-GOMEZ CREEK PRE-1 Plan: Imported Plan 01 11/20/2012
RS = 150
.035
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
400
395
390
385
380
375
370
365
0
20
40
60
80
100
120
140
160
180

CROSS SECTION
REACH: Reach-1 RS: 140

INPUT
Description: 14
Station Elevation Data num= 39

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
207.94	390	208.9	389.49	212.08	388	213.5	387.25	224.63	382
226.6	381.14	228.99	380	231.57	379.09	233.67	378	237.63	376.96
241.83	376	245.65	374	249.11	372	252.75	370	257.41	370
259.64	372	262.14	372.86	264.99	374	269.54	374.71	276.94	376
286.99	377.16	288.53	377.27	290.57	376.73	291.47	376.72	294.79	378
298.23	379.63	310.84	378	323.41	377.87	329.13	377.78	334.44	377.6
337.89	377.83	341.99	378	347.2	378.62	351.8	379.25	356.9	380
359.52	380.96	362.72	382	364.95	382.79	368.66	384		

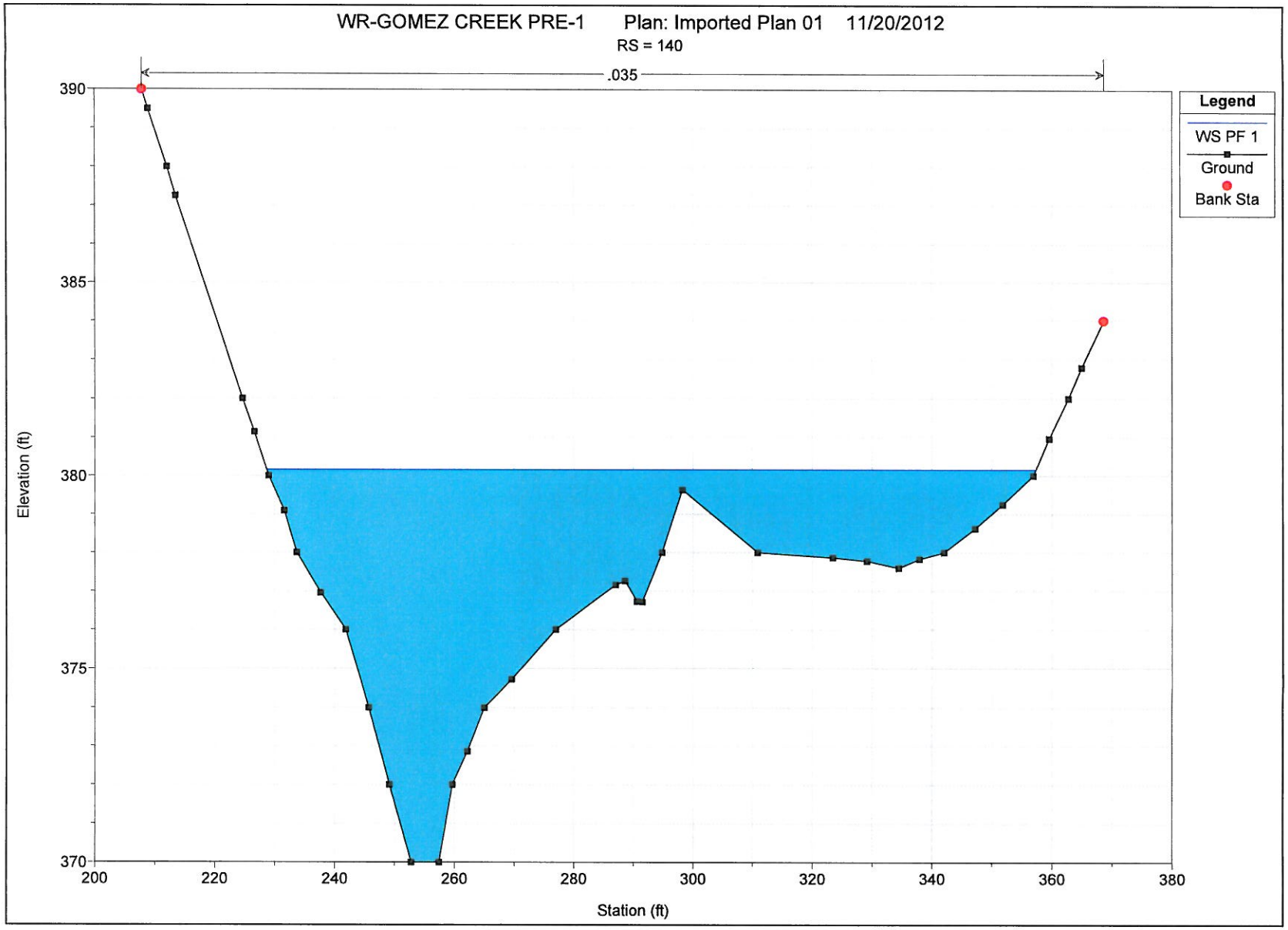
Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
	.035	207.94	.035	368.66	.035

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
207.94	368.66	25	25	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	382.67	Element	Left OB	Channel	Right OB
Vel Head (ft)	2.50	Wt. n-Val.		0.035	
W.S. Elev (ft)	380.17	Reach Len. (ft)	25.00	25.00	25.00
Crit W.S. (ft)	380.63	Flow Area (sq ft)		449.16	
E.G. Slope (ft/ft)	0.017672	Area (sq ft)		449.16	
Q Total (cfs)	5697.90	Flow (cfs)		5697.90	
Top Width (ft)	128.72	Top Width (ft)		128.72	
Vel Total (ft/s)	12.69	Avg. Vel. (ft/s)		12.69	
Max Chl Dpth (ft)	10.17	Hydr. Depth (ft)		3.49	
Conv. Total (cfs)	42862.2	Conv. (cfs)		42862.2	
Length Wtd. (ft)		Wetted Per. (ft)		133.29	
Min Ch El (ft)	370.00	Shear (lb/sq ft)		3.72	
Alpha	1.00	Stream Power (lb/ft s)	368.66	0.00	0.00
Frctn Loss (ft)	0.36	Cum Volume (acre-ft)		57.42	
C & E Loss (ft)	0.06	Cum SA (acres)		38.00	


WR-GOMEZ CREEK PRE-1 Plan: Imported Plan 01 11/20/2012
RS = 140
.035
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
390
385
380
375
370
200
220
240
260
280
300
320
340
360
380
Station (ft)

CROSS SECTION
REACH: Reach-1 RS: 130

INPUT
Description: 24
Station Elevation Data num= 20

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
326.43	382.73	334.3	379.11	336.58	378	340.95	376	343.31	374.99
355.21	370	382.88	370	387.71	370.48	391.09	370.85	400.35	372
404.15	372.27	406.89	372.36	413.04	372.62	443.91	374	449.03	375.07
452.96	376	458.27	377.31	470.51	380.27	478.69	382	506.04	384.92

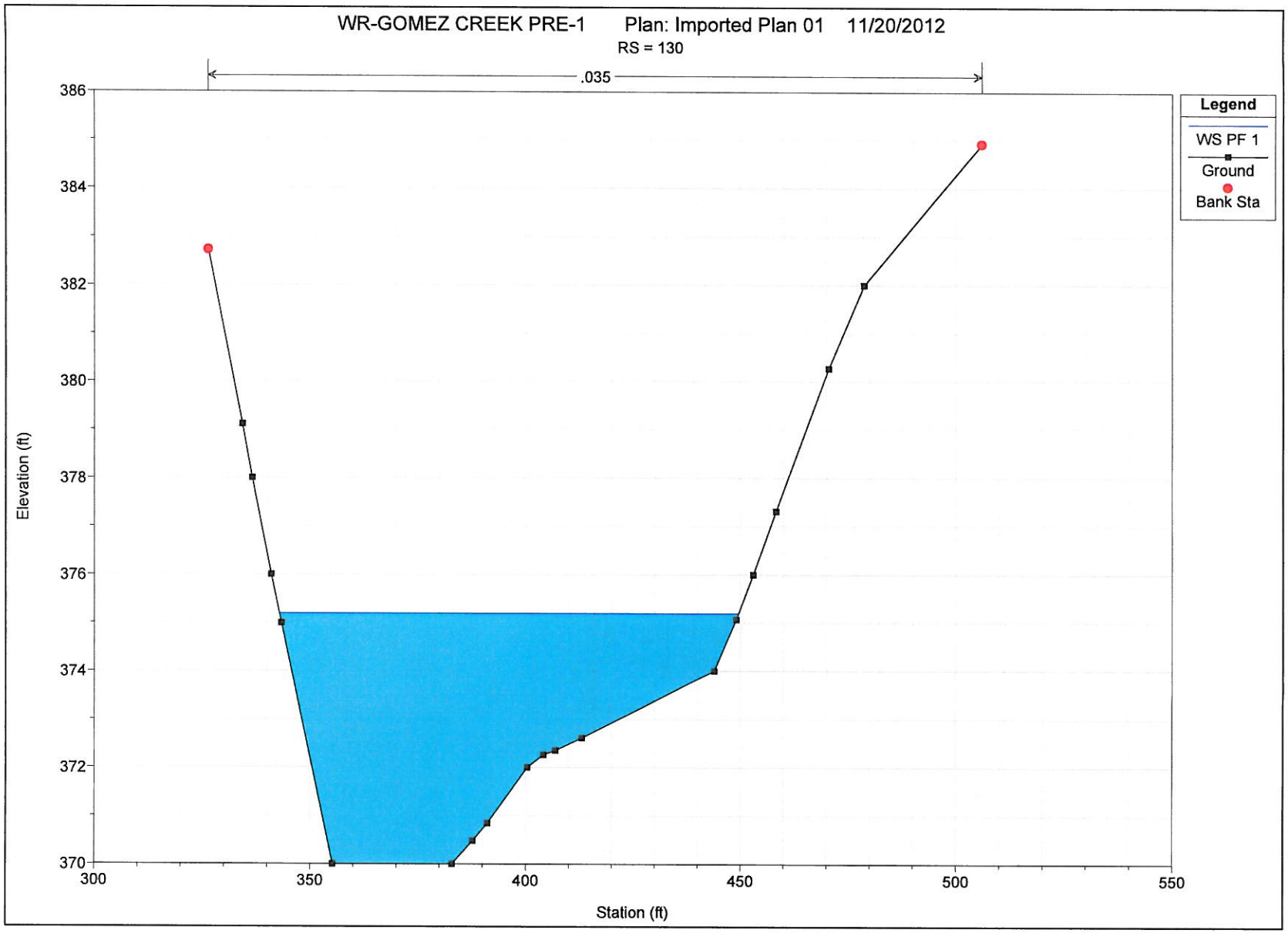
Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
	.035	326.43	.035	506.04	.035

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
326.43	506.04	25	25	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	379.36	Element	Left OB	Channel	Right OB
Vel Head (ft)	4.16	Wt. n-Val.		0.035	
W.S. Elev (ft)	375.20	Reach Len. (ft)	25.00	25.00	25.00
Crit W.S. (ft)	376.45	Flow Area (sq ft)		348.06	
E.G. Slope (ft/ft)	0.031263	Area (sq ft)		348.06	
Q Total (cfs)	5697.90	Flow (cfs)		5697.90	
Top Width (ft)	106.74	Top Width (ft)		106.74	
Vel Total (ft/s)	16.37	Avg. Vel. (ft/s)		16.37	
Max Chl Dpth (ft)	5.20	Hydr. Depth (ft)		3.26	
Conv. Total (cfs)	32225.3	Conv. (cfs)		32225.3	
Length Wtd. (ft)		Wetted Per. (ft)		108.08	
Min Ch El (ft)	370.00	Shear (lb/sq ft)		6.29	
Alpha	1.00	Stream Power (lb/ft s)	506.04	0.00	0.00
Frctn Loss (ft)	0.73	Cum Volume (acre-ft)		54.78	
C & E Loss (ft)	0.02	Cum SA (acres)		37.30	


WR-GOMEZ CREEK PRE-1 Plan: Imported Plan 01 11/20/2012
RS = 130
.035
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
386
384
382
380
378
376
374
372
370
300
350
400
450
500
550
Station (ft)

CROSS SECTION
REACH: Reach-1 RS: 120

INPUT
Description: 34
Station Elevation Data num= 51

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
283.44	386	286.24	384.81	287.97	384	292.01	382.18	292.72	381.8
294.47	381.07	299.67	378.74	301.54	378	302.97	377.34	306.1	376
307.43	374.8	309.16	374	313.83	373.26	318.05	372.48	320.33	372
336.55	372	340.75	371.96	340.94	372	353.94	372	355.15	371.69
361.14	370.78	366.1	370	366.81	369.83	378.93	369.57	380.05	369.62
391.54	370	392.95	370.27	396.5	372	397.86	372.63	400.3	374
420.81	374	422.01	373.51	425.43	372	441.67	371.91	458.72	371.91
460.43	371.92	488.17	371.39	489.98	371.42	495.84	371.45	499.58	371.54
507.93	371.95	509.22	372	512.84	372.72	517.4	373.38	519.7	373.76
521.95	374	526.34	374.99	528.04	375.41	530.1	376	537.92	378
542.75	379.3								

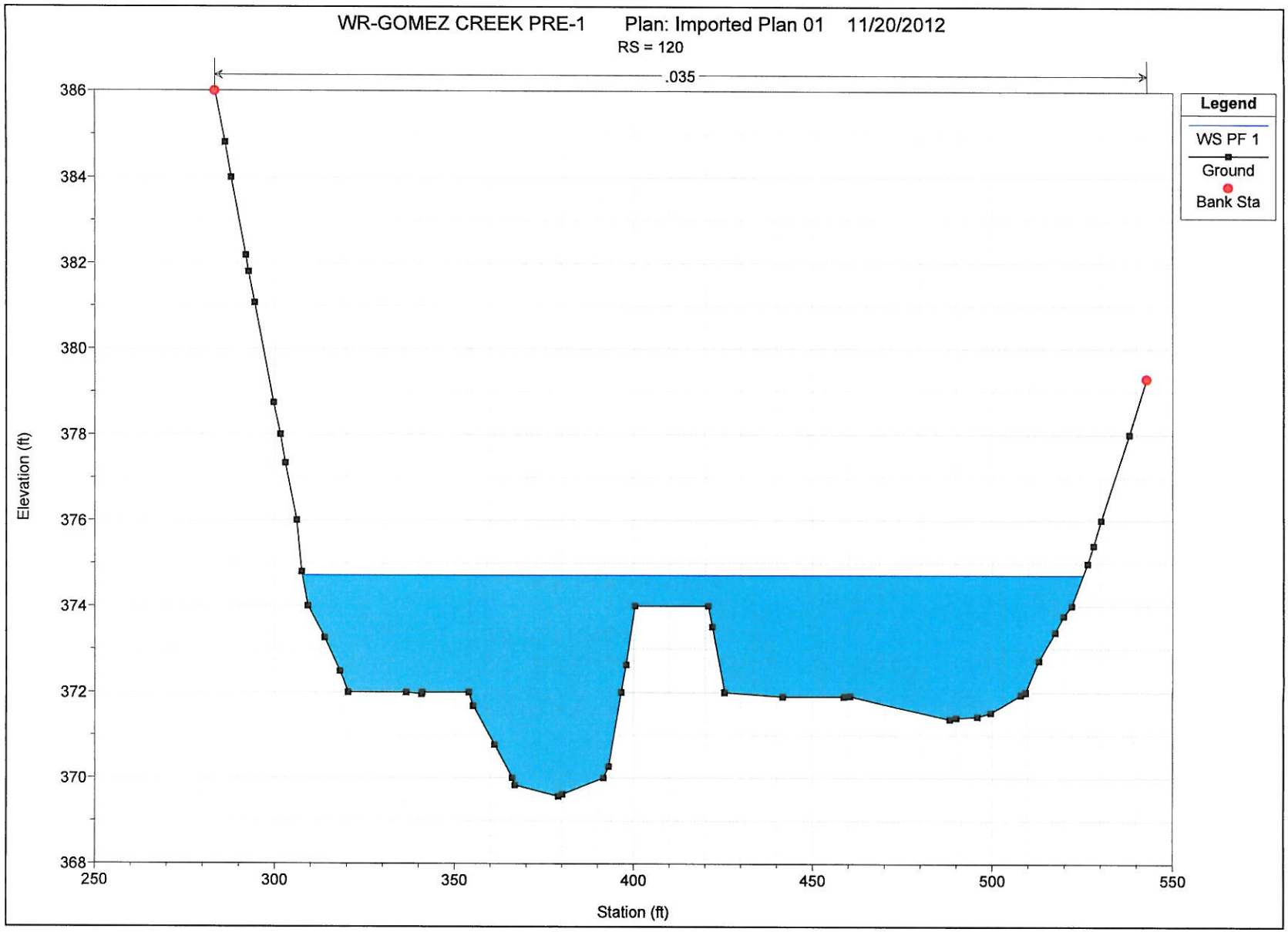
Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
	.035	283.44	.035	542.75	.035

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
283.44	542.75	25	25	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	376.11	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.40	Wt. n-Val.		0.035	
W.S. Elev (ft)	374.72	Reach Len. (ft)	25.00	25.00	25.00
Crit W.S. (ft)	374.72	Flow Area (sq ft)		600.86	
E.G. Slope (ft/ft)	0.013042	Area (sq ft)		600.86	
Q Total (cfs)	5697.90	Flow (cfs)		5697.90	
Top Width (ft)	217.52	Top Width (ft)		217.52	
Vel Total (ft/s)	9.48	Avg. Vel. (ft/s)		9.48	
Max Chl Dpth (ft)	5.15	Hydr. Depth (ft)		2.76	
Conv. Total (cfs)	49894.1	Conv. (cfs)		49894.1	
Length Wtd. (ft)	25.00	Wetted Per. (ft)		219.66	
Min Ch El (ft)	369.57	Shear (lb/sq ft)		2.23	
Alpha	1.00	Stream Power (lb/ft s)	542.75	0.00	0.00
Frctn Loss (ft)	0.42	Cum Volume (acre-ft)		51.80	
C & E Loss (ft)	0.17	Cum SA (acres)		36.24	


WR-GOMEZ CREEK PRE-1 Plan: Imported Plan 01 11/20/2012
RS = 120
.035
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
386
384
382
380
378
376
374
372
370
368
250
300
350
400
450
500
550
Station (ft)

CROSS SECTION
REACH: Reach-1 RS: 110

INPUT
Description: 44
Station Elevation Data num= 33

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
279.48	380.34	286.75	380	293.63	378.9	297.96	378	302.31	376.98
306.61	376	316.49	374.87	324.4	374	334.62	373.46	351.38	372.52
361.87	371.95	370.91	371.04	382.48	370	388.73	368.06	389.12	367.97
403.33	366	409.53	366	415.76	368	421.62	370	427.33	372
440.84	372	442.63	371.73	444.7	371.47	446.15	371.39	453.24	371.18
455.92	371.26	464.74	371.42	467.09	371.51	473.58	372	480.41	374
484.83	376.13	489.73	378.46	493.83	380.39				

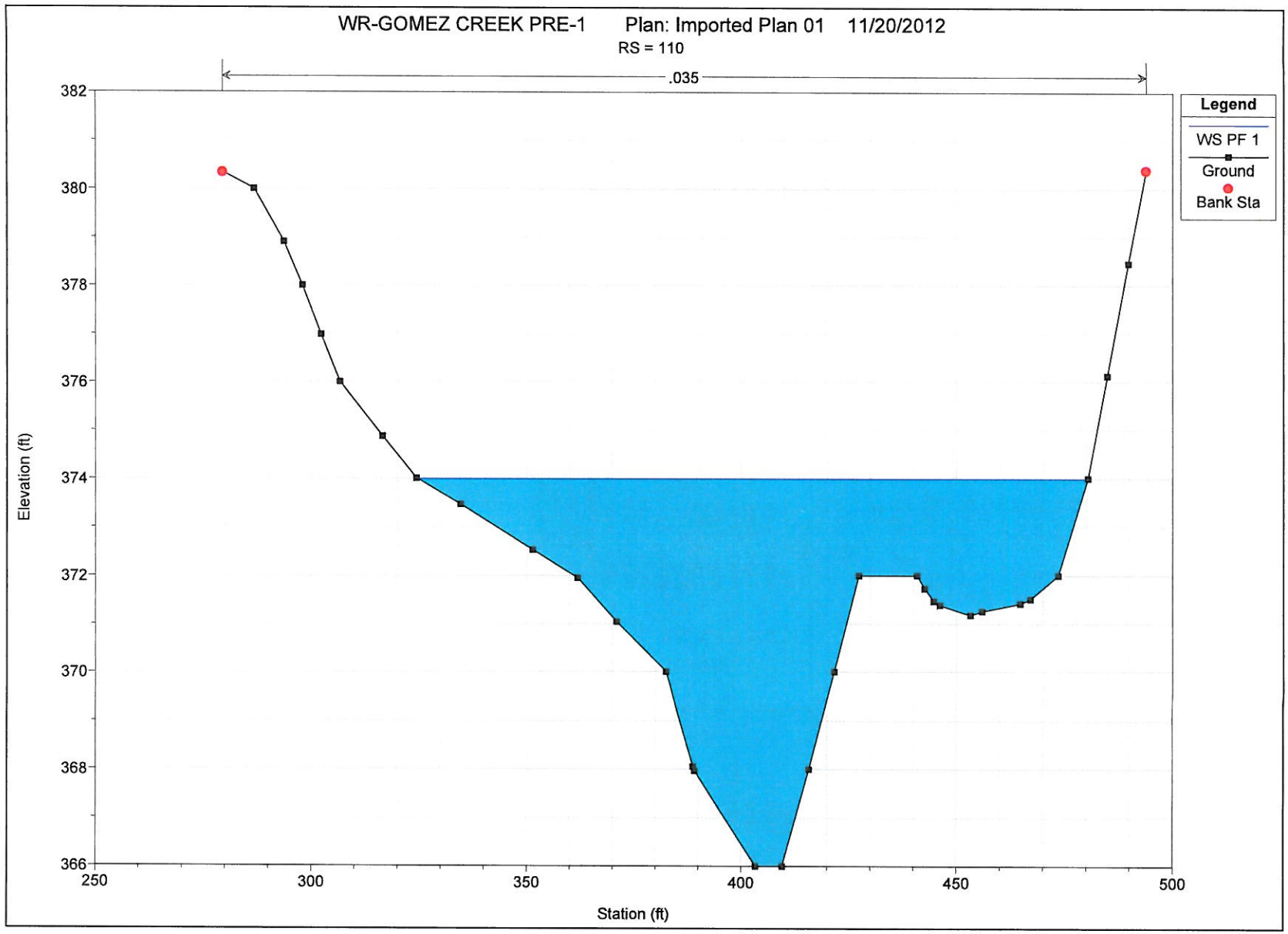
Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
	.035	279.48	.035	493.83	.035

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
279.48	493.83	25	25	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	376.10	Element	Left OB	Channel	Right OB
Vel Head (ft)	2.11	Wt. n-Val.		0.035	
W.S. Elev (ft)	373.99	Reach Len. (ft)	25.00	25.00	25.00
Crit W.S. (ft)	374.31	Flow Area (sq ft)		488.96	
E.G. Slope (ft/ft)	0.016658	Area (sq ft)		488.96	
Q Total (cfs)	5697.90	Flow (cfs)		5697.90	
Top Width (ft)	155.73	Top Width (ft)		155.73	
Vel Total (ft/s)	11.65	Avg. Vel. (ft/s)		11.65	
Max Chl Dpth (ft)	7.99	Hydr. Depth (ft)		3.14	
Conv. Total (cfs)	44147.3	Conv. (cfs)		44147.3	
Length Wtd. (ft)		Wetted Per. (ft)		157.66	
Min Ch El (ft)	366.00	Shear (lb/sq ft)		3.23	
Alpha	1.00	Stream Power (lb/ft s)	493.83	0.00	0.00
Frctn Loss (ft)	0.36	Cum Volume (acre-ft)		48.64	
C & E Loss (ft)	0.04	Cum SA (acres)		35.24	


WR-GOMEZ CREEK PRE-1 Plan: Imported Plan 01 11/20/2012
RS = 110
.035
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
382
380
378
376
374
372
370
368
366
250
300
350
400
450
500
Station (ft)

CROSS SECTION
REACH: Reach-1 RS: 100

INPUT
Description: 54
Station Elevation Data num= 35

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
215.41	374.37	217.45	374.27	220.63	374	232.88	372.33	247.32	370.12
248.25	370	292.97	368.33	296.41	368.22	310.62	368.15	370.09	368
374.81	366	383.99	364	392.97	362.65	396.34	362.33	397.77	362.13
400.85	362.16	419.94	364	421.01	364.85	425.33	368.75	426.63	370
438.7	370	441.88	369.85	462.19	368.53	473.67	368.38	495.12	367.87
499.45	367.72	513.12	367.79	513.53	367.83	522.3	368	526.62	368.74
529.96	370	531.24	371.1	532.5	372	533.7	372.13	539.7	372.61

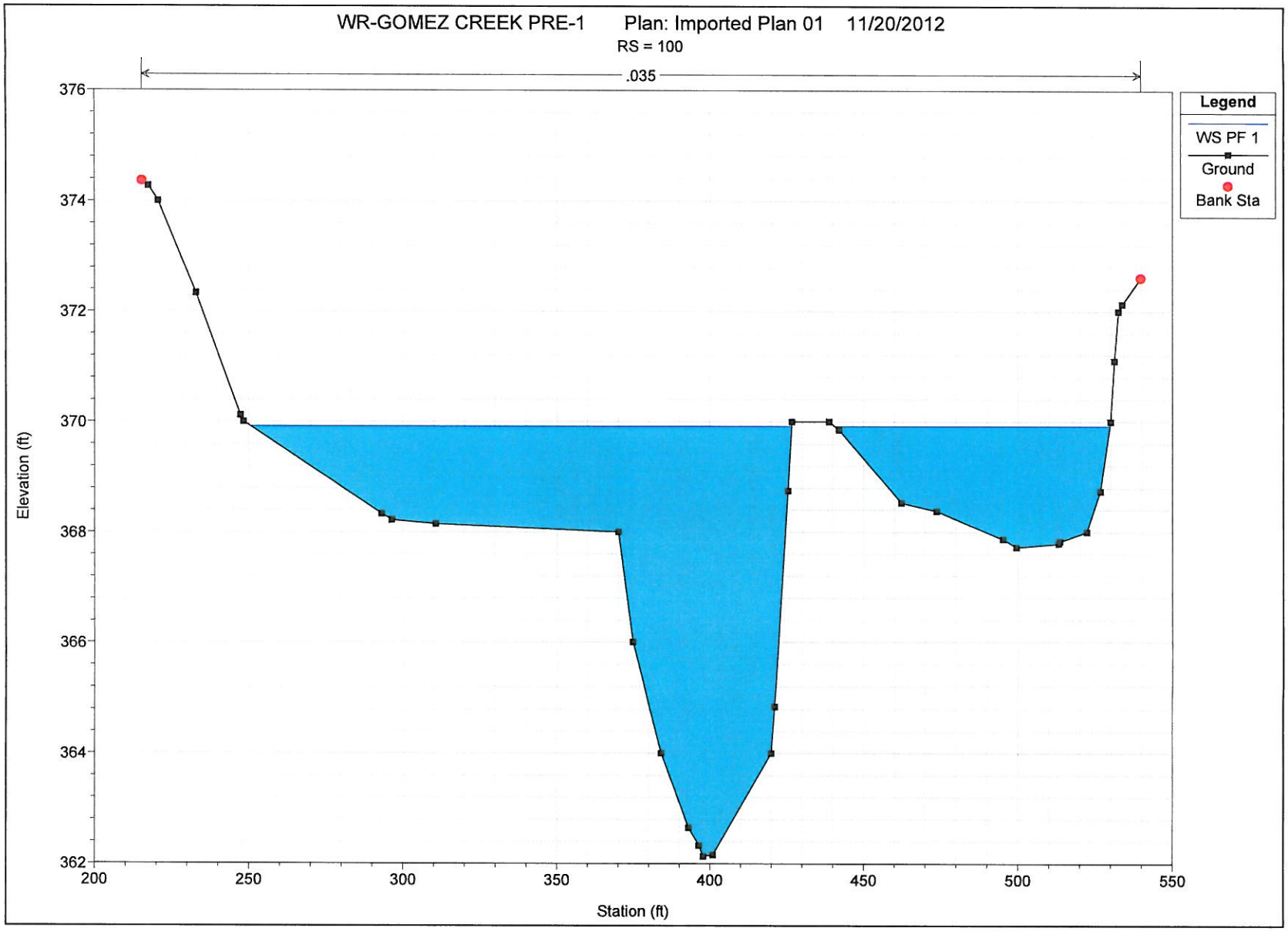
Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
	.035	215.41	.035	539.7	.035

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
215.41	539.7	25	25	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	371.16	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.23	Wt. n-Val.		0.035	
W.S. Elev (ft)	369.92	Reach Len. (ft)	25.00	25.00	25.00
Crit W.S. (ft)	369.92	Flow Area (sq ft)		639.14	
E.G. Slope (ft/ft)	0.013913	Area (sq ft)		639.14	
Q Total (cfs)	5697.90	Flow (cfs)		5697.90	
Top Width (ft)	265.60	Top Width (ft)		265.60	
Vel Total (ft/s)	8.91	Avg. Vel. (ft/s)		8.91	
Max Chl Dpth (ft)	7.79	Hydr. Depth (ft)		2.41	
Conv. Total (cfs)	48306.9	Conv. (cfs)		48306.9	
Length Wtd. (ft)		Wetted Per. (ft)		269.08	
Min Ch El (ft)	362.13	Shear (lb/sq ft)		2.06	
Alpha	1.00	Stream Power (lb/ft s)	539.70	0.00	0.00
Frctn Loss (ft)		Cum Volume (acre-ft)		45.80	
C & E Loss (ft)		Cum SA (acres)		34.21	


WR-GOMEZ CREEK PRE-1 Plan: Imported Plan 01 11/20/2012
RS = 100
.035
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
376
374
372
370
368
366
364
362
200
250
300
350
400
450
500
550
Station (ft)

CROSS SECTION
REACH: Reach-1 RS: 90

INPUT
Description: 64
Station Elevation Data num= 65

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
179.79	374.24	180.55	374	187.81	372.31	197.31	370	210.65	368.23
211.88	368	220.27	367.51	247.03	366	247.55	365.9	259.7	364
263.2	362.42	268.05	360	270.34	359.19	271.84	358.74	271.9	358.62
278.14	358.7	278.66	358.88	287.02	360	292.36	362	303.18	366
313.95	367.46	316.44	367.82	318.68	367.77	320.35	367.54	331.85	367.06
348.3	366	377.9	364.6	397.06	364.55	452.19	364.13	467.81	364.4
490.45	364.98	504.25	364.82	510.27	364.91	543.61	364.61	580.52	365.24
606.18	364.33	617.28	364.06	620.79	364	635.57	364.09	641.75	364.14
652.34	364.17	660.94	364.22	670.33	364.18	688.72	364	708.49	364.06
721.46	364.07	743.63	364.24	763.7	365.3	768.31	365.42	774.95	365.55
785.94	365.74	791.69	365.86	792.54	365.85	803.1	366	809.1	366
820.58	367.14	826.44	367.67	829.52	368	835.19	368.91	841.25	370
844.68	370.69	854.13	372	861.05	372.51	862.9	372.67	875.24	374

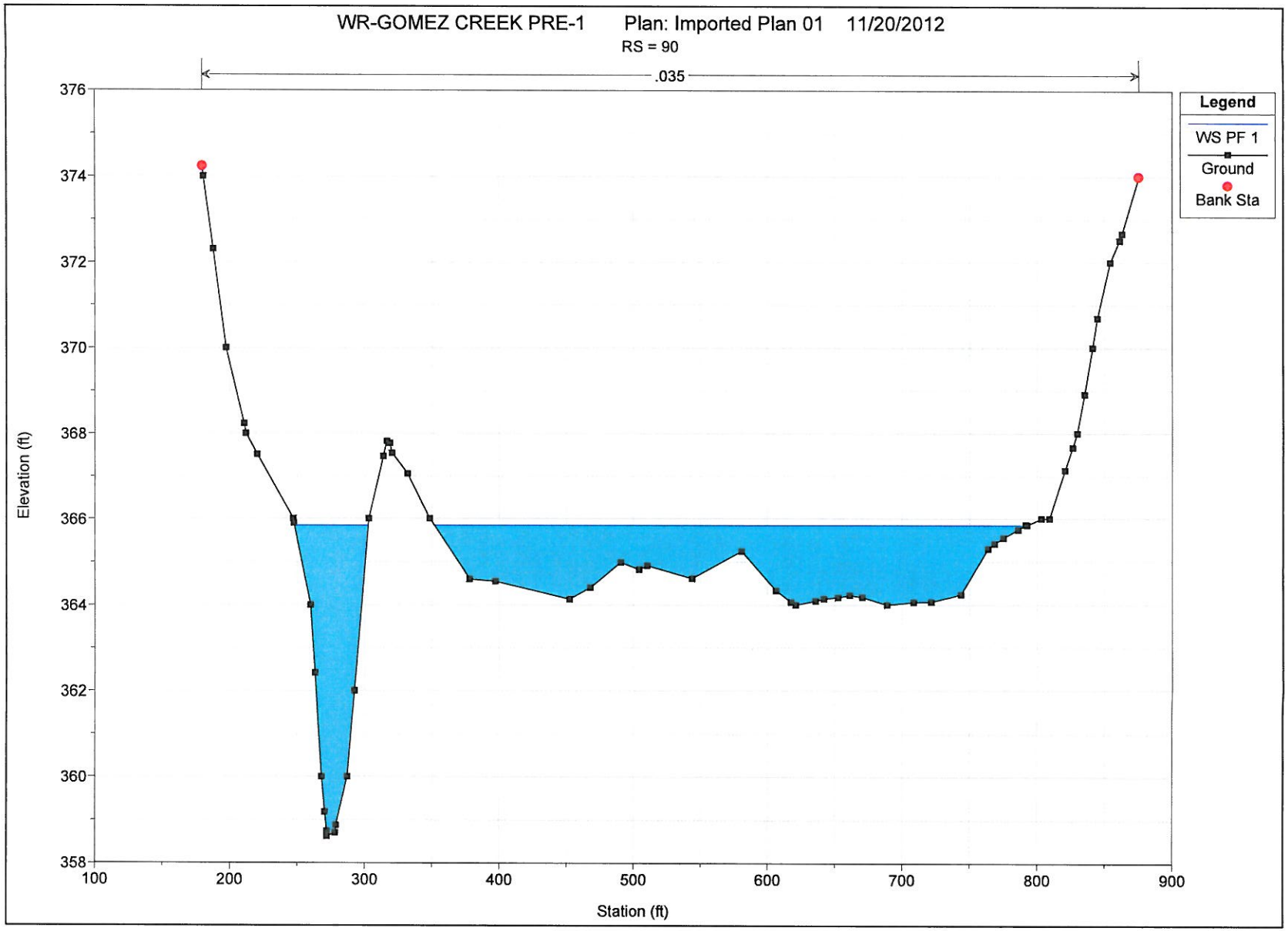
Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
	.035	179.79	.035	875.24	.035

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
179.79	875.24	25	25	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	366.69	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.84	Wt. n-Val.		0.035	
W.S. Elev (ft)	365.85	Reach Len. (ft)	25.00	25.00	25.00
Crit W.S. (ft)	365.85	Flow Area (sq ft)		773.68	
E.G. Slope (ft/ft)	0.016675	Area (sq ft)		773.68	
Q Total (cfs)	5697.90	Flow (cfs)		5697.90	
Top Width (ft)	494.32	Top Width (ft)		494.32	
Vel Total (ft/s)	7.36	Avg. Vel. (ft/s)		7.36	
Max Chl Dpth (ft)	7.23	Hydr. Depth (ft)		1.57	
Conv. Total (cfs)	44124.2	Conv. (cfs)		44124.2	
Length Wtd. (ft)		Wetted Per. (ft)		496.92	
Min Ch El (ft)	358.62	Shear (lb/sq ft)		1.62	
Alpha	1.00	Stream Power (lb/ft s)	875.24	0.00	0.00
Frctn Loss (ft)		Cum Volume (acre-ft)		41.91	
C & E Loss (ft)		Cum SA (acres)		32.01	


WR-GOMEZ CREEK PRE-1 Plan: Imported Plan 01 11/20/2012
RS = 90
.035
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
376
374
372
370
368
366
364
362
360
358
100
200
300
400
500
600
700
800
900
Station (ft)

CROSS SECTION
REACH: Reach-1 RS: 80

INPUT
Description: 74
Station Elevation Data num= 53

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
189.17	368.82	193.32	368	202.02	366.56	217.96	364	226.32	362
230.1	360	232.55	358.73	234.16	358	246.71	358	251.79	360
257.13	362	262.36	364	270.79	364.13	318.38	364.02	318.7	364
384.2	362.55	387.02	362.47	390.01	362.45	440.15	362.23	443.28	362.19
456.74	362.14	462.24	362.11	488.22	361.88	529.86	361.84	534.35	361.93
550.53	362.18	563.94	362.36	569.63	362.42	575.05	362.43	577.25	362.51
593.62	362.61	636.46	362.49	678.2	362.55	759.6	362.14	765.46	362.15
771.02	362.05	787.67	361.88	796.19	361.75	803.13	361.61	812.85	361.59
817.74	361.68	822.51	361.73	837.16	362	867.55	362.85	878.72	363.38
880.52	363.41	881.92	363.55	888.44	364	893.84	364.79	897.94	365.25
905.67	366	911.71	366.48	922.6	367.48				

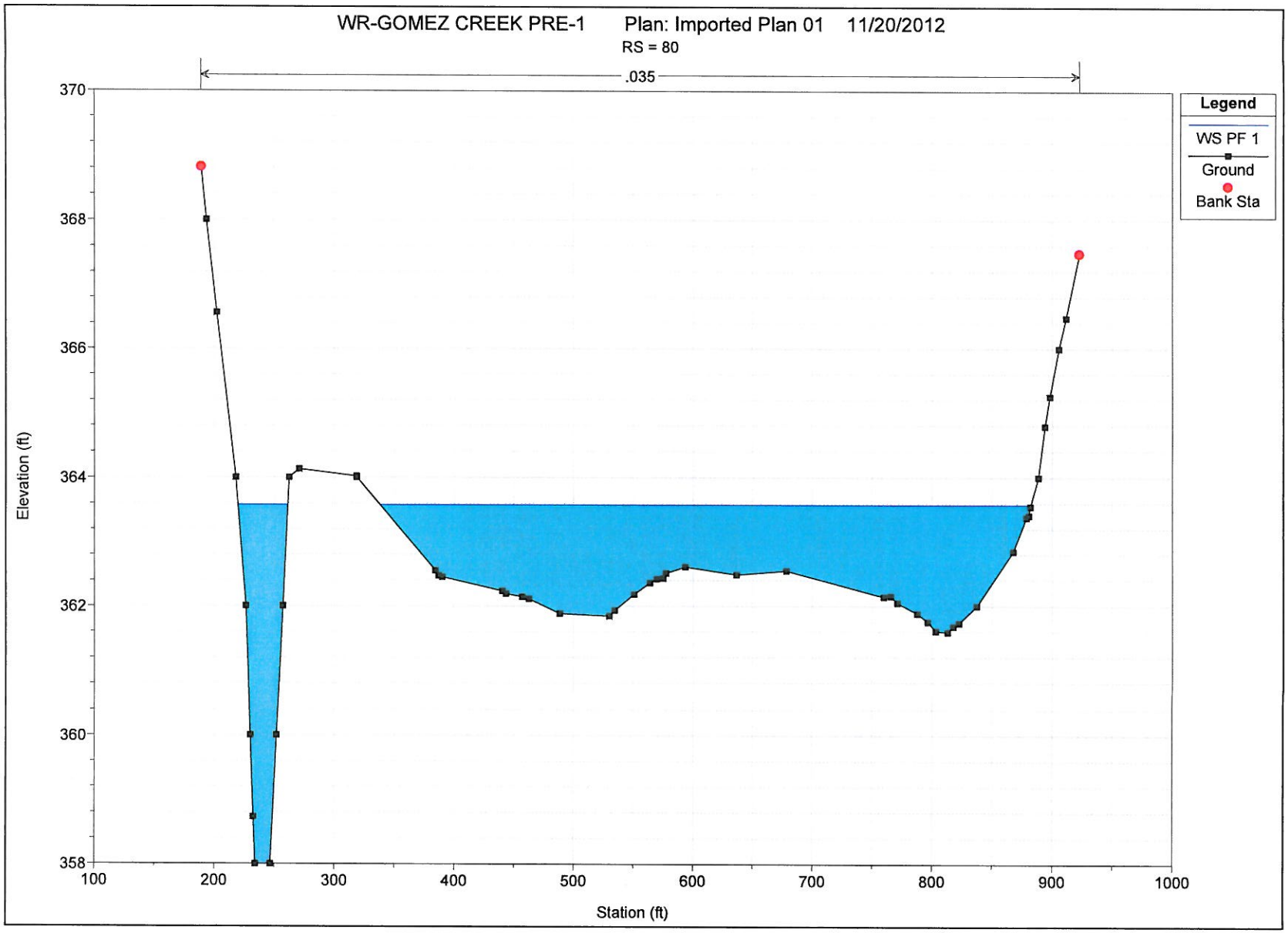
Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
	.035	189.17	.035	922.6	.035

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
189.17	922.6	25	25	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	364.32	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.74	Wt. n-Val.		0.035	
W.S. Elev (ft)	363.57	Reach Len. (ft)	25.00	25.00	25.00
Crit W.S. (ft)	363.57	Flow Area (sq ft)		823.23	
E.G. Slope (ft/ft)	0.016972	Area (sq ft)		823.23	
Q Total (cfs)	5697.90	Flow (cfs)		5697.90	
Top Width (ft)	585.81	Top Width (ft)		585.81	
Vel Total (ft/s)	6.92	Avg. Vel. (ft/s)		6.92	
Max Chl Dpth (ft)	5.57	Hydr. Depth (ft)		1.41	
Conv. Total (cfs)	43737.3	Conv. (cfs)		43737.3	
Length Wtd. (ft)		Wetted Per. (ft)		588.05	
Min Ch El (ft)	358.00	Shear (lb/sq ft)		1.48	
Alpha	1.00	Stream Power (lb/ft s)	922.60	0.00	0.00
Frctn Loss (ft)		Cum Volume (acre-ft)		37.18	
C & E Loss (ft)		Cum SA (acres)		28.74	


WR-GOMEZ CREEK PRE-1 Plan: Imported Plan 01 11/20/2012
RS = 80
.035
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
370
368
366
364
362
360
358
100
200
300
400
500
600
700
800
900
1000
Station (ft)

CROSS SECTION
REACH: Reach-1 RS: 70

INPUT
Description: 84
Station Elevation Data num= 69

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
215.04	366	222.42	365.48	229.07	365.05	232.6	364.88	235.26	364.81
237.59	364.77	240.28	364.73	249.1	364	255.88	363.83	270.06	363.19
276.84	362.95	280.06	362.85	284.11	362.76	295.14	362	299.09	360.67
301.05	360	301.81	359.75	307.03	358	309.56	357.71	311	357.46
311.5	357.35	311.54	357.28	311.86	357.25	312.17	357.18	323.34	357.11
324.85	357.28	326.24	357.47	327.7	357.76	329.19	358	330.57	358.64
333.61	360	336.44	361.34	337.9	362	339	362.2	352.51	364
353.38	364.04	358	364.28	359.72	364.39	360.24	364.46	366.5	364.53
368.71	364.31	371.53	364	385.36	362.82	400.73	362	403.29	361.93
419.65	361.69	480.1	360.58	489.67	360.5	544.08	361.14	547.93	361.18
605.6	360.94	631.99	361.14	657.04	360.99	734.6	360.71	746.78	360.64
774.24	360.59	809.16	360.59	865.18	361.05	905.46	361.52	924.05	361.89
928.34	362	934.11	362.32	937.69	362.54	945.38	362.96	948.33	363.11
958.61	363.75	960.32	363.85	962.58	364	975.17	365.27		

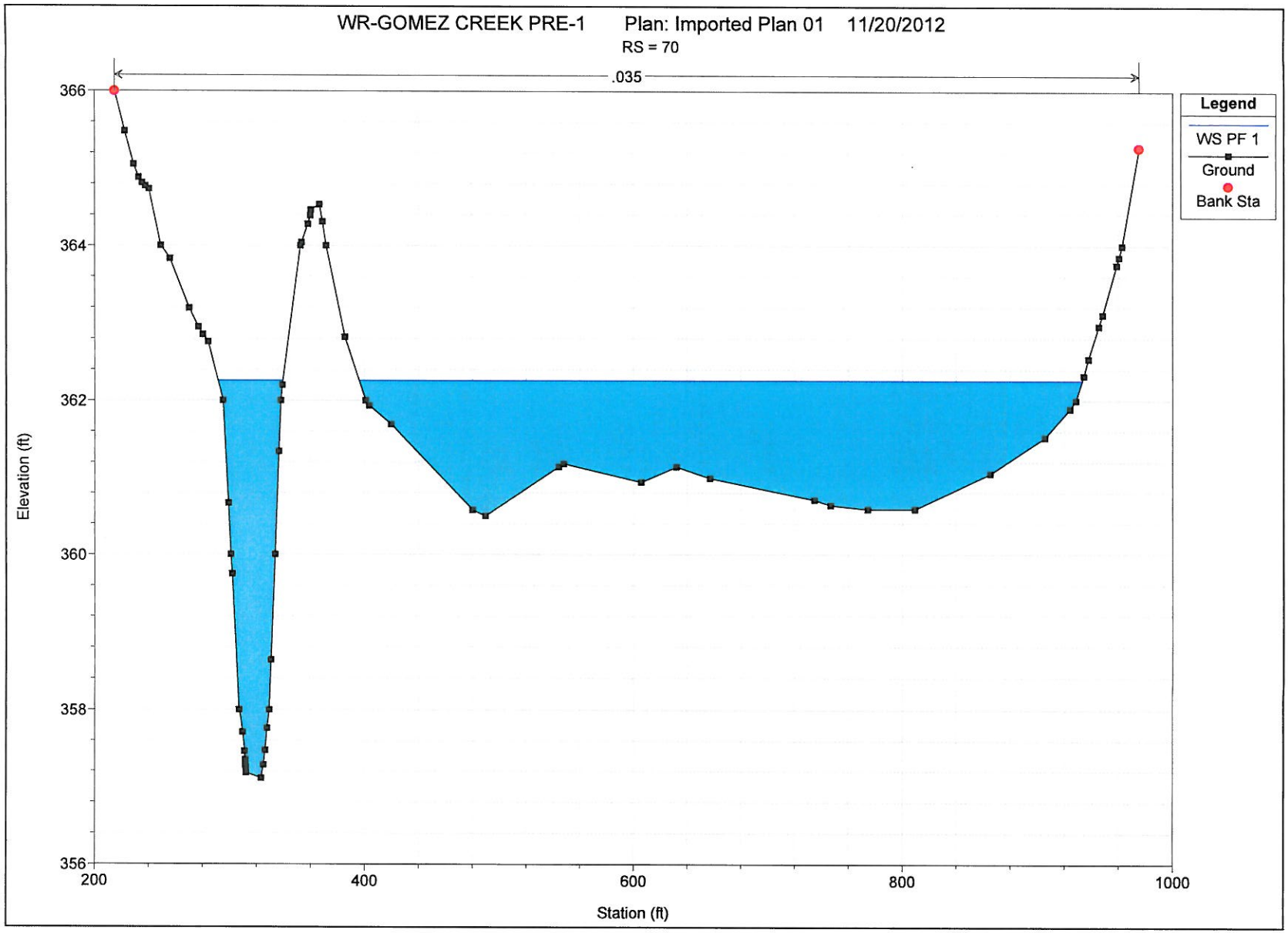
Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
	.035	215.04	.035	975.17	.035

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
215.04	975.17	25	25	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	363.00	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.74	Wt. n-Val.		0.035	
W.S. Elev (ft)	362.26	Reach Len. (ft)	25.00	25.00	25.00
Crit W.S. (ft)	362.26	Flow Area (sq ft)		826.83	
E.G. Slope (ft/ft)	0.016686	Area (sq ft)		826.83	
Q Total (cfs)	5697.90	Flow (cfs)		5697.90	
Top Width (ft)	585.20	Top Width (ft)		585.20	
Vel Total (ft/s)	6.89	Avg. Vel. (ft/s)		6.89	
Max Chl Dpth (ft)	5.15	Hydr. Depth (ft)		1.41	
Conv. Total (cfs)	44110.8	Conv. (cfs)		44110.8	
Length Wtd. (ft)	25.00	Wetted Per. (ft)		586.97	
Min Ch El (ft)	357.11	Shear (lb/sq ft)		1.47	
Alpha	1.00	Stream Power (lb/ft s)	975.17	0.00	0.00
Frctn Loss (ft)		Cum Volume (acre-ft)		32.42	
C & E Loss (ft)		Cum SA (acres)		25.39	


WR-GOMEZ CREEK PRE-1 Plan: Imported Plan 01 11/20/2012
RS = 70
.035
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
366
364
362
360
358
356
200
400
600
800
1000
Station (ft)

CROSS SECTION
REACH: Reach-1 RS: 60

INPUT
Description: 94
Station Elevation Data num= 103

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
233.08	367.28	241.11	366	243.71	365.41	250.47	364	253.91	362
255.65	360.98	257.45	360	259.03	359.07	260.96	358	262.18	357.26
264.49	356	264.94	355.74	265.13	355.43	266.02	355.22	266.45	355.05
268.09	354.91	275.86	354.99	275.95	355.01	277.87	355.15	279.31	355.26
280.99	355.41	283.31	355.7	285.66	355.93	286.28	356	286.82	356.41
289.51	358	290.65	358.79	292.62	360	299.89	360.27	304.48	360.46
332	360	332.82	360.04	333.55	360	339.63	359.83	359.2	359.25
363.59	359.14	364.95	359.1	365.97	359.06	375.79	358.74	418.64	358.46
486.35	358.64	489.28	358.67	489.62	358.68	491.42	358.71	546.93	360
565.19	360.04	569.82	360.06	571.15	360.06	572.57	360.08	573.97	360.08
577.17	360.09	579.72	360.09	581.73	360.1	584.78	360.1	585.28	360.08
586.86	360.06	588.2	360	589.38	359.94	591.53	359.91	593.76	359.91
595.41	359.95	596.7	360	605.03	360	605.12	359.98	612.84	359.93
616.96	359.92	623.26	359.98	623.92	360	660.18	360	661.39	360.01
670.31	360.01	673.87	360	682.5	359.94	694.58	359.91	697.73	359.92
699.26	359.94	700.31	359.97	701.71	360	706.58	360.06	709.14	360.08
710.96	360.09	711.85	360.09	712.59	360.1	715.82	360.12	722.85	360.12
727.78	360.1	729.44	360.09	730.78	360.06	733.28	360.04	735.94	360
755.46	360	757.27	359.99	823.23	359.41	862.29	359.45	946.02	359.38
948.23	359.39	975.22	360	986.35	360.48	1000.47	361.06	1011.5	361.48
1021.71	362	1032.18	362.86	1045.14	364				

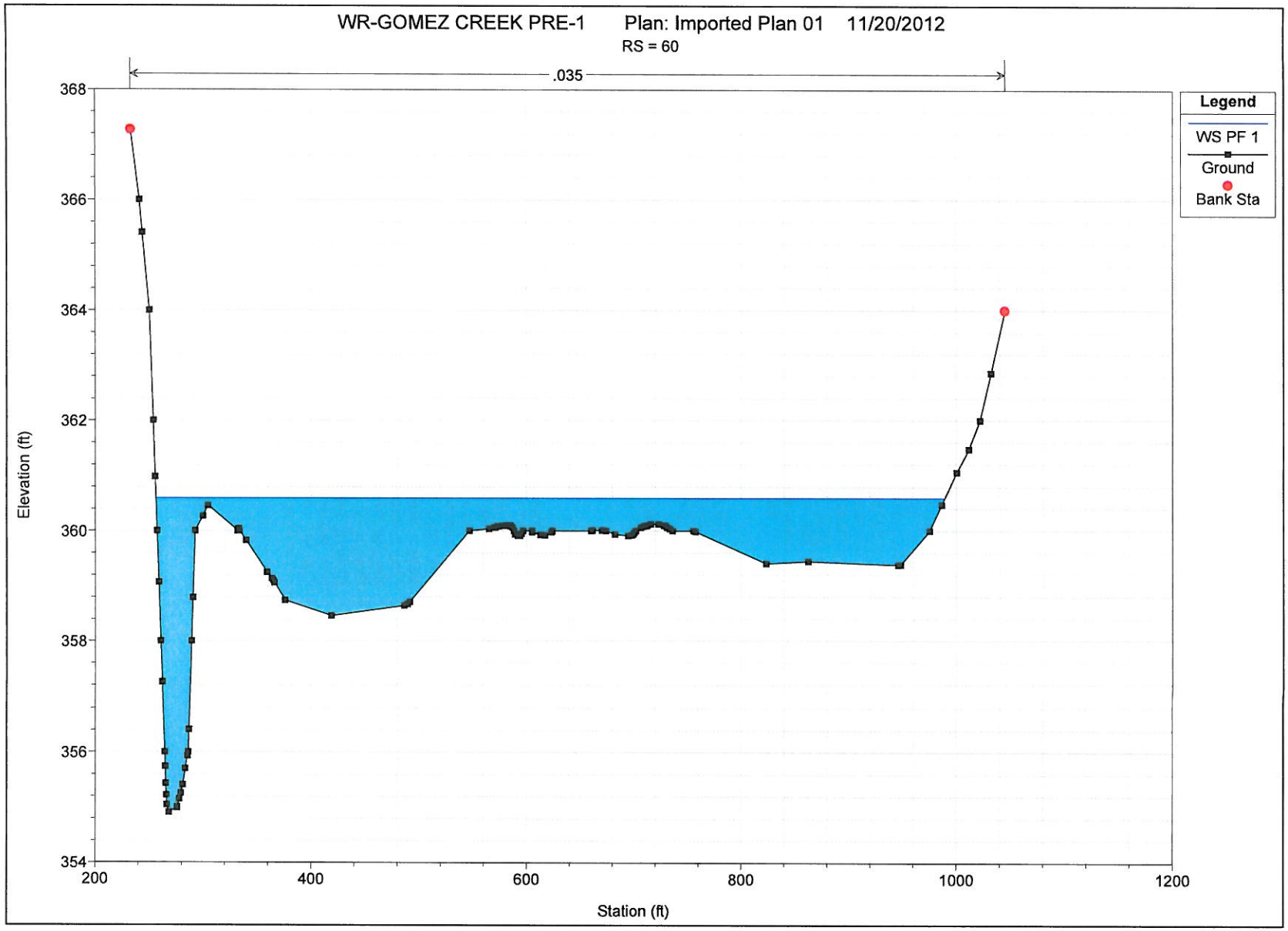
Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
	.035	233.08	.035	1045.14	.035

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
233.08	1045.14	25	25	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	361.25	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.65	Wt. n-Val.		0.035	
W.S. Elev (ft)	360.60	Reach Len. (ft)	25.00	25.00	25.00
Crit W.S. (ft)	360.60	Flow Area (sq ft)		880.47	
E.G. Slope (ft/ft)	0.018286	Area (sq ft)		880.47	
Q Total (cfs)	5697.90	Flow (cfs)		5697.90	
Top Width (ft)	732.86	Top Width (ft)		732.86	
Vel Total (ft/s)	6.47	Avg. Vel. (ft/s)		6.47	
Max Chl Dpth (ft)	5.69	Hydr. Depth (ft)		1.20	
Conv. Total (cfs)	42136.3	Conv. (cfs)		42136.3	
Length Wtd. (ft)		Wetted Per. (ft)		735.68	
Min Ch El (ft)	354.91	Shear (lb/sq ft)		1.37	
Alpha	1.00	Stream Power (lb/ft s)	1045.14	0.00	0.00
Frctn Loss (ft)		Cum Volume (acre-ft)		27.57	
C & E Loss (ft)		Cum SA (acres)		21.69	


WR-GOMEZ CREEK PRE-1 Plan: Imported Plan 01 11/20/2012
RS = 60
.035
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
368
366
364
362
360
358
356
354
200
400
600
800
1000
1200
Station (ft)

CROSS SECTION
REACH: Reach-1 RS: 50

INPUT
Description: 104
Station Elevation Data num= 100

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
97.67	364	110.39	362.44	113.43	362	127.98	360	131.89	359.7
143.38	358.61	155.96	358.02	156.44	358	161.04	356	165.07	354.21
165.58	354	170.03	352	174.68	352	176.31	352.31	184.93	354
187.16	355	189.52	356	193.87	358	195.92	358.46	196.46	358.55
211.49	358.54	211.63	358.43	213.1	358.32	220	358	246.69	358
255.16	358.1	266.3	358.1	270.14	358.09	277.82	358	285.23	357.79
330.82	357.47	350.69	357.46	367.27	357.41	422.53	357.64	424.53	357.69
428.7	357.75	435.67	357.82	442.79	357.87	447	357.91	450.75	357.97
452.18	358	472.81	358.15	475.8	358.16	478.82	358.18	482.53	358.19
486.5	358.21	498.42	358.32	600.32	358	604.7	357.94	610.17	357.89
612.93	357.85	616.87	357.83	617.82	357.84	618.93	357.92	619.96	357.95
623.39	358	628.1	358.04	631.7	358.06	634.95	358.06	637.43	358.04
639.34	358	642.52	357.96	661.64	357.77	662.79	357.75	665.86	357.72
667.96	357.73	671.63	357.73	674.5	357.7	676.39	357.69	679.25	357.69
686.39	357.73	691.12	357.77	696.07	357.8	721.74	357.86	769.08	357.73
773.03	357.71	777.04	357.68	781.14	357.68	783.33	357.66	790.6	357.66
800.66	357.69	846.33	357.7	851.25	357.72	859.09	357.77	863.12	357.77
864.89	357.76	867.38	357.77	871.49	357.81	876.47	357.89	885.93	357.99
890.45	357.98	894.23	358	908.78	358.01	918.44	358	920.45	357.99
921.81	358	979.32	358	990	359.15	999.66	360	1001.48	360.48

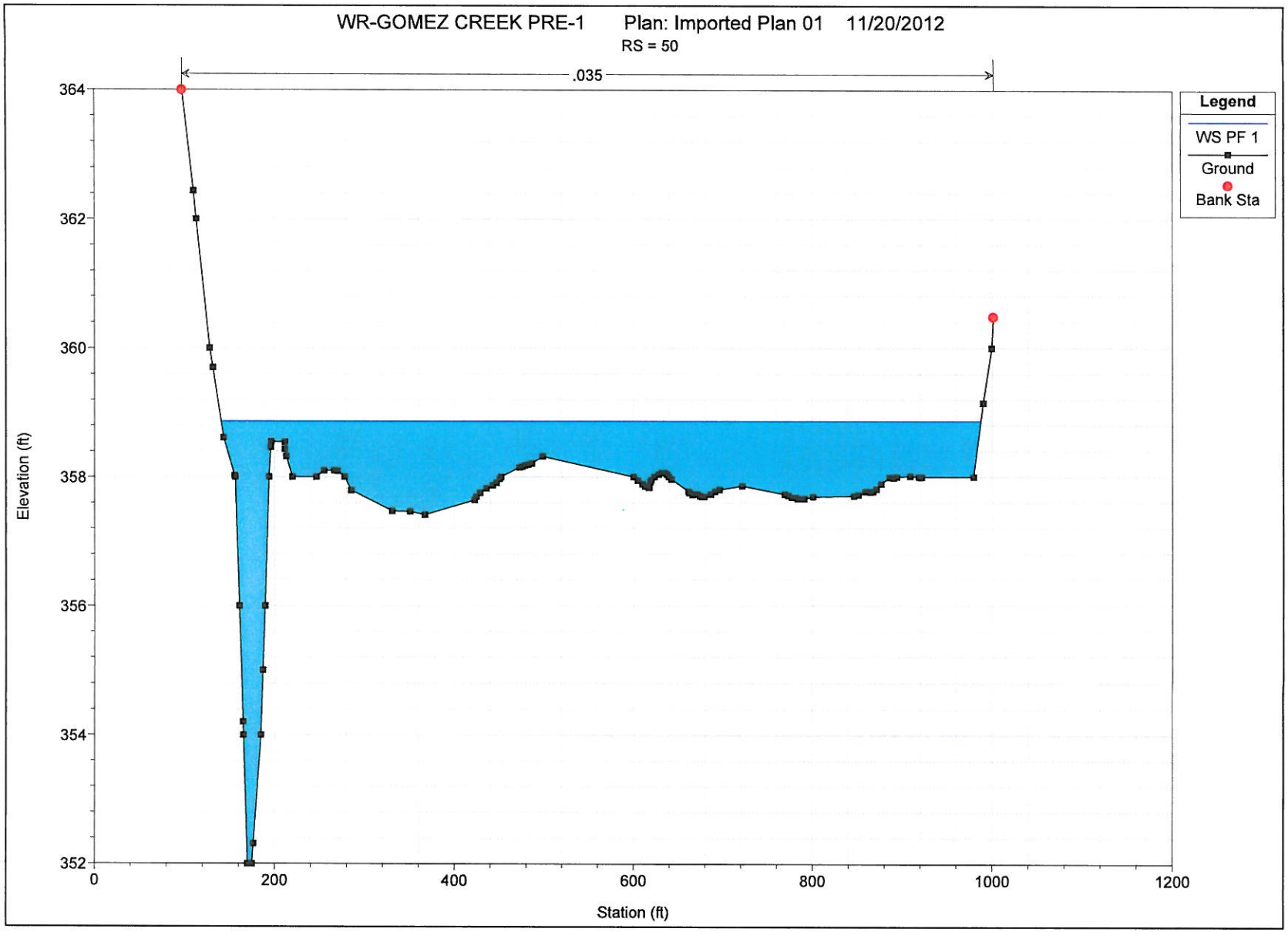
Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
	.035	97.67	.035	1001.48	.035

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
97.67	1001.48	25	25	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	359.42	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.55	Wt. n-Val.		0.035	
W.S. Elev (ft)	358.87	Reach Len. (ft)	25.00	25.00	25.00
Crit W.S. (ft)	358.87	Flow Area (sq ft)		955.85	
E.G. Slope (ft/ft)	0.016840	Area (sq ft)		955.85	
Q Total (cfs)	5697.90	Flow (cfs)		5697.90	
Top Width (ft)	846.74	Top Width (ft)		846.74	
Vel Total (ft/s)	5.96	Avg. Vel. (ft/s)		5.96	
Max Chl Dpth (ft)	6.87	Hydr. Depth (ft)		1.13	
Conv. Total (cfs)	43908.3	Conv. (cfs)		43908.3	
Length Wtd. (ft)		Wetted Per. (ft)		849.26	
Min Ch El (ft)	352.00	Shear (lb/sq ft)		1.18	
Alpha	1.00	Stream Power (lb/ft s)	1001.48	0.00	0.00
Frctn Loss (ft)		Cum Volume (acre-ft)		22.29	
C & E Loss (ft)		Cum SA (acres)		17.13	


WR-GOMEZ CREEK PRE-1 Plan: Imported Plan 01 11/20/2012
RS = 50
.035
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
364
362
360
358
356
354
352
0
200
400
600
800
1000
1200
Station (ft)