County of San Diego

Stormwater Quality Management Plan (SWQMP)
For Priority Development Projects (PDPs)

Use for all PDPs (see Storm Water Intake Form, Part 4)

Priority Development Project

Project Information	
Project Name	Mountain Meadows Gas Station
Project Address	26746 Mountain Meadows Road, Escondido, CA 92026
Assessor's Parcel # (APN)	186-093-19-00, 186-093-23-00, & 186-093-37-00
Permit # / Record ID	PDS2017-STP-17-028; PDS2017-BC-17-0069

Project Applicant / Project Proponent		
Name	KA Enterprises, Eugene Marini	
Address	5820 Oberlin Dr. Suite 201	
Phone	(858) 281-6091	**Email:** eugene@kaenterprises.net

SWQMP Preparer		
Name	Patric T. de Boer	
Company (if applicable)	Omega-Engineering Consultants	
Address	4340 Viewridge Avenue Suite B, San Diego CA, 92123	
Phone	(619) 488-6952	**Email:** patric@omega-consultants.com
PE Number (if applicable)	83583	

Preparer's Certification

I understand that the County of San Diego has adopted minimum requirements for managing urban runoff, including storm water, from land development activities, as described in the County of San Diego BMP Design Manual. The BMP Design Manual is a design manual for compliance with local County of San Diego Watershed Protection Ordinance (Sections 67.801 et seq.) and regional MS4 Permit (California Regional Water Quality Control Board San Diego Region Order No. R9-2013-0001, as amended by Order No. R9-2015-0001 and Order No. R9-2015-0100) requirements for storm water management.

This SWQMP is intended to comply with applicable requirements of the BMP Design Manual. I certify that it has been completed to the best of my ability and accurately reflects the project being proposed and the applicable BMPs proposed to minimize the potentially negative impacts of this project's land development activities on water quality. I understand and acknowledge that the plan check review of this SWQMP by County staff is confined to a review and does not relieve me as the person in charge of overseeing the selection and design of storm water BMPs for this project, of my responsibilities for project design.

Signature Patric de Boer **Date** *8/13/2019*

COUNTY ACCEPTED

SWQMP Approved By: *Approval Date*:

**** Note* Approval does not constitute compliance with regulatory requirements.***

Submittal Record: List the dates of SWQMP and plan submittals and updates. Briefly describe key changes from previous versions. If responding to plan check comments, note this in the entry and attach the responses as applicable.

No.	Date	Summary of Changes
Preliminary Design / Planning / CEQA		
1	11/13/2017	Initial Submittal
2	4/15/2019	Re-design, on new SWQMP template
3	8/13/2019	Redlines Addressed
4	Date	Summary of Change
No.	Date	Summary of Change
Final Design		
1	Date	Initial Submittal
2	Date	Summary of Change
3	Date	Summary of Change
4	Date	Summary of Change
No.	Date	Summary of Change
Plan Changes		
1	Date	Initial Submittal
2	Date	Summary of Change
3	Date	Summary of Change
4	Date	Summary of Change
No.	Date	Summary of Change

PDP SWQMP Submittal Checklist

SWQMP Tables: All of the eight tables below must be completed.

SWQMP Attachments[1]: Use the checklist below to identify which attachments will be included with this submittal. Attachments with boxes already checked (☒) are required for all projects. The applicability of other attachments will be determined upon completing this form.

☒ Attachment 1: Storm Water Intake Form

☒ Attachment 2: DMA Exhibits and Construction Plan Sheets

☐ Attachment 3: Source Control BMP Worksheet

☐ Attachment 4: Previous SWQMP Submittals

☒ Attachment 5: Existing Site and Drainage Description

☒ Attachment 6: Documentation of DMAs without Structural BMPs

☒ Attachment 7: Documentation of DMAs with Structural Pollutant Control BMPs

☒ Attachment 8: Documentation of DMAs with Structural Hydromodification Management BMPs

☒ Attachment 9: Management of Critical Coarse Sediment Yield Areas

☒ Attachment 10: Installation Verification Form

☒ Attachment 11: BMP Maintenance Agreements and Plans

☐ Attachment 12: Documentation of Alternative Compliance Projects (ACPs)

After completing the remainder of this form, check the applicable SWQMP Attachment boxes to summarize your selections.

[1] All SWQMP attachments are available at www.sandiego.gov/stormwater under the Development Resources tab. Some attachments are presented out of order because they are shared between multiple SWQMP forms.

Table 1 – Scope of SWQMP Submittal

Select one option below that describes the scope of this SWQMP Submittal. Document your selection as indicated.

SWQMP Scope	Required Documentation
☒ ***a. SWQMP addresses the entire project***	No additional documentation.
☐ ***b. SWQMP implements requirements of an earlier master SWQMP submittal***	Include a copy of the previous submittal as **Attachment 4**.
☐ ***c. First of multiple SWQMP submittals***	Use the spaces below to identify the elements addressed in this submittal and in future submittals.

(1) Elements addressed in current submittal (streets, common areas, first project phase, etc.):

N/A

(2) Elements to be addressed in future submittal(s) (individual lots, future project phases, etc.):

N/A

Table 2 – Baseline BMPs for Existing and Proposed Site Features

Site Features Select each feature that applies.		BMP Implementation Describe BMP implementation for each selected site feature.				
Group 1: Existing Natural Site Features [See BMPDM Sections 4.3.1 and 4.3.2]						
		Maintain & conserve natural features (SD-G)		**Establish buffers for waterbodies (SD-H)**		
		Full	Partial	Full	Partial	
☐	**Natural waterbodies**	☐	☐	☐	☐	
☐	**Natural storage reservoirs & drainage corridors**	☐	☐			
☒	**Natural areas, soils, & vegetation (incl. trees)**	☒	☐			
Group 2: Common Impervious Outdoor Site Features [See BMPDM Sections 4.3.3 and 4.3.5]						
		Disperse impervious areas (SD-B)		**Use permeable materials (SD-D)**		**Minimize impervious areas (SD-I)**
		Full	Partial	Full	Partial	
☒	**Streets and roads**	☐	☐	☐	☐	☒ Check here to confirm that impervious surfaces have been minimized where applicable and feasible for all outdoor impervious areas. If not, explain in Table 3.
☒	**Sidewalks & walkways**	☐	☐	☐	☐	
☒	**Parking areas & lots**	☐	☐	☐	☐	
☒	**Driveways**	☐	☐	☐	☐	
☐	**Patios, decks, & courtyards**	☐	☐	☐	☐	
☐	**Hardcourt recreation areas**	☐	☐	☐	☐	
☐	Add impervious feature	☐	☐	☐	☐	
☐	Add impervious feature	☐	☐	☐	☐	
☐	Add impervious feature	☐	☐	☐	☐	
Group 3: Other Outdoor Site Features [See BMPDM Sections 4.2.6, 4.3.4, 4.3.5, 4.3.7, and 4.3.8]						
☒	**Rooftop areas**	**Disperse rooftop runoff (SD-B)**		**Install green roofs (optional; SD-C)**		**Use rain barrels to capture runoff (optional; SD-E)**
		Full	Partial	Full	Partial	Full / Partial
		☐	☐	☐	☐	☐ / ☐
☒	**Landscaped areas**	**Use water-efficient landscaping (SD-J)**		**Install efficient irrigation systems (SD-K)**		**Minimize erosion of slopes and surfaces (SD-L)**
		Full	Partial	Full	Partial	Full / Partial
		☒	☐	☒	☐	☐ / ☐
☐	**Water features (pools, spas, etc.)**	**Provide a designated washing area (SC-A)**		**Drain feature to the sanitary sewer (if allowed) (SC-B)**		**Drain feature to a pervious area (SC-C)**
		Full	Partial	Full	Partial	Full / Partial
		☐	☐	☐	☐	☐ / ☐

Note: Justification is required in Table 4 for any feature not selecting at least one BMP (either full or partial implementation). For Group 2 features this means not selecting either SD-B or SD-D. Additional justifications may be required on request by County staff. Also use Table 4 to describe sources or BMPs other than those listed.

Table 3 –Baseline BMPs for Pollutant-generating Sources (Group 4)

A. Requirements for Documentation
Select either or both as applicable.

Completion of Part B is not required because:

☐ This is a Small Residential Project, OR

☐ None of these sources or features is proposed.

☐ ***Source Control BMP Requirements Worksheet E.1-1*** (SC in Appendix E of the BMP Design Manual) is included as **Attachment 3** (optional unless requested by County staff).

B. Sources and BMPs
Select all proposed sources and features below. Then select the BMPs on the right to be implemented for each.

	SC-B Plumb to sanitary sewer	SC-C Drain feature to a pervious area	SC-D Provide containment for spills and discharges	SC-E Prevent contact with rainfall	SC-F Isolate flows from adjacent areas	SC-G Prevent wind dispersal	SC-H Label with stencils or signs
Common Source Areas							
☒ **Trash & Refuse Storage**	☒	---	☐	☐	☐	☐	---
☐ **Materials & Equipment Storage**	☐	---	☐	☐	☐	☐	---
☐ **Loading & Unloading**	☐	---	☐	☐	☐	---	---
☒ **Fueling**	☐	---	☒	☒	☒	---	---
☐ **Maintenance & Repair**	☐	---	☐	☐	☐	---	---
☐ **Vehicle & Equipment Cleaning**	☐	---	☐	☐	☐	---	---
☒ **Food Preparation or Service**	☒	---	☒	☒	☐	---	---
Distributed Features							
☒ **Storm drain inlets & catch basins**	---	---	---	---	---	---	☒
☒ **Interior floor drains and sumps**	☒	---	---	---	---	---	---
☒ **Drain lines (air conditioning, etc.)**	☐	☒	☐	---	---	---	---
☒ **Fire test sprinkler discharges**	☐	☒	☐	---	---	---	---

Provide the following in Table 4: (1) justification of any source area or feature with NO BMPs selected, (2) justification of individual unselected BMPs *if requested by County staff*, and (3) identification of any proposed pollutant-generating sources and BMPs not listed here.

Note: Pollutant-generating sources and features may not discharge directly to the MS4. Discharging to any of the stormwater BMPs identified in Table 5 Part B is also discouraged. If doing so, however, the source or feature area must be included in applicable DCV calculations.

Table 4 – Explanations and Justifications for Table 2 and 3 Baseline BMPs

☐ **Check here if no explanations or justifications for Table 2 or 3 BMPs are required.**

- **Required Justifications**: If NO BMPs are selected for a source or feature, justify why all BMPs are either not applicable or are infeasible. For Group 2 features NO BMPs means not selecting either SD-B or SD-D.
- **If Requested**: Justify why individual BMPs will not be implemented or will only be partially implemented.
- **Additional Explanation**: Describe any proposed features and/or BMPs not listed in Tables 2 or 3.

BMP-Feature Combination		Explanation
Feature	Roof Features	Roof features include the proposed fueling station canopy, and the market rooftop. The fuel canopy will drain to the proposed biofiltration basin on the east side of the site, and the makret rooftop will drain to street trees which are alongside the west side of the property.
BMP	Biofiltration Basin, and Street Tree	
Feature	Feature	Explanation
BMP	BMP	
Feature	Feature	Explanation
BMP	BMP	
Feature	Feature	Explanation
BMP	BMP	
Feature	Feature	Explanation
BMP	BMP	
Feature	Feature	Explanation
BMP	BMP	
Feature	Feature	Explanation
BMP	BMP	

Table 5: DMA Structural Compliance Strategies and Documentation

Part A – Selection and Application Structural Performance Standards

1. Selection of Standards (select one; see BMPDM Section 6.1)

☒ a. Pollutant control + hydromodification ☐ b. Pollutant control only (project is exempt from hydromodification requirements)

2. Application of Structural Performance Standards (select one; see BMPDM Section 1.7)

☐ **New Development Projects:** Standards apply to all impervious surfaces.

☒ **Redevelopment Projects:** Complete the calculations below. Select the applicable scenario based on the results.

a. Existing impervious area (ft^2)	b. Impervious area created / replaced (ft^2)	c. % Impervious created / replaced [(b/a)*100]
30,646	31,719	103.50

☒ *Scenario 1: c is 50% or more*: Performance standards apply to all impervious surfaces (a + b).

☐ *Scenario 2: c is less than 50%*: Performance standards apply only to created or replaced impervious surfaces (b only).

Part B – Compliance Strategies and Required Attachments

***1.** Complete and submit each of the applicable attachments on the right.*

Att. 1	Att. 2	Att. 3	Att. 4	Att. 5
Storm Water Intake Form ☒	DMA Exhibits and Construction Plan Sheets ☒	Source Control BMP Worksheet (see Page 3) ☐	Previous SWQMP Submittals (see Page 1) ☐	Existing Site and Drainage Description ☒

***2.** Indicate each compliance strategy below that will be used for one or more DMAs on the site.*

	Att. 6 DMAs without Structural BMPs	Att. 7 DMAs w/ Structural Pollutant Control BMPs	Att. 8 DMAs w/ Structural Hydromod. BMPs	Att. 9 Critical Coarse Sediment Yield Areas	Att. 10 Installation Verification Form	Att. 11 Maintenance Agreements/ Plans	Att. 12 Alternative Compliance Projects
☒Self-mitigating DMAs (BMPDM Section 5.2.1)	☒			☒			
☒De Minimis DMAs (BMPDM Section 5.2.2)	☒			☒			
☐Self-retaining DMAs (BMPDM Section 5.2.3)	☒			☒	☒		
Structural BMPs (select all that apply)							
☒Pollutant Control BMPs (BMPDM Section 5.4)		☒		☒	☒	☒	
☒Hydromodification BMPs (BMPDM Chapter 6)			☒	☒	☒	☒	
☐Alternative Compliance Project (BMPDM Section 1.8)				☐	☐	☐	☐

☒ **Please check this box after you complete this list. Corresponding attachments will be automatically selected on the right.**

- *Attachments 1, 2, and 5 are required for all projects.*

Table 6: Critical Coarse Sediment Yield Area (CCSYA) Requirements

- Identify one applicable compliance pathway for the PDP below.
- Document your selection in **Attachment 9**.

A. Hydromodification Management Exemption (BMPDM Sections 1.6 and 6.1)

☐ **PDP is Exempt from Hydromodification Management Requirements**

Select if hydromodification management exemption was selected in Table 4 Part A.1.

B. Watershed Management Area (WMAA) Mapping (BMPDM Appendix H.1.1.2)

☐ **WMAA mapping demonstrates the following:**

a. <5% of potential onsite CCYSAs will be impacted (built on or obstructed)

b. All potential upstream offsite CCYSAs will be bypassed

C. Resource Protection Ordinance (RPO) Methods (BMPDM Appendix H.1.1.1)

☐ **RPO Scenario 1: PDP is subject to and in compliance with RPO requirements**

a. Project requires one or more discretionary permits (RPO applicability is confirmed during discretionary review)

b. Onsite AND upstream offsite CCSYAs will be avoided and/or bypassed

☒ **RPO Scenario 2: PDP is entirely exempt/not subject to RPO requirements**[2]

a. Project does not require discretionary permits

b. Project will bypass all upstream offsite CCSYAs (no requirements for onsite CCSYAs)

D. No Net Impact Analysis (BMPDM Appendix H.4)

☐ **Project demonstrates no net impact to receiving waters**

[2] Does not include PDPs utilizing exemption(s) via RPO Section 86.604(e)(2)(cc) or 86.604(e)(3).

Table 7 –Minimum Construction Stormwater BMPs

Minimum Required BMPs by Activity Type Select all applicable activities and at least one BMP for each	References Caltrans[3]	 County of San Diego	
☒ **Erosion Control for Disturbed Slopes** (choose at least 1 per season)			
☐ Vegetation Stabilization Planting[4] (Summer)	SS-2, SS-4		
☒ Hydraulic Stabilization Hydroseeding[9] (Summer)	SS-4		
☒ Bonded Fiber Matrix or Stabilized Fiber Matrix[5] (Winter)	SS-3		
☐ Physical Stabilization Erosion Control Blanket[7] (Winter)	SS-7		
☒ **Erosion control for disturbed flat areas (slope < 5%)**			
☐ County Standard Lot Perimeter Protection Detail	SC-2	PDS 659[6]	
☒ Use of Item A erosion control measures on flat areas	SS-3, SS-4, SS-7		
☐ County Standard Desilting Basin (must treat all site runoff)	SC-2	PDS 660[7]	
☐ Mulch, straw, wood chips, soil application	SS-6, SS-8		
☒ **Energy dissipation (required to control velocity for concentrated runoff or dewatering discharge)**			
☒ Energy Dissipater Outlet Protection	SS-10	RSD D-40[8]	
☒ **Sediment control for all disturbed areas**			
☐ Silt Fence	SC-1		
☒ Fiber Rolls (Straw Wattles)	SC-5		
☒ Gravel & Sand Bags	SC-6, SC-8		
☐ Dewatering Filtration	NS-2		
☒ Storm Drain Inlet Protection	SC-10		
☐ Engineered Desilting Basin (sized for 10-year flow)	SC-2		
☒ **Preventing offsite tracking of sediment**			
☒ Stabilized Construction Entrance	TC-1		
☐ Construction Road Stabilization	TC-2		
☐ Entrance/Exit Tire Wash	TC-3		
☐ Entrance/Exit Inspection & Cleaning Facility	TC-1		
☒ Street Sweeping and Vacuuming	SC-7		
☒ **Materials Management**			
☒ Material Delivery & Storage	WM-1		
☒ Spill Prevention and Control	WM-4		
☒ **Waste Management[9]**			
☒ Waste Management Concrete Waste Management	WM-8		
☒ Solid Waste Management	WM-5		
☒ Sanitary Waste Management	WM-9		
☒ Hazardous Waste Management	WM-6		

[3] See Caltrans 2017 Storm Water Quality Handbooks, Construction Site BMP Manual, available at: (http://www.dot.ca.gov/hq/construc/stormwater/manuals.htm)
[4] Planting or Hydroseeding may be installed between May 1st and August 15th. Slope irrigation must be in place and operable for slopes >3 feet. Vegetation must be watered and established prior to October 1st. A contingency physical BMP must be implemented by August 15th if vegetation is not established by that date. If landscaping is proposed, erosion control measures must also be used while landscaping is being established. Established vegetation must have a subsurface mat of intertwined mature roots with a uniform vegetative coverage of 70 percent of the natural vegetative coverage or more on all disturbed areas.
[5] All slopes over three feet must have established vegetative cover prior to final permit approval.
[6] County PDS 659. Standard Lot Perimeter Protection Design System (Bldg. Division)
[7] County PDS 660. County Standard Desilting Basin for Disturbed Areas of 1 Acre or Less Bldg. Division
[8] Regional Standard Drawing D-40 – Rip Rap Energy Dissipater (also acceptable for velocity reduction)
[9] Applicants are responsible to apply appropriate BMPs for specific wastes (e.g., BMP WM-8 for concrete).

Table 8 – Explanations and Justifications for Construction Phase BMPs

☒ **Check here if no explanations or justifications for Table 7 BMPs are required.**		
Justifications for Table 7 Temporary Construction Phase BMPs • **Required Justifications**: Justify all construction activity types for which NO BMPs were selected. • **If Requested**: Justify why specific individual BMPs were not selected. • **Additional Explanation**: Describe any proposed features and/or BMPs not listed in Table 7.		
Activity Type / BMP		**Explanation**
Activity Type	Activity Type	Explanation
BMP	BMP	
Activity Type	Activity Type	Explanation
BMP	BMP	
Activity Type	Activity Type	Explanation
BMP	BMP	
Activity Type	Activity Type	Explanation
BMP	BMP	
Activity Type	Activity Type	Explanation
BMP	BMP	
Activity Type	Activity Type	Explanation
BMP	BMP	
Activity Type	Activity Type	Explanation
BMP	BMP	

ATTACHMENT #1

County of San Diego
Stormwater Quality Management Plan (SWQMP)
Attachment 1: Storm Water Intake Form for All Permit Applications

This form establishes Stormwater Quality Management Plan (SWQMP) requirements for Development Projects per Sections 67.809 and 67.811 of the County of San Diego Watershed Protection Ordinance (WPO).
See ***Storm Water Intake Form Instructions*** for additional guidance and explanation of terms.

Part 1. Project Information	
Project Name:	Mountain Meadows Gas Station
Record ID (Permit) No(s):	PDS2017-STP-17-028; PDS2017-BC-17-0069
Assessor's Parcel No(s):	186-093-19-00, 186-093-23-00, & 186-093-37-00
Street Address (or Intersection):	26746 Mountain Meadows Road
City, State, Zip:	Escondido, CA, 92026

Part 2. Applicant / Project Proponent Information	
Name:	Eugene Marini
Company:	KA Enterprises
Street Address:	5820 Oberlin Drive Suite 201
City, State, Zip:	San Diego, CA 92121
Phone Number	(858) 281-6091
Email:	eugene@kaenterprises.net

Part 3. Required Information for All Development Projects

Ⓐ	**1. Existing (pre-development) impervious surfaces (ft²)**	**2. Created or replaced impervious surfaces (ft²)**	**3. Total disturbed area (acres or ft²)**
	30,646	31,719	41,724

Ⓑ	☒ Check here and provide a WDID# if this project is subject to the California Construction General Permit (Order No. 2009-0009-DWQ)[1]	**WDID # (if issued)**
		TBD

For County Use Only	Reviewed By:	Review Date:
☐ Standard SWQMP	☐ PDP SWQMP	☐ Green Streets PDP Exemption SWQMP

[1] Available at: https://www.waterboards.ca.gov/water_issues/programs/stormwater/construction.html

Part 4. Priority Classification & SWQMP Form Selection

(A) *If your project is the following … (select one)*	(B) *You must complete …*
☐ **Standard Project** ☐ a. Project is East of the Pacific/Salton Sea Divide ☐ b. None of the PDP criteria below applies	➔ **Standard *SWQMP Form***
☒ **Priority Development Project (PDP)** ☐ 1. Project is part of an existing PDP**,** OR ☒ 2. Project does any of the following: ☒ a. Creates or replaces a total of 10,000 ft² or more of impervious surface ☒ b. Creates or replaces a combined total of 5,000 ft² or more of impervious surface within one or more of the following uses: (1) parking lots; (2) streets, roads, highways, freeways, and/or driveways; (3) restaurants; and (4) hillsides ☒ c. Creates or replaces a combined total of 5,000 ft² or more of impervious surface within one or more of the following uses: (1) automotive repair shops; and (2) retail gasoline outlets ☐ d. Discharges directly to an Environmentally Sensitive Area (ESA) AND creates or replaces 2,500 ft² or more of impervious surface ☒ e. Disturbs one or more acres of land (43,560 ft²) and is expected to generate pollutants post-construction ☒ f. Is a redevelopment project that creates or replaces 5,000 ft² or more of impervious surface on a site already having at least 10,000 ft² of impervious surface	➔ **PDP *SWQMP Form***
☐ **Green Streets PDP Exemption**[2]	➔ **Green *Streets PDP Exemption SWQMP Form***

Part 5. Applicant Signature

I have reviewed the information in this form, and it is true and correct to the best of my knowledge.

Applicant / Project Proponent Signature: Patrick de Bree Date: 8/13/19

- ***Upon completion*** *submit this form to the County.*
- ***If requested****, attach supporting documentation to justify selections made or exemptions claimed.*
- ***If this is a PDP that is part of a larger existing PDP****, you will be required to attach a copy of the existing SWQMP to the newer SWQMP submittal.*

[2] ***Green Streets PDP Exemption Projects*** are those claiming exemption from PDP classification per WPO Section 67.811(b)(2) because they consist exclusively of *either* 1) development of new sidewalks, bike lanes, and/or trails; *or* 2) improvements to existing roads, sidewalks, bike lanes, and/or trails.

ATTACHMENT #2

2.1 DMA Exhibits

- DMA Exhibits must show all DMAs on the project site. Exhibits must include all applicable features identified in applicable SWQMP attachments.
- Exhibits may be prepared individually for the BMPs associated with each applicable SWQMP Attachment (6, 7, 8, and/or 9) or combined into one or more consolidated exhibits.
- Use this checklist to ensure required information is included on each exhibit (copy as needed).

DMA Exhibit ID #:	**DMA/BMP MAP**
A. Features required for all exhibits	
1. Existing Site Features	
☒ Underlying hydrologic soil group (A, B, C, D)	☒ Topography and impervious areas
☒ Approximate depth to groundwater	☒ Existing drainage network, directions, and offsite connections
☒ Natural hydrologic features	
2. Drainage Management Area (DMA) Information	
☒ Proposed drainage network, directions, and offsite connections	☒ DMA boundaries, ID numbers, areas, and type (structural BMP, de minimis, etc.)
3. Proposed Site Changes, Features, and BMPs	
☐ Proposed demolition and grading	☐ Construction BMPs[2]
☒ Group 1, 2, and 3 Features[1]	☒ Baseline source control BMPs
☒ Group 4 Features	☒ Baseline source control BMPs
B. Proposed Features and BMPs Specific to Individual SWQMP Attachments[3]	
☒ Attachment 6	☐ SSD-BMP impervious dispersion areas N/A ☒ SSD-BMP tree wells
☒ Attachment 7	☒ Structural pollutant control BMPs
☒ Attachment 8	☒ Structural hydromodification management BMPs ☒ Point(s) of Compliance (POC) for hydromodification management ☒ Proposed drainage boundary and drainage area to each POC
☒ Attachment 9	☐ Onsite CCSYAs ☐ Bypass of onsite CCSYAs ☒ Bypass of upstream offsite CCSYAs

TO BE PROVIDED ON EROSION CONTROL PLAN OF MINISTERIAL PLANS

[1] Group 1-4 features and baseline BMPs from PDP SWQMP Tables 2 and 3.
[2] Minimum Construction Stormwater BMPs from PDP SWQMP Table 7.
[3] Identify the location, ID numbers, type, and size/detail of BMPs.

2.2 Individual Structural BMP DMA Mapbook

- Use this page as a cover sheet for the Structural DMA Mapbook.
- An individual Structural DMA Mapbook must be submitted for any project site with one or more structural BMPs. One Mapbook is required for each unique subsequent owner with responsibility for maintenance of a Structural BMP. Mapbook exhibits will be incorporated as exhibits in Stormwater Maintenance Agreements (SWMAs) and Maintenance Notifications (MNs). See Attachment 11 for additional information on maintenance agreements. If the Mapbook has been provided for each subsequent owner in Attachment 11, they are not required here.
- Place each map on 8.5"x11" paper.
- Show at a minimum the DMA, Structural BMP, Assessor's parcel boundaries with parcel numbers, and any existing hydrologic features within the DMA.

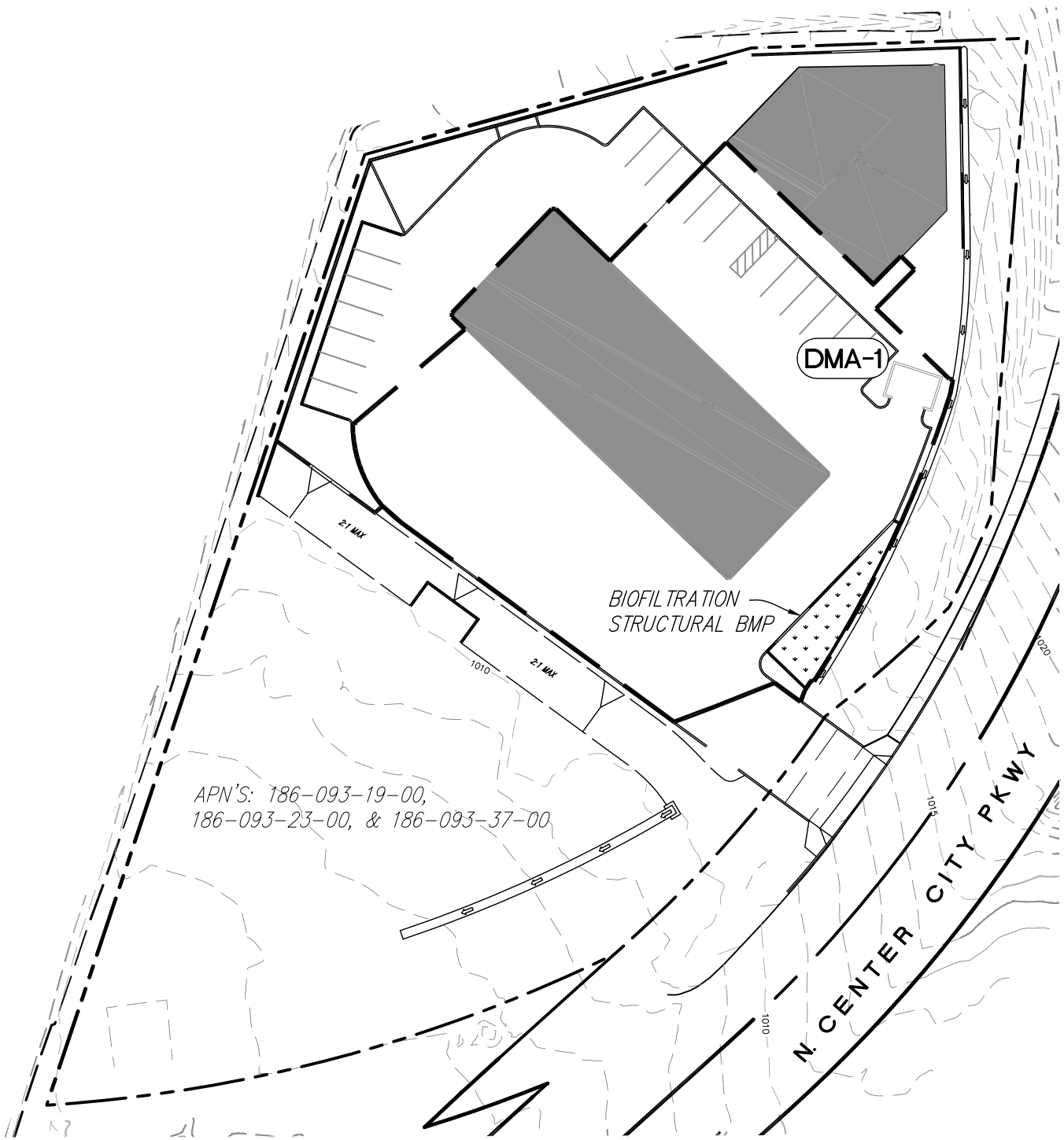
☐	All Mapbooks are attached
☒	All Mapbooks are in Attachment 11

2.3 Construction Plan Sets

- DMAs, features, and BMPs identified and described in this attachment must also be shown on all applicable construction and landscape plans.
- As applicable, plan sheets must identify:
    - All features and BMPs identified in Sub-attachment 2.1 (DMA Exhibits).
    - The additional information listed below.
- Use this checklist to ensure required information is included on each plan (copy as needed).

Plan Type	**Conceptual Grading Plans**
Required Information[4]	
☒ Structural BMP(s) and Significant Site Design BMPs (if applicable) with ID numbers.	
☒ The grading and drainage design shown on the plans must be consistent with the delineation of DMAs shown on the DMA exhibit.	
☒ Details and specifications for construction of Structural BMP(s) and Significant Site Design BMPs (if applicable).	
☒ Signage indicating the location and boundary of structural BMP(s) as required by County staff.	
☒ How to access the structural BMP(s) to inspect and perform maintenance.	
☒ Features that are provided to facilitate inspection (e.g., observation ports, cleanouts, silt posts, or other features that allow the inspector to view necessary components of the structural BMP and compare to maintenance thresholds).	
☐ Maintenance thresholds specific to the structural BMP(s), with a location-specific frame of reference (e.g., level of accumulated materials that triggers removal of the materials, to be identified based on viewing marks on silt posts or measured with a survey rod with respect to a fixed benchmark within the BMP). PROVIDED WITHIN ATTACHMENT 11.	
☐ Recommended equipment to perform maintenance. ← TO BE PROVIDED IN FUTURE SWQMP MINISTERIAL SUBMITTAL IN ATTACHMENT 11.	
☐ When applicable, necessary special training or certification requirements for inspection and maintenance personnel such as confined space entry or hazardous waste management.	
☐ Include landscaping plan sheets (if available) showing vegetation requirements for vegetated structural BMP(s).	
☐ All BMPs must be fully dimensioned on the plans. ← WILL BE ON THE HORIZONTAL CONTROL PLAN IN FUTURE MINISTERIAL GRADING PLANS.	
☐ When proprietary BMPs are used, site-specific cross-section with outflow, inflow, and manufacturer model number must be provided. Photocopies of general brochures are not acceptable.	
☒ Include all source control and site design measures described in the SWQMP.	
☒ Include all construction BMPs described in the SWQMP.	

[4] For Building Permit Applications, refer to Form PDS 272, https://www.sandiegocounty.gov/content/dam/sdc/pds/docs/pds272.pdf



LEGEND:

DMA BOUNDARY

PROPERTY LINE

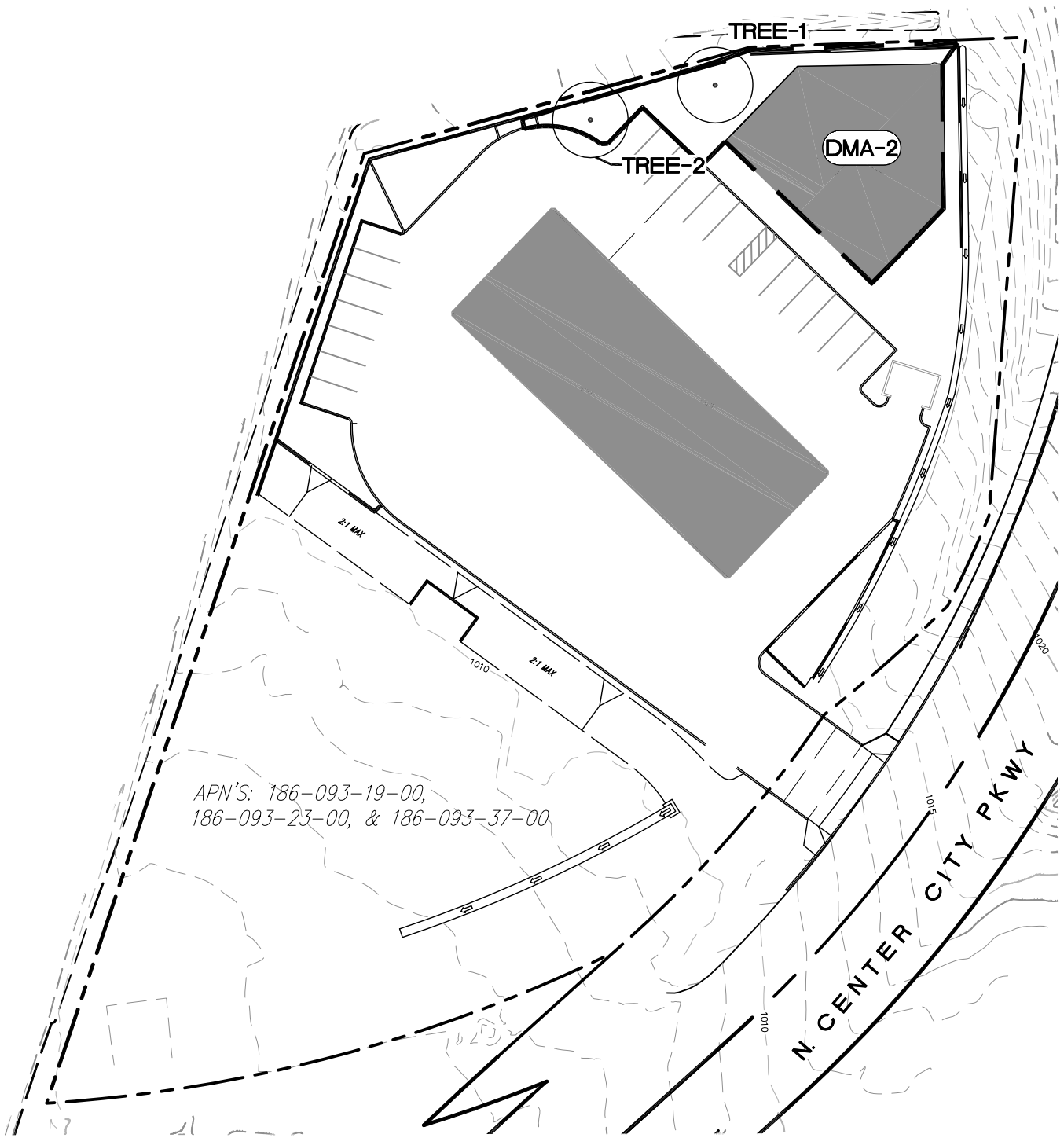
DRAINAGE MANAGEMENT AREA DMA-1

BUILDING ROOFTOP

SCALE: 1" = 50'

0 25 50

STRUCTURAL DMA MAPBOOK FOR DMA-1



LEGEND:

DMA BOUNDARY

PROPERTY LINE

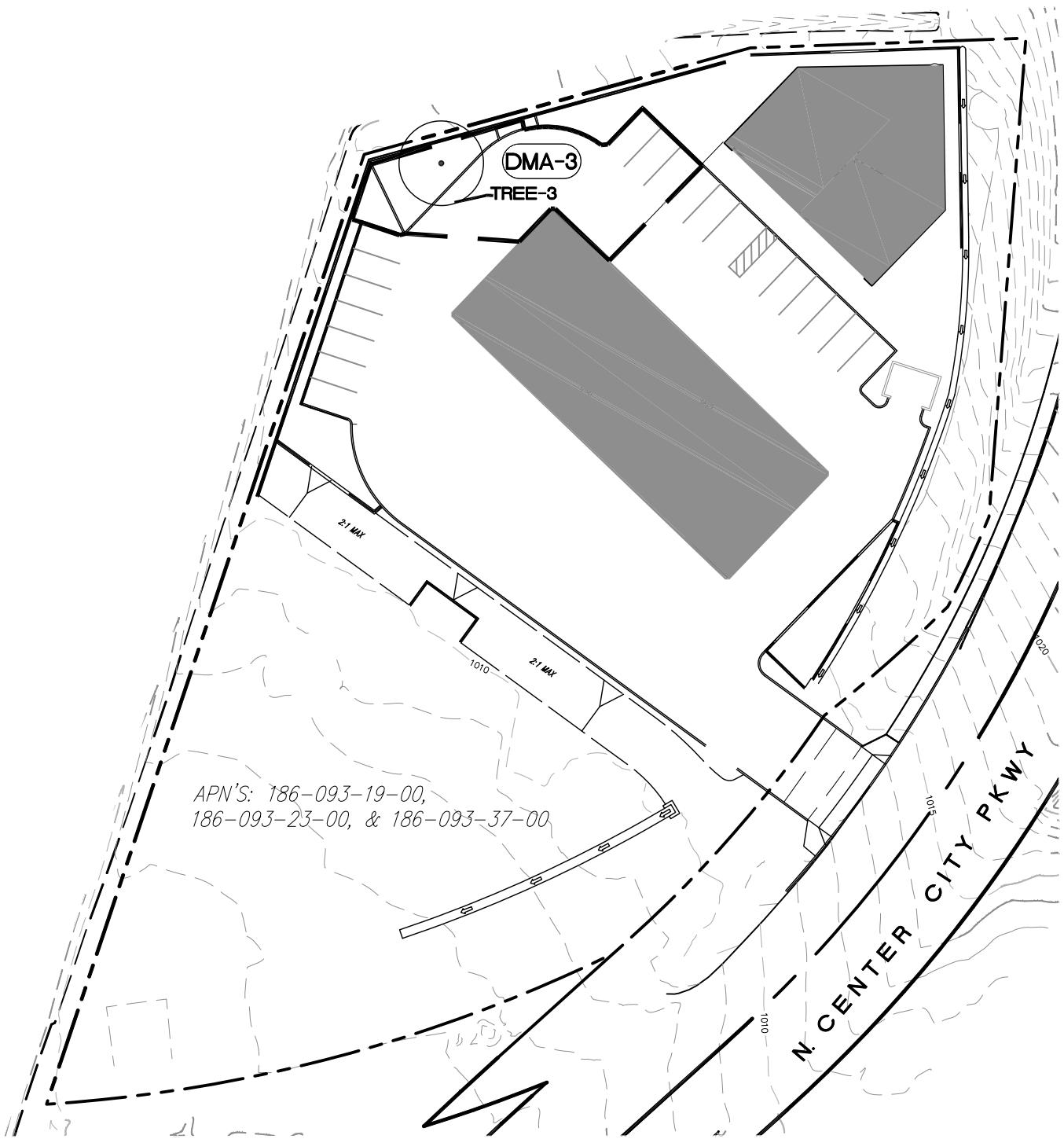
DRAINAGE MANAGEMENT AREA — DMA-1

BUILDING ROOFTOP

SCALE: 1" = 50'

0 25 50

STRUCTURAL DMA MAPBOOK FOR DMA-2



LEGEND:

DMA BOUNDARY

PROPERTY LINE

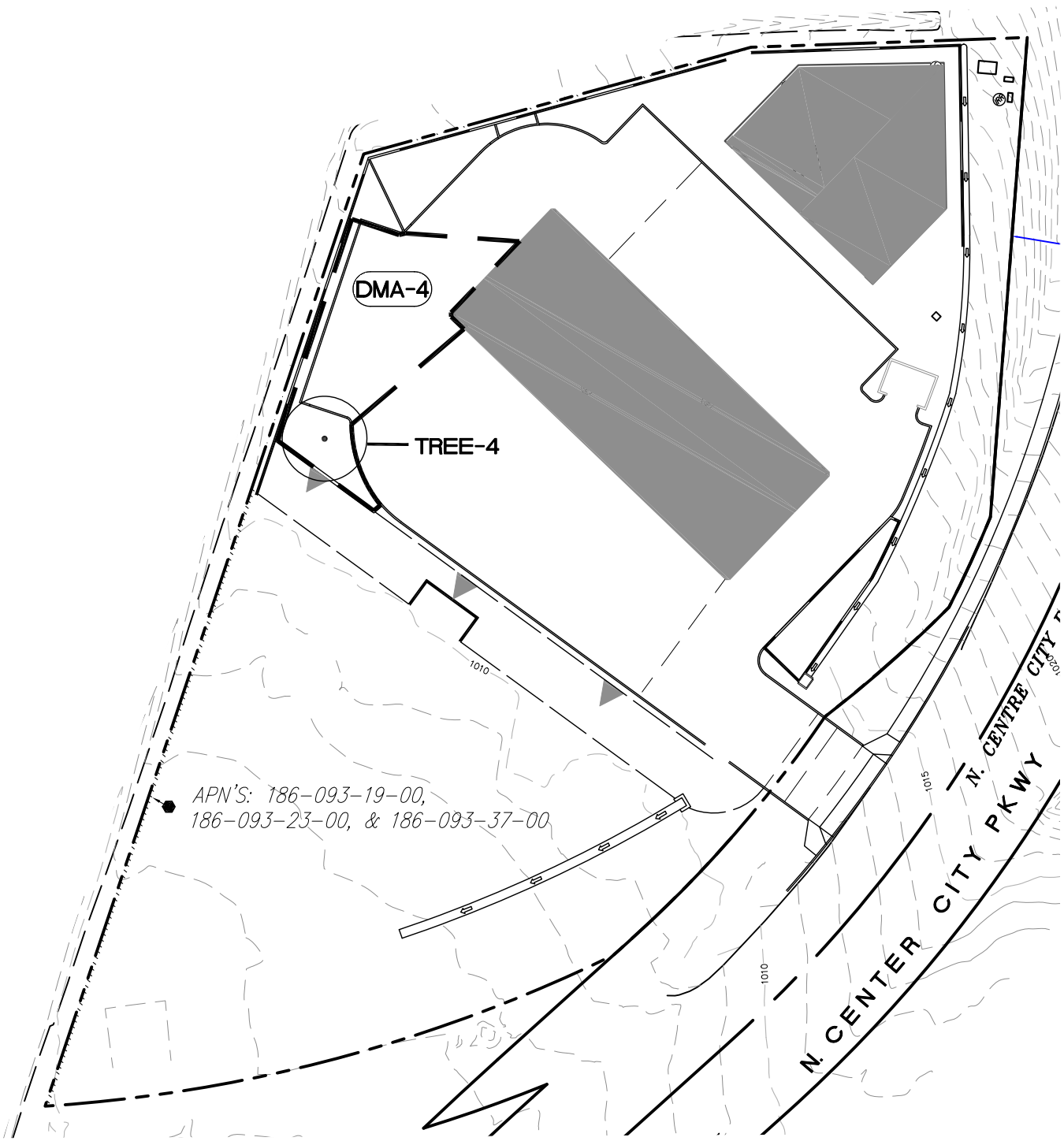
DRAINAGE MANAGEMENT AREA DMA-1

BUILDING ROOFTOP

SCALE: 1" = 50'

0 25 50

STRUCTURAL DMA MAPBOOK FOR DMA-3



LEGEND:

DMA BOUNDARY

PROPERTY LINE

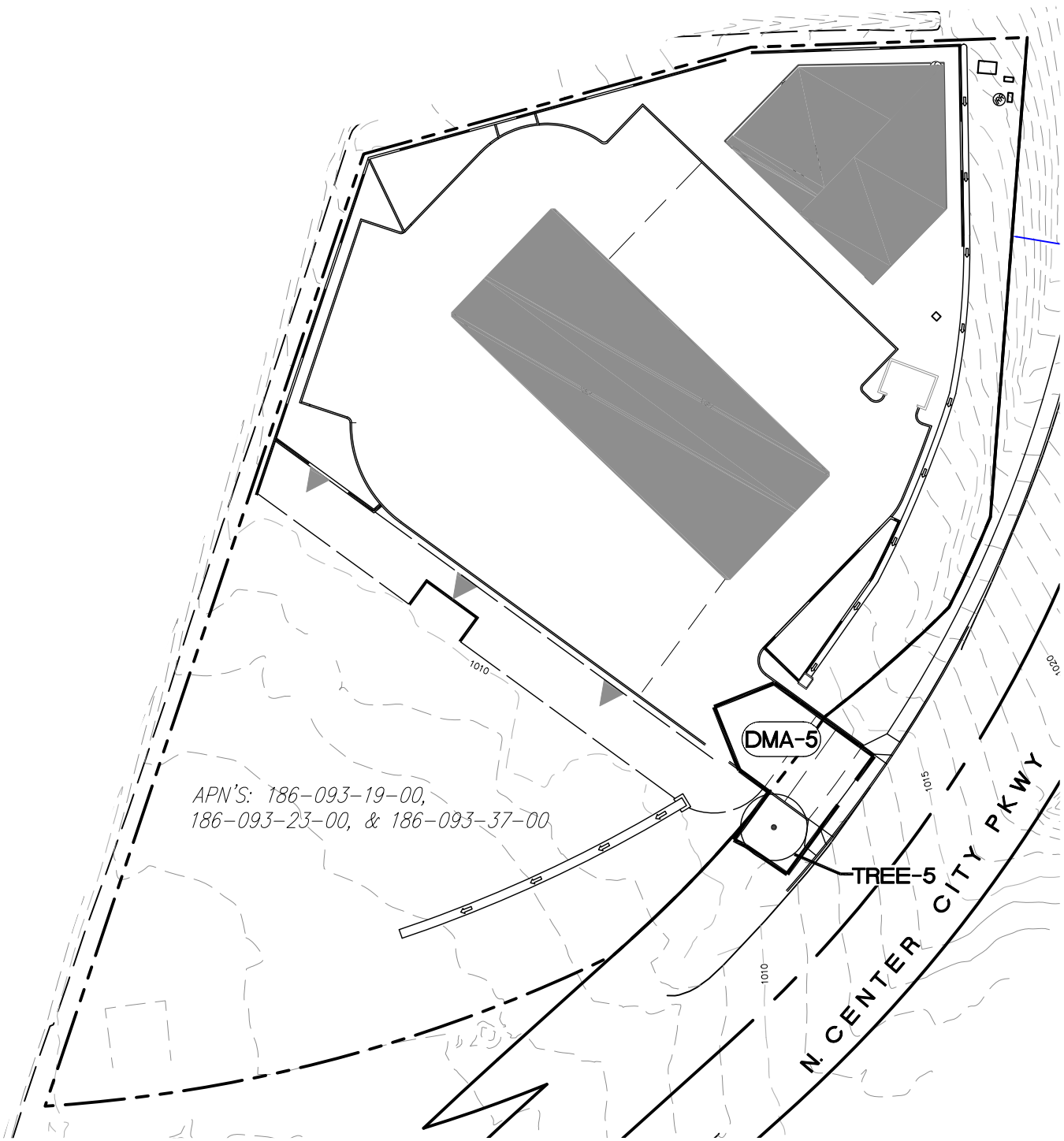
DRAINAGE MANAGEMENT AREA — DMA-1

BUILDING ROOFTOP

SCALE: 1" = 50'

0 25 50

STRUCTURAL DMA MAPBOOK FOR DMA-4



LEGEND:

DMA BOUNDARY

PROPERTY LINE

DRAINAGE MANAGEMENT AREA — DMA-1

BUILDING ROOFTOP

SCALE: 1" = 50'

0 25 50

STRUCTURAL DMA MAPBOOK FOR DMA-5

PRELIMINARY GRADING PLAN FOR:

KA ENTERPRISES MEGA MART
DEER SPRINGS ROAD AND N. CENTRE CITY PKWY ESCONDIDO, CA

LEGAL DESCRIPTION:

PARCEL A:

THOSE PORTIONS OF THE SOUTH HALF OF THE SOUTHEAST QUARTER OF SECTION 19 AND OF THE NORTH HALF OF THE NORTHEAST QUARTER OF SECTION 30, ALL BEING IN TOWNSHIP 11 SOUTH, RANGE 2 WEST, SAN BERNARDINO MERIDIAN, IN THE COUNTY OF SAN DIEGO, STATE OF CALIFORNIA, ACCORDING TO UNITED STATES GOVERNMENT SURVEY, APPROVED JANUARY 26, 1891, DESCRIBED WHOLE AS FOLLOWS: COMMENCING AT ENGINEER'S STATION 403 + 50.35 ON THE CENTER LINE OF CALIFORNIA STATE HIGHWAY XI-SD-77-F (U.S. 395); THENCE NORTH 64 MINUTES 14 MINUTES 00 SECONDS EAST, 100.00 FEET TO AN INTERSECTION WITH THE NORTHEASTERLY LINE OF SAID STATE HIGHWAY, BEING ALSO THE SOUTHWESTERLY TERMINUS OF THE CENTER LINE OF COUNTY ROAD SURVEY NO. 603 (KNOWN AS MOUNTAIN ROAD) AS DESCRIBED IN DEED TO THE COUNTY OF SAN DIEGO, RECORDED APRIL 14, 1958 IN BOOK 7035, PAGE 315 OF OFFICIAL RECORDS; THENCE NORTHEASTERLY LINE OF SAID STATE HIGHWAY NORTH 25 DEGREES 46 MINUTES 00 SECONDS WEST (RECORD NORTH 25 DEGREES 51 MINUTES 20 SECONDS WEST) 55.00 FEET TO THE POINT OF CUSP WITH A TANGENT 25.00 FOOT RADIUS CURVE, CONCAVE NORTHEASTERLY, IN THE BOUNDARY OF SAID MOUNTAIN MEADOW ROAD AND THE TRUE POINT OF BEGINNING; THENCE ALONG THE NORTHWESTERLY BOUNDARY OF SAID MOUNTAIN MEADOW ROAD AS FOLLOWS: SOUTHEASTERLY AND EASTERLY ALONG THE ARC OF SAID CURVE THROUGH A CENTRAL ANGLE OF 90 DEGREES 00 MINUTES 00 SECONDS A DISTANCE OF 39.27 FEET; TANGENT TO SAID CURVE NORTH 64 DEGREES 14 MINUTES 00 SECONDS EAST 52.58 FEET TO THE BEGINNING OF A TANGENT 470.00 FOOT RADIUS CURVE, CONCAVE NORTHWESTERLY, NORTHEASTERLY ALONG THE ARC OF SAID CURVE THROUGH A CENTRAL ANGLE OF 51 DEGREES 13 MINUTES 30 SECONDS A DISTANCE OF 420.20 FEET TO AN INTERSECTION WITH THE NORTHEASTERLY LINE OF LAND DESCRIBED IN DEED TO VICTOR E. CURCI, ET UX, RECORD MAY 1, 1956 IN BOOK 6081, PAGE 419 OF OFFICIAL RECORDS, A RADIAL LINE OF SAID CURVE BEARS SOUTH 76 DEGREES 59 MINUTES 30 SECONDS EAST TO SAID INTERSECTION; THENCE ALONG THE SAID NORTHEASTERLY LINE NORTH 25 DEGREES 46 MINUTES 00 SECONDS WEST (RECORD - NORTH 26 DEGREES 51 MINUTES 20 SECONDS WEST) 261.11 FEET; THENCE SOUTH 64 DEGREES 14 MINUTES 00 SECONDS WEST 444.00 FEET TO AN INTERSECTION WITH THE NORTHEASTERLY LINE OF SAID STATE HIGHWAY; THENCE ALONG SAID NORTHEASTERLY LINE SOUTH 25 DEGREES 46 MINUTES 00 SECONDS EAST, 411.76 FEET TO THE TRUE POINT OF BEGINNING. EXCEPTING THEREFROM THAT PORTION CONVEYED TO THE STATE OF CALIFORNIA IN PARCELS 1 AND 2 OF DEED RECORDED JULY 15, 1974 AS FILE NO. 74-188092 OF OFFICIAL RECORDS.

PARCEL B:

THOSE PORTIONS OF THE SOUTH HALF OF THE SOUTHEAST QUARTER OF SECTION 19 AND OF THE NORTH HALF OF THE NORTHEAST QUARTER OF SECTION 30, BOTH BEING IN TOWNSHIP 11 SOUTH, RANGE 2 WEST SAN BERNARDINO BASE AND MERIDIAN, IN THE COUNTY OF SAN DIEGO, STATE OF CALIFORNIA, ACCORDING TO UNITED STATES GOVERNMENT SURVEY APPROVED JANUARY 26, 1891, LYING WITHIN A STRIP OF LAND 30.00 FEET WIDE, THE SOUTHEASTERLY LINE OF SAID STRIP BEING THE CENTERLINE OF A 60.00 FOOT WIDE STRIP DESCRIBED IN PARCEL 1 OF DEED TO THE COUNTY OF SAN DIEGO, RECORDED APRIL 14, 1958 IN BOOK 7035, PAGE 318 OF OFFICIAL RECORDS, IN THE OFFICE OF THE COUNTY RECORDER OF SAN DIEGO COUNTY. EXCEPTING THEREFROM THAT PORTION THEREOF LYING WESTERLY OF THE EASTERLY LINE OF STATE HIGHWAY II-SD-15 AND LYING EASTERLY OF A LINE THAS S 47.00 FEET WESTERLY OF AND PARALLEL AND CONCENTRIC WITH A LINE SHOWN AS THE "FD-E" LINE ON STATE HIGHWAY MAP

EASEMENT + EXCEPTIONS NOTES:

THE FOLLOWING IS A LIST OF EXCEPTIONS TO COVERAGE AS LISTED IN THE ABOVE REFERENCED PRELIMINARY REPORT. SURVEY RELATED ITEMS THAT CAN BE PLOTTED ARE SHOWN HEREON. THE EFFECT OF AGREEMENTS, ASSESSMENTS, COVENANTS & CONDITIONS & RESTRICTIONS, FINANCING STATEMENTS, LEASES, LIENS, PERMITS, RESOLUTIONS, TAXES, OR WAIVERS THAT APPEAR IN SAID REPORT THAT ARE NOT SURVEY RELATED ARE LISTED FOR REFERENCE ONLY.

(7) THE RIGHT AND PRIVILEGE TO PLACE AND MAINTAIN AN ANCHOR TO SUPPORT A LINE OF POLES AND WIRES AND INCIDENTAL PURPOSES TOGETHER WITH THE RIGHT OF INGRESS AND EGRESS IN FAVOR OF SAN DIEGO GAS AND ELECTRIC COMPANY BY INSTRUMENT RECORDED DECEMBER 21, 1948 IN BOOK 3056, PAGE 217 OF OFFICIAL RECORDS.

(8) THE FACT THAT THE OWNERSHIP OF SAID LAND DOES NOT INCLUDE ANY RIGHTS OF INGRESS OR EGRESS TO OR FROM CALIFORNIA STATE HIGHWAY XI-SD-77F, ADJACENT THERETO, SAID RIGHTS HAVING BEEN RELINQUISHED BY DEED RECORDED APRIL 9, 1958 IN BOOK 7035, PAGE 315 OF OFFICIAL RECORDS.

(9) AN EASEMENT FOR HIGHWAY SLOPE PURPOSES IN FAVOR OF STATE OF CALIFORNIA, RECORDED ON JULY 15, 1974 AS IDOCUMENT NO. 74-188092, OF OFFICIAL RECORDS. SAID EASEMENT HAS BEEN RELINQUISHED TO THE COUNTY OF SAN DIEGO PER DOC NO. 80-007793 AS PART OF RELINQUISHMENT MAP NO. 241345

(10) AN EASEMENT TO: CONSTRUCT, MAINTAIN, OPERATE, REPLACE, REMOVE, RENEW AND ENLARGE LINES OF PIPE, CONDUITS, CABLES, WIRES, POLES AND OTHER STRUCTURES, EQUIPMENT AND FIXTURES FOR THE OPERATION OF GAS PIPE LINES, TELEGRAPHIC AND TELEPHONE LINES AND FOR THE TRANSPORTATION OR DISTRIBUTION OF ELECTRICAL ENERGY AND WATER; RECORDED ON JULY 6, 1989 AS IDOCUMENT NO. 89-357212, OF OFFICIAL RECORDS.

(11) AN EASEMENT TO CONSTRUCT AND MAINTAIN SLOPES, SANITARY SEWERS, STORM DRAINS AND APPURTENANT STRUCTURES INCLUDING ACCESS TO PROTECT THE PROPERTY FROM ALL HAZARDS, RECORDED ON JULY 6, 1989 AS IDOCUMENT NO. 89-357212, OF OFFICIAL RECORDS. (NON PLOTTABLE)

(12) IRREVOCABLE OFFER TO DEDICATE AN EASEMENT FOR FUTURE STREET OR HIGHWAY PURPOSES IN FAVOR OF COUNTY OF SAN DIEGO, RECORDED ON NOVEMBER 4, 2004 AS IDOCUMENT NO. 2004-1046716, OF OFFICIAL RECORDS.

GROSS AREA SUMMARY:

69,941 SQUARE FEET (1.606 ACRES)

SOURCE OF TOPOGRAPHY:

TOPOGRAPHY SHOWN HEREON IS BASED ON AERIAL PHOTOGRAMMETRIC MAPPING CONDUCTED BY PHOTO GEODETIC, INC. AS PHOTOGRAPHED ON 3-21-17. HORIZONTAL AND VERTICAL GROUND CONTROL WERE ESTABLISHED BY OMEGA LAND SURVEYING, INC. ON MARCH 2, 2017 WITH SUPPLEMENTAL DATA COLLECTED ON MARCH 6, 2017.

VERTICAL BENCHMARK:

DESCRIPTION: STATION SIO5
LOCATION: LA JOLLA, CA
ELEVATION: 726.12' (NAVD 88)
SOURCE: SAN DIEGO COUNTY REAL TIME NETWORK

FLOOD ZONE:

THE PROPERTY SHOWN HEREON IS CONTAINTED WITHIN F.E.M.A. FLOOD ZONE "X" BEING AN AREA DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN AS SHOWN ON FLOOD INSURANCE RATE MAP NUMBER 06073C0803G, DATED MAY 16, 2002. ANY LIMITS OF SAID FLOODPLAIN WITHIN THE EXTENT OF THIS PLAT ARE SHOWN HEREON.

DISCRETIONARY REVIEW NOTE:

THIS PLAN IS PROVIDED TO ALLOW FOR FULL AND ADEQUATE DISCRETIONARY REVIEW OF A PROPOSED DEVELOPMENT PROJECT. THE PROPERTY OWNER ACKNOWLEDGES THAT ACCEPTANCE OR APPROVAL OF THIS PLAN DOES NOT CONSTITUTE AN APPROVAL TO PERFORM ANY GRADING SHOWN HEREON, AND AGREES TO OBTAIN VALID GRADING PERMISSIONS BEFORE COMMENCING SUCH ACTIVITY.

TITLE INFORMATION:

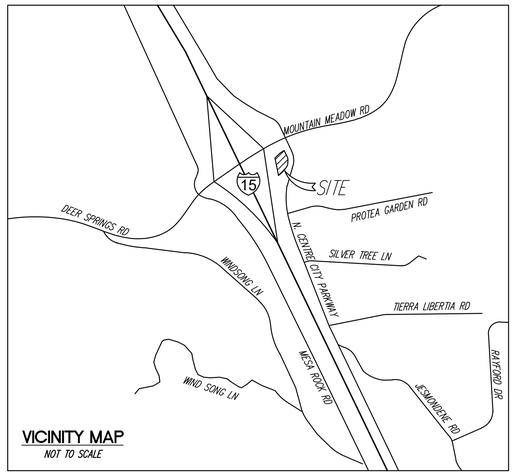
TITLE INFORMATION FOR THIS SURVEY BASED ON A PRELIMINARY REPORT PREPARED BY TITLE 365 INSURANCE COMPANY AS ORDER NO. CA0410-16015350-41, DATED OCTOBER 5, 2016, 2015.

EARTHWORK:

CUT:	1,30 CY
UNDERCUTS:	1,959 CY
FILL:	6,100 CY
DEMO HAUL OFF:	680 CY
IMPORT:	4,691 CY
REMEDIAL:	2,020 CY

ABBREVIATIONS:

AB	AGGREGATE BASE	IE	INVERT ELEVATION
AC	ASPHALT CONCRETE	LID	UNIDENTIFIED LID
BO	BLOW-OFF VALVE	LP	LIGHT POLE
CB	CATCH BASIN	MH	MANHOLE
CL	CENTERLINE	P	PAVEMENT
CONC	CONCRETE	PAD	PAD ELEVATION
ELEC	ELECTRICAL UTILITIES	PP	POWER POLE
EL HH	ELECTRICAL H H	RIM	MANHOLE RIM ELEVATION
EX	EXISTING	ROW	RIGHT-OF-WAY
FF	FINISHED FLOOR	SD	STORM DRAIN UTILITIES
FH	FIRE HYDRANT	SDCO	STORM DRAIN CONNECTION
FL	FLOW LINE	SDMH	STORM DRAIN MANHOLE
FS	FINISHED SURFACE	TC	TOP OF CURB
GV	GATE VALVE	TEL	TELEPHONE UTILITIES
GUY	GUY WIRE	WM	WATER METER BOX



VICINITY MAP
NOT TO SCALE

SITE ADDRESS:

26746 MOUNTAIN MEADOW RD.
ESCONDIDO, CA 92026

ASSESSOR'S PARCEL NUMBER:

186-093-19-00, 186-093-23-00, & 186-093-37-00

OWNER:

RAYMOND W. GRIMM JR. AND DARAN W. GRIMM, HUSBAND AND WIFE AS COMMUNITY PROPERTY; JOHN L. PIESCER AND GAYLE E. PIESCER, HUSBAND AND WIFE; CRAIG E. GRIMM AND STINA GRIMM, HUSBAND AND WIFE AND PETER KOTE, AS SUCCESSOR TRUSTEE OF THE LINGER FAMILY TRUST ESTABLISHED JUNE 27, 1987 – SURVIVOR'S TRUST, ALL AS THEIR INTERESTS APPEAR OF RECORD, SUBJECT TO ITEM NO. 1.3, 16, 17 OF SCHEDULE B.

PROJECT DEVELOPER:

COMPANY: KA ENTERPRISES
ATTN: EUGENE MARINI
ADDRESS: 5820 OBERLIN DRIVE SUITE 201 SAN DIEGO, CA 92121
PH: (858) 281-6091
EMAIL: EUGENE@KAENTERPRISES.NET

SHEET INDEX:

LEGEND:

ITEM		SYMBOL
PROJECT BOUNDARY		
CENTERLINE		
RIGHT-OF-WAY		
EX. EASEMENT		
SETBACK		
DAYLIGHT		
EX CONTOUR		588
EX BUILDING		
EX WATER	SIZE AND TYPE PER PLAN	W
EX FIRE HYDRANT ASSEMBLY		
EX BOLLARD		
EX WATER METER		
EX STREET LIGHT		
EX CURB & GUTTER		
EX FENCE		
EX TREE		
PROPOSED R/W DEDICATION		
PROPOSED CONTOUR		52
PROPOSED SLOPE (2:1 MAX)		FILL CUT
PROPOSED FINISH FLOOR ELEVATION		FF=52.00
PROPOSED TOP OF CURB ELEVATION		374.00TC
PROPOSED PAVEMENT ELEVATION		374.00P
PROPOSED FLOWLINE ELEVATION		374.00FL
PROPOSED FINISHED GRADE ELEVATION		374.00FG
PROPOSED GRADIANT		1.75%
PROPOSED CURB	SDRSD G-01 6" CURB	
PROPOSED CURB & GUTTER	SDRSD G-2 TYPE 'G'	
PROPOSED PCC SIDEWALK	SDRSD G-07, 10, & 11	
PCC PAVEMENT		
AC PAVEMENT		
PROPOSED D.G. WALKWAY		
PROPOSED UTILITY TRENCH		
PEDESTRIAN CURB RAMP	SDRSD G-27 TYPE-A'	
PROPOSED DRIVEWAY	SDRSD G-14A 'W' PER PLAN	
PROPOSED STORM DRAIN		SIZE & TYPE PER PLAN
PROPOSED BROW DITCH	SDRSD D-75 TYPE 'A'	
PCC RIBBON GUTTER		
EARTHEN SWALE		(% PER PLAN)
PROPOSED BF-1 BIOFILTRATION BASIN		
PROPOSED GRATED INLET		
PROPOSED B-INLET	SDRSD D-02, PER PLAN	
PROPOSED SLOT-DRAIN		
PROPOSED HEADWALL	SDRSD D-34	
CATCH BASIN - TYPE F	SDRSD D-07	
RIP-RAP	SDRSD D-40	
STORMDRAIN CLEANOUT		
PROPOSED WATER LATERAL		SIZE & TYPE PER PLAN
PROPOSED WATER SERVICE WATER METER		
PROPOSED FIRE SERVICE BACKFLOW WITH FDC		
PROPOSED DOMESTIC WATER POINT OF CONNECTION		
PROPOSED DOMESTIC WATER POINT OF CONNECTION		W
PROPOSED IRRIGATION POINT OF CONNECTION		RW
PROPOSED FIRE POINT OF CONNECTION		FS
PROPOSED SEWER POINT OF CONNECTION		S
PROPOSED ROOF DRAIN		RD
PROPOSED SEWER		SIZE & TYPE PER PLAN
PROPOSED SEWER CLEANOUT		
PROPOSED RETAINING WALL		
PROPOSED STREET LIGHT		
PROPOSED PYLON SIGN		
PROPOSED FUEL PUMP LOCATION		Canopy
PROPOSED TRASH ENCLOSURE		
PROPOSED GREASE INTERCEPTOR		
SEPTIC TREATMENT SYSTEM		
TREE WELL		

No.	Revision	Date	By	Ckd.	Appr.

TITLE SHEET
KA ENTERPRISES MEGA MART
Deer Spring Rd / Mountain Meadows
Escondido, CA

5820 Oberlin Dr Suite 201
San Diego, CA 92121
858/404-6080
fax 858/404-6081

For: KA ENTERPRISES

REGISTERED PROFESSIONAL ENGINEER * MARK V. HANN * No. 50940 * CIVIL * STATE OF CALIFORNIA

Scale: 1" = 20' Horizontal, 1" = 20' Vertical, N/A
Designed SSC
Drawn JT
Checked AJK
Approved
Date 8/5/19

OMEGA ENGINEERING CONSULTANTS
4340 VIEWRIDGE AVE. SUITE B
SAN DIEGO, CA 92123
PH:(858) 634-8620 FAX:(858)-634-8627

JOB NUMBER
SHEET 1 OF 7

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SITE PLAN

KA ENTERPRISES MEGA MART
DEER SPRINGS ROAD AND N. CENTRE CITY PKWY ESCONDIDO, CA

EASEMENT + EXCEPTIONS NOTES:

THE FOLLOWING IS A LIST OF EXCEPTIONS TO COVERAGE AS LISTED IN THE ABOVE REFERENCED PRELIMINARY REPORT. SURVEY RELATED ITEMS THAT CAN BE PLOTTED ARE SHOWN HEREON. THE EFFECT OF AGREEMENTS, ASSESSMENTS, COVENANTS & CONDITIONS & RESTRICTIONS, FINANCING STATEMENTS, LEASES, LIENS, PERMITS, RESOLUTIONS, TAXES, OR WAIVERS THAT APPEAR IN SAID REPORT THAT ARE NOT SURVEY RELATED ARE LISTED FOR REFERENCE ONLY.

⟨7⟩ THE RIGHT AND PRIVILEGE TO PLACE AND MAINTAIN AN ANCHOR TO SUPPORT A LINE OF POLES AND WIRES AND INCIDENTAL PURPOSES TOGETHER WITH THE RIGHT OF INGRESS AND EGRESS IN FAVOR OF SAN DIEGO GAS AND ELECTRIC COMPANY BY INSTRUMENT RECORDED DECEMBER 21, 1948 IN BOOK 3056, PAGE 217 OF OFFICIAL RECORDS.

⟨8⟩ THE FACT THAT THE OWNERSHIP OF SAID LAND DOES NOT INCLUDE ANY RIGHTS OF INGRESS OR EGRESS TO OR FROM CALIFORNIA STATE HIGHWAY XI-SD-77F, ADJACENT THERETO, SAID RIGHTS HAVING BEEN RELINQUISHED BY DEED RECORDED APRIL 9, 1958 IN BOOK 7035, PAGE 315 OF OFFICIAL RECORDS.

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⟨10⟩ AN EASEMENT TO: CONSTRUCT, MAINTAIN, OPERATE, REPLACE, REMOVE, RENEW AND ENLARGE LINES OF PIPE, CONDUITS, CABLES, WIRES, POLES AND OTHER STRUCTURES, EQUIPMENT AND FIXTURES FOR THE OPERATION OF GAS PIPE LINES, TELEGRAPHIC AND TELEPHONE LINES AND FOR THE TRANSPORTATION OR DISTRIBUTION OF ELECTRICAL ENERGY AND WATER; RECORDED ON JULY 6, 1989 AS DOCUMENT NO. 89-357212, OF OFFICIAL RECORDS.

⟨11⟩ AN EASEMENT TO CONSTRUCT AND MAINTAIN SLOPES, SANITARY SEWERS, STORM DRAINS AND APPURTENANT STRUCTURES INCLUDING ACCESS TO PROTECT THE PROPERTY FROM ALL HAZARDS, RECORDED ON JULY 6, 1989 AS DOCUMENT NO. 89-357212, OF OFFICIAL RECORDS. (NON PLOTTABLE)

⟨12⟩ IRREVOCABLE OFFER TO DEDICATE AN EASEMENT FOR FUTURE STREET OR HIGHWAY PURPOSES IN FAVOR OF COUNTY OF SAN DIEGO, RECORDED ON NOVEMBER 4, 2004 AS DOCUMENT NO. 2004-1046716, OF OFFICIAL RECORDS.

PARKING DATA

PARKING SPACES REQUIREMENTS:
C-STORE: 4 STALLS PER 1000 S.F.
3,500 S.F. = 14 STALLS

PARKING SPACES REQUIRED: 14 STALLS
PARKING SPACES PROVIDED: 19 STALLS (INCLUDING 1 ADA STALL)

BICYCLE PARKING REQUIREMENTS:
0.1 PER PARKING STALL
19 STALLS= 2 BICYCLE STALLS

BICYCLE PARKING STALLS PROVIDED: 2 STALLS

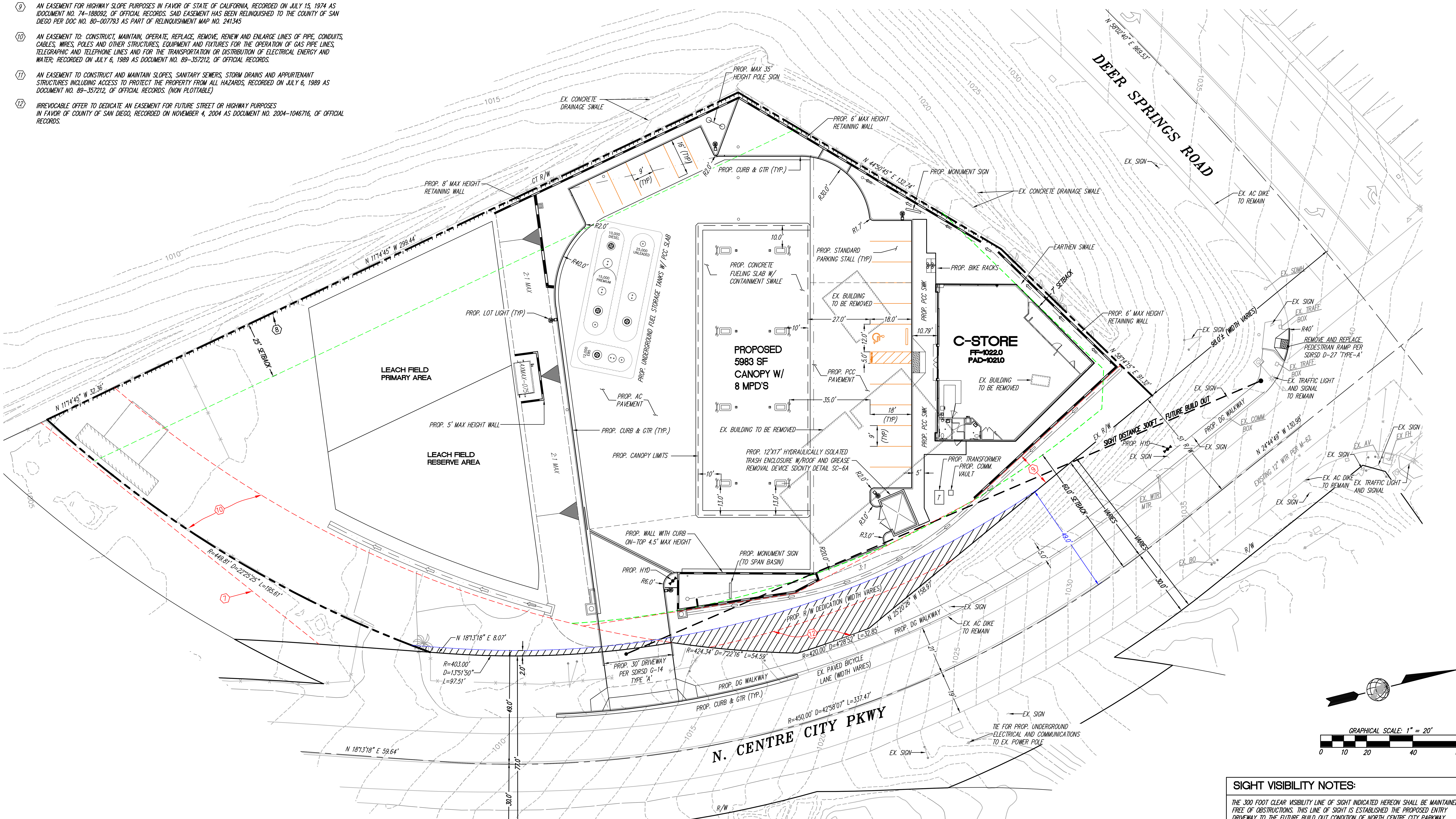
SETBACK DATA

BUILDING SETBACKS:	2'
FRONT YARD:	50' FROM STREET CENTERLINE
INTERIOR SIDE YARD:	0'
EXTERIOR SIDE YARD:	35' FROM STREET CENTERLINE
REAR YARD:	15'

AREA TABLE

EXISTING IMPERVIOUS:	30,646 SF
EXISTING PERVIOUS:	39,299 SF
REMOVED IMPERVIOUS:	30,646 SF
PROPOSED IMPERVIOUS:	31,238 SF
PROPOSED PERVIOUS:	38,707 SF

NET INCREASE IN IMPERVIOUS AREA: +592 SF



SIGHT VISIBILITY NOTES:

THE 300 FOOT CLEAR VISIBILITY LINE OF SIGHT INDICATED HEREON SHALL BE MAINTAINED FREE OF OBSTRUCTIONS. THIS LINE OF SIGHT IS ESTABLISHED THE PROPOSED ENTRY DRIVEWAY TO THE FUTURE BUILD OUT CONDITION OF NORTH CENTRE CITY PARKWAY.

ANY PLANTING OR IMPROVEMENT THAT ARE TO EXTEND EAST OF THIS LINE OF SIGHT SHALL NOT IN ANY WAY HINDER THE LINE OF SIGHT. NO TREES SHALL BE PLANTED IN THIS AREA AND ALL OTHER PLANTING SHALL BE LESS THAN 3 FEET IN HEIGHT

No.	Date	By	Ckd.	Appr.	Revision

SITE PLAN
KA ENTERPRISES MEGA MART
Deer Spring Rd / Mountain Meadows
Escondido, CA

For: KA ENTERPRISES
5820 Oberlin Dr Suite 201
San Diego, CA 92121
858/404-6080
fax 858/404-6081

REGISTERED PROFESSIONAL ENGINEER ANDREW J. KANN No. 50940 CIVIL STATE OF CALIFORNIA

OMEGA ENGINEERING CONSULTANTS
4340 VIEWRIDGE AVE. SUITE B
SAN DIEGO, CA 92123
PH:(858) 634-8620 FAX:(858)-634-8627

Designed SS
Drawn JT
Checked AJK
Approved ____
Date 4/18/19

Scale: 1"= 20' Horizontal
1"= 20' Vertical N/A

JOB NUMBER

SHEET 2 OF 7

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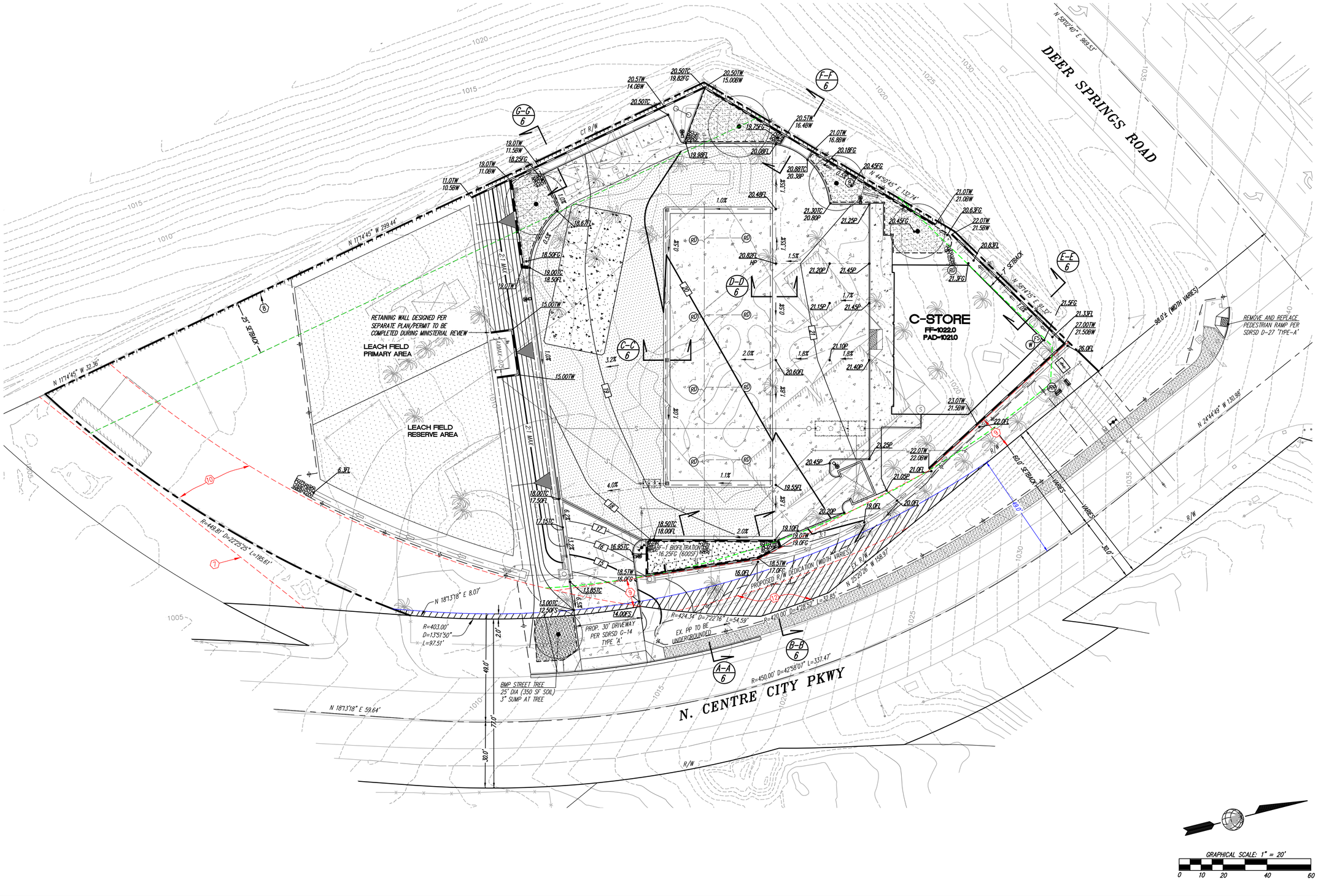
PRELIMINARY GRADING PLAN

KA ENTERPRISES MEGA MART
DEER SPRINGS ROAD AND N. CENTRE CITY PKWY ESCONDIDO, CA



No.	Date	By	Ckd.	Appr.	Revision

PRELIMINARY GRADING PLAN
KA ENTERPRISES MEGA MART
Deer Spring Rd / Mountain Meadows
Escondido, CA

For: KA ENTERPRISES

5820 Oberlin Dr Suite 201
San Diego, CA 92121
858/404-6080
fax 858/404-6081

ANDREW J. KANN — No. 50940 — REGISTERED PROFESSIONAL ENGINEER — CIVIL — STATE OF CALIFORNIA

Scale:	1" = 20' Horizontal / 1" = 20' Vertical / N/A
Designed	SS
Drawn	JT
Checked	AJK
Approved	
Date	7/24/19

OMEGA
ENGINEERING CONSULTANTS
4340 VIEWRIDGE AVE. SUITE B
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JOB NUMBER

SHEET 3 OF 7

P: \DWG OMEGA \0539 Mountain Meadow Gas \ACAD \CSP \0539-CSP03-GRADING.dwg 7/24/2019 6:12 PM

PRELIMINARY UTILITY PLAN

KA ENTERPRISES MEGA MART
DEER SPRINGS ROAD AND N. CENTRE CITY PKWY ESCONDIDO, CA

No.	Date	By	Ckd.	Appr.	Revision

PRELIMINARY UTILITY PLAN
KA ENTERPRISES MEGA MART
Deer Spring Rd / Mountain Meadows
Escondido, CA

5820 Oberlin Dr Suite 201
San Diego, CA 92121
858/404-6080
fax 858/404-6081

For: KA ENTERPRISES

MARK J. KAHN — No. 50940 — REGISTERED PROFESSIONAL ENGINEER — CIVIL — STATE OF CALIFORNIA

Scale: 1" = 20' Horizontal; 1" = 20' Vertical; N/A

Designed SS | Drawn JF | Checked AJK | Approved — | Date 4/18/19

OMEGA ENGINEERING CONSULTANTS
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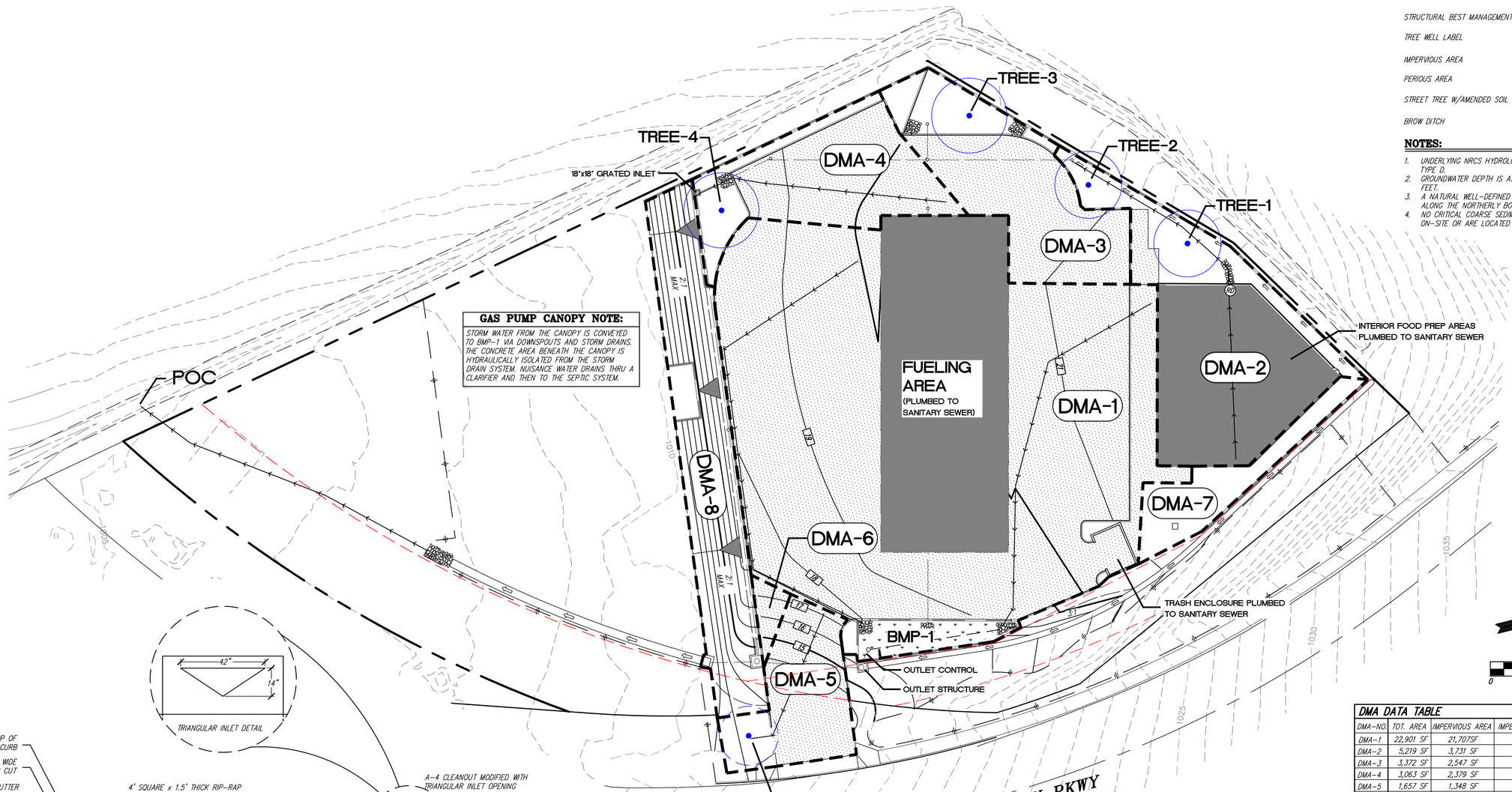
JOB NUMBER

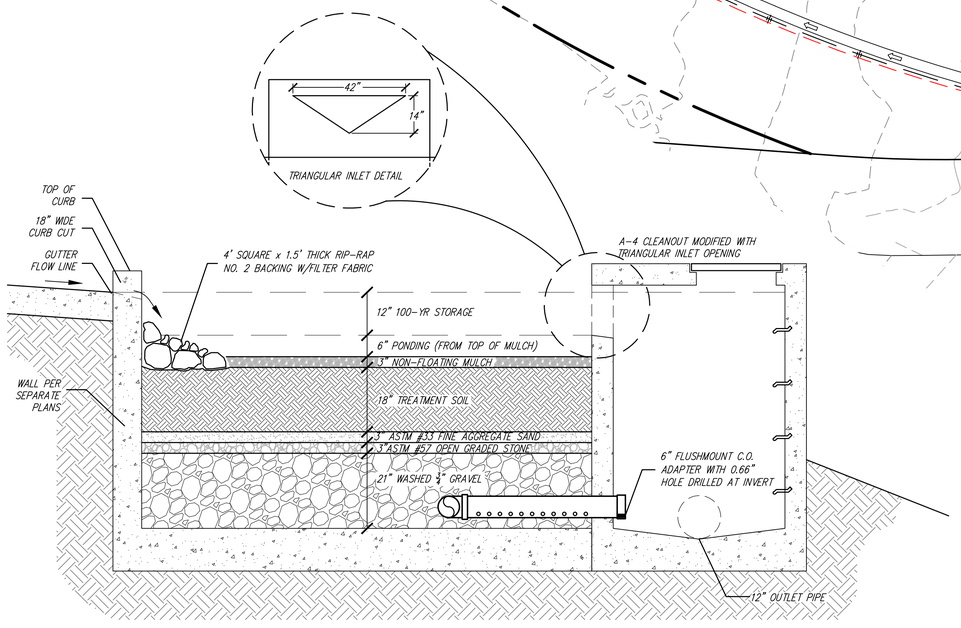
SHEET 4 OF 7

P: \OMC OMEGA \0539 Mountain Meadow Cost \ACAD \CDP \0539-CDP04-UTILITY.dwg 4/18/2019 6:44 PM

DMA/BMP MAP

KA ENTERPRISES MEGA MART
DEER SPRINGS ROAD AND N. CENTRE CITY PKWY ESCONDIDO, CA





BIO-1 DETAIL
NOT TO SCALE

LEGEND:

- DMA BOUNDARY
- DRAINAGE ARROWS
- DRAINAGE MANAGEMENT AREA — DMA-1
- POINT OF COMPLIANCE — POC
- STRUCTURAL BEST MANAGEMENT PRACTICE — BMP-#
- TREE WELL LABEL — TREE-#
- IMPERVIOUS AREA
- PERIOUS AREA
- STREET TREE W/AMENDED SOIL
- BROW DITCH

NOTES:

1. UNDERLYING NRCS HYDROLOGIC SOIL GROUP FOR SITE IS TYPE D.
2. GROUNDWATER DEPTH IS ASSUMED GREATER THAN 15 FEET.
3. A NATURAL WELL-DEFINED WATER COURSE IS IDENTIFIED ALONG THE NORTHERLY BOUNDARY OF THE PROJECT SITE.
4. NO CRITICAL COARSE SEDIMENT YIELD AREAS EXISTING ON-SITE OR ARE LOCATED UP-STREAM OF THE SITE.

GRAPHICAL SCALE: 1" = 20'
0 10 20 40 60

DMA DATA TABLE

DMA-NO.	TOT. AREA	IMPERVIOUS AREA	IMPERVIOUS %	DCV	TYPE/TREATED BY
DMA-1	22,901 SF	21,707SF	95%	1,108 CF	DRAINS TO BMP-1
DMA-2	5,219 SF	3,731 SF	72%	571 CF	TREE WELL
DMA-3	3,372 SF	2,547 SF	76%	386 CF	TREE WELL
DMA-4	3,063 SF	2,379 SF	78%	360 CF	TREE WELL
DMA-5	1,657 SF	1,348 SF	81%	203 CF	TREE WELL
DMA-6	161 SF	161 SF	100%	N/A	DE MINIMIS
DMA-7	1,251 SF	0 SF	0%	N/A	SELF MITIGATING
DMA-8	4,100 SF	0 SF	0%	N/A	SELF MITIGATING

STREET TREE DATA TABLE

TREE NO.	TRIBUTARY DMA	CANOPY DIA.	SOIL AREA	SOIL DEPTH
1	DMA-2	25 FT	395 SF	2.5 FT
2	DMA-2	25 FT	395 SF	2.5 FT
3	DMA-3	30 FT	570 SF	2.5 FT
4	DMA-4	28 FT	500 SF	2.5 FT
5	DMA-5	22 FT	304 SF	2.5 FT

ONSITE TREATMENT BMP DATA TABLE

BMP-#	TREATING	PROP. FOOTPRINT	DESCRIPTION
BMP-1	DMA-1	600 SF	BIOFILTRATION (BF-1) W/ OUTLET STRUCTURE
–	–	–	–

APPLICABLE SITE DESIGN BMP NOTES

SITE DESIGN BMP	SOURCE CONTROL REQUIRMENT
4.3.1	MAINTAIN NATURAL DRAINAGE PATHWAYS & HYDROLOGIC FEATURES
4.3.2	CONSERVE NATURAL AREAS, SOILS, AND VEGETATION
4.3.3	MINIMIZED IMPERVIOUS AREA
4.3.4	MINIMIZE SOIL COMPACTION

No.	Date	By	Ckd.	Appr.	Revision

DMA/BMP MAP
KA ENTERPRISES MEGA MART
Deer Spring Rd / Mountain Meadows
Escondido, CA

For: KA ENTERPRISES

5820 Oberlin Dr Suite 201
San Diego, CA 92121
858/404-6080
fax 858/404-6081

PROFESSIONAL ENGINEER — MARK J. KINKLE — No. 50940 — REGISTERED — STATE OF CALIFORNIA — CIVIL

Scale: 1"= 20' Horizontal, 1"= 20' Vertical, N/A

Designed SSS | Drawn JT | Checked AJK | Approved | Date 8/1/19

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JOB NUMBER

SHEET 5 of 7

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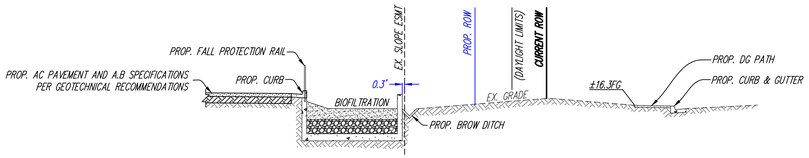
SITE SECTIONS

KA ENTERPRISES MEGA MART
DEER SPRINGS ROAD AND N. CENTRE CITY PKWY ESCONDIDO, CA



SECTION 'A–A'

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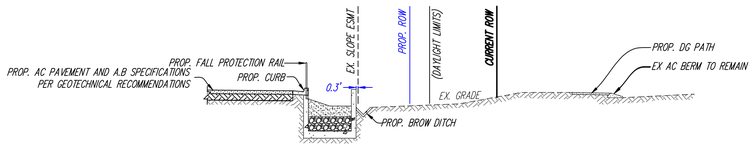
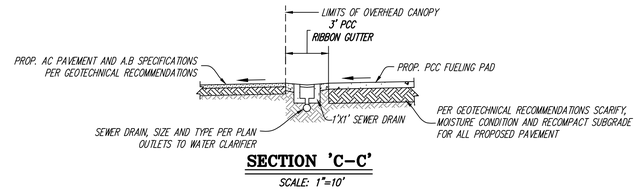


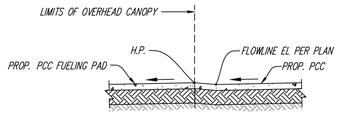
SECTION 'B–B'

SCALE: 1"=10'



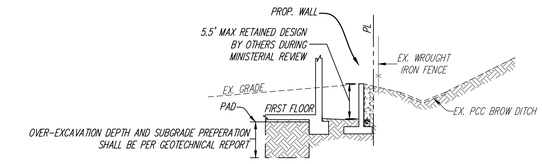
SECTION 'C–C'

SCALE: 1"=10'



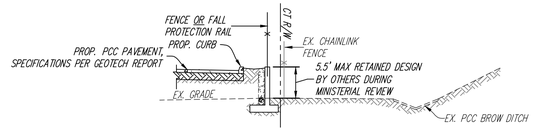
SECTION 'D–D'

SCALE: 1"=5'



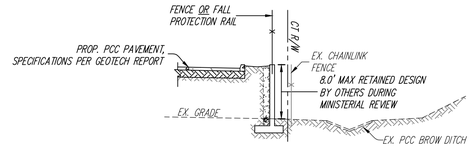
SECTION 'E–E'

SCALE: 1"=10'



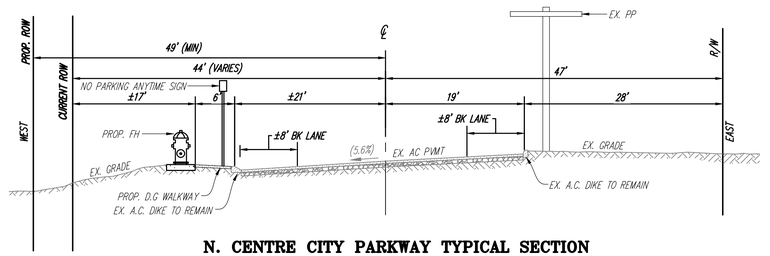
SECTION 'F–F'

SCALE: 1"=10'



SECTION 'G–G'

SCALE: 1"=10'



N. CENTRE CITY PARKWAY TYPICAL SECTION

N.T.S.

No.	Date	By	Ckd.	Appr.	Revision

SITE SECTIONS
KA ENTERPRISES MEGA MART
Deer Spring Rd / Mountain Meadows
Escondido, CA

For: KA ENTERPRISES

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REGISTERED PROFESSIONAL ENGINEER ★ MARK J. KAHN ★ No. 50940 ★ STATE OF CALIFORNIA ★ CIVIL

Scale:
Designed SS — 1" = 20' Horizontal
Drawn JF — 1" = 20' Vertical
Checked AJK — Approved ____ N/A
Date 4/18/19

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JOB NUMBER

SHEET 6 OF 7

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CONSTRAINTS MAP

KA ENTERPRISES MEGA MART

DEER SPRINGS ROAD AND N. CENTRE CITY PKWY ESCONDIDO, CA

LEGAL DESCRIPTION:

PARCEL A:
THOSE PORTIONS OF THE SOUTH HALF OF THE SOUTHEAST QUARTER OF SECTION 19 AND OF THE NORTH HALF OF THE NORTHEAST QUARTER OF SECTION 30, ALL BEING IN TOWNSHIP 11 SOUTH, RANGE 2 WEST, SAN BERNARDINO MERIDIAN, IN THE COUNTY OF SAN DIEGO, STATE OF CALIFORNIA, ACCORDING TO UNITED STATES GOVERNMENT SURVEY, APPROVED JANUARY 26, 1891, DESCRIBED WHOLE AS FOLLOWS: COMMENCING AT ENGINEER'S STATION 403 + 50.35 ON THE CENTER LINE OF CALIFORNIA STATE HIGHWAY XI–SD–77–F (U.S. 395); THENCE NORTH 64 MINUTES 14 MINUTES 00 SECONDS EAST, 100.00 FEET TO AN INTERSECTION WITH THE NORTHEASTERLY LINE OF SAID STATE HIGHWAY, BEING ALSO THE SOUTHWESTERLY TERMINUS OF THE CENTER LINE OF COUNTY ROAD SURVEY NO. 603 (KNOWN AS MOUNTAIN ROAD) AS DESCRIBED IN DEED TO THE COUNTY OF SAN DIEGO, RECORDED APRIL 14, 1958 IN BOOK 7035, PAGE 315 OF OFFICIAL RECORDS; THENCE NORTHEASTERLY LINE OF SAID STATE HIGHWAY NORTH 25 DEGREES 46 MINUTES 00 SECONDS WEST (RECORD NORTH 25 DEGREES 51 MINUTES 20 SECONDS WEST) 55.00 FEET TO THE POINT OF CUSP WITH A TANGENT 25.00 FOOT RADIUS CURVE, CONCAVE NORTHEASTERLY, IN THE BOUNDARY OF SAID MOUNTAIN MEADOW ROAD AND THE TRUE POINT OF BEGINNING; THENCE ALONG THE NORTHWESTERLY BOUNDARY OF SAID MOUNTAIN MEADOW ROAD AS FOLLOWS: SOUTHEASTERLY AND EASTERLY ALONG THE ARC OF SAID CURVE THROUGH A CENTRAL ANGLE OF 90 DEGREES 00 MINUTES 00 SECONDS A DISTANCE OF 39.27 FEET; TANGENT TO SAID CURVE NORTH 64 DEGREES 14 MINUTES 00 SECONDS EAST 52.58 FEET TO THE BEGINNING OF A TANGENT 470.00 FOOT RADIUS CURVE, CONCAVE NORTHWESTERLY, NORTHEASTERLY ALONG THE ARC OF SAID CURVE THROUGH A CENTRAL ANGLE OF 51 DEGREES 13 MINUTES 30 SECONDS A DISTANCE OF 420.20 FEET TO AN INTERSECTION WITH THE NORTHEASTERLY LINE OF LAND DESCRIBED IN DEED TO VICTORY E. CURCI, ET UX, RECORD MAY 1, 1956 IN BOOK 6081, PAGE 419 OF OFFICIAL RECORDS, A RADIAL LINE OF SAID CURVE BEARS SOUTH 76 DEGREES 59 MINUTES 30 SECONDS EAST TO SAID INTERSECTION; THENCE ALONG THE SAID NORTHEASTERLY LINE NORTH 25 DEGREES 46 MINUTES 00 SECONDS WEST (RECORD –NORTH 26 DEGREES 51 MINUTES 20 SECONDS WEST) 261.11 FEET; THENCE SOUTH 64 DEGREES 14 MINUTES 00 SECONDS WEST 444.00 FEET TO AN INTERSECTION WITH THE NORTHEASTERLY LINE OF SAID STATE HIGHWAY; THENCE ALONG SAID NORTHEASTERLY LINE SOUTH 25 DEGREES 46 MINUTES 00 SECONDS EAST, 411.76 FEET TO THE TRUE POINT OF BEGINNING. EXCEPTING THEREFROM THAT PORTION CONVEYED TO THE STATE OF CALIFORNIA IN PARCELS 1 AND 2 OF DEED RECORDED JULY 15, 1974 AS FILE NO. 74–188092 OF OFFICIAL RECORDS.

PARCEL B:
THOSE PORTIONS OF THE SOUTH HALF OF THE SOUTHEAST QUARTER OF SECTION 19 AND OF THE NORTH HALF OF THE NORTHEAST QUARTER OF SECTION 30, BOTH BEING IN TOWNSHIP 11 SOUTH, RANGE 2 WEST SAN BERNARDINO BASE AND MERIDIAN, IN THE COUNTY OF SAN DIEGO, STATE OF CALIFORNIA, ACCORDING TO UNITED STATES GOVERNMENT SURVEY APPROVED JANUARY 26, 1891, LYING WITHIN A STRIP OF LAND 30.00 FEET WIDE, THE SOUTHEASTERLY LINE OF SAID STRIP BEING THE CENTERLINE OF A 60.00 FOOT WIDE STRIP DESCRIBED IN PARCEL 1 OF DEED TO THE COUNTY OF SAN DIEGO, RECORDED APRIL 14, 1958 IN BOOK 7035, PAGE 318 OF OFFICIAL RECORDS, IN THE OFFICE OF THE COUNTY RECORDER OF SAN DIEGO COUNTY. EXCEPTING THEREFROM THAT PORTION THEREOF LYING WESTERLY OF THE EASTERLY LINE OF STATE HIGHWAY II–SD–15 AND LYING EASTERLY OF A LINE THAS S 47.00 FEET WESTERLY OF AND PARALLEL AND CONCENTRIC WITH A LINE SHOWN AS THE "FD–E" LINE ON STATE HIGHWAY MAP

EASEMENT + EXCEPTIONS NOTES:

THE FOLLOWING IS A LIST OF EXCEPTIONS TO COVERAGE AS LISTED IN THE ABOVE REFERENCED PRELIMINARY REPORT. SURVEY RELATED ITEMS THAT CAN BE PLOTTED ARE SHOWN HEREON. THE EFFECT OF AGREEMENTS, ASSESSMENTS, COVENANTS & CONDITIONS & RESTRICTIONS, FINANCING STATEMENTS, LEASES, LIENS, PERMITS, RESOLUTIONS, TAXES, OR WAIVERS THAT APPEAR IN SAID REPORT THAT ARE NOT SURVEY RELATED ARE LISTED FOR REFERENCE ONLY.

(7) THE RIGHT AND PRIVILEGE TO PLACE AND MAINTAIN AN ANCHOR TO SUPPORT A LINE OF POLES AND WIRES AND INCIDENTAL PURPOSES TOGETHER WITH THE RIGHT OF INGRESS AND EGRESS IN FAVOR OF SAN DIEGO GAS AND ELECTRIC COMPANY BY INSTRUMENT RECORDED DECEMBER 21, 1948 IN BOOK 3056, PAGE 217 OF OFFICIAL RECORDS.

(8) THE FACT THAT THE OWNERSHIP OF SAID LAND DOES NOT INCLUDE ANY RIGHTS OF INGRESS OR EGRESS TO OR FROM CALIFORNIA STATE HIGHWAY XI–SD–77F, ADJACENT THERETO, SAID RIGHTS HAVING BEEN RELINQUISHED BY DEED RECORDED APRIL 9, 1958 IN BOOK 7035, PAGE 315 OF OFFICIAL RECORDS.

(9) AN EASEMENT FOR HIGHWAY SLOPE PURPOSES IN FAVOR OF STATE OF CALIFORNIA, RECORDED ON JULY 15, 1974 AS IDOCUMENT NO. 74–188092, OF OFFICIAL RECORDS. SAID EASEMENT HAS BEENRELINQUISHED TO THE COUNTY OF SAN DIEGO PER DOC NO. 80–007793 AS PART OF RELINQUISHMENT MAP NO. 241345

(10) AN EASEMENT TO: CONSTRUCT, MAINTAIN, OPERATE, REPLACE, REMOVE, RENEW AND ENLARGE LINES OF PIPE, CONDUITS, CABLES, WIRES, POLES AND OTHER STRUCTURES, EQUIPMENT AND FIXTURES FOR THE OPERATION OF GAS PIPE LINES, TELEGRAPHIC AND TELEPHONE LINES AND FOR THE TRANSPORTATION OR DISTRIBUTION OF ELECTRICAL ENERGY AND WATER; RECORDED ON JULY 6, 1989 AS IDOCUMENT NO. 89–357212, OF OFFICIAL RECORDS.

(11) AN EASEMENT TO CONSTRUCT AND MAINTAIN SLOPES, SANITARY SEWERS, STORM DRAINS AND APPURTENANT STRUCTURES INCLUDING ACCESS TO PROTECT THE PROPERTY FROM ALL HAZARDS, RECORDED ON JULY 6, 1989 AS IDOCUMENT NO. 89–357212, OF OFFICIAL RECORDS. (NON PLOTTABLE)

(12) IRREVOCABLE OFFER TO DEDICATE AN EASEMENT FOR FUTURE STREET OR HIGHWAY PURPOSES IN FAVOR OF COUNTY OF SAN DIEGO, RECORDED ON NOVEMBER 4, 2004 AS IDOCUMENT NO. 2004–1046716, OF OFFICIAL RECORDS.

BOUNDARY NOTES:

THE BOUNDARY AND ALL DIMENSIONS SHOWN HEREON ARE BASED ON A RETRACEMENT OF CALTRANS, DISTRICT 11, MAPS 18046 THRU 18049.

THE BOUNDARY RETRACED HEREON IS FOR TITLE INSURANCE PURPOSES ONLY AND IS NOT INTENDED TO BE USED FOR BOUNDARY LINE STAKE–OUT OR CERTIFICATION PURPOSES. ANY CORNERS FOR WHICH MONUMENTS WERE NOT FOUND OR SET RAISES THE PROBABILITY OF UNCERTAINTIES IN BOUNDARY LINE LOCATIONS.

● INDICATES FOUND 1" PIPE WITH DISC STAMPED "DIV HWYS"

SOURCE OF TOPOGRAPHY:

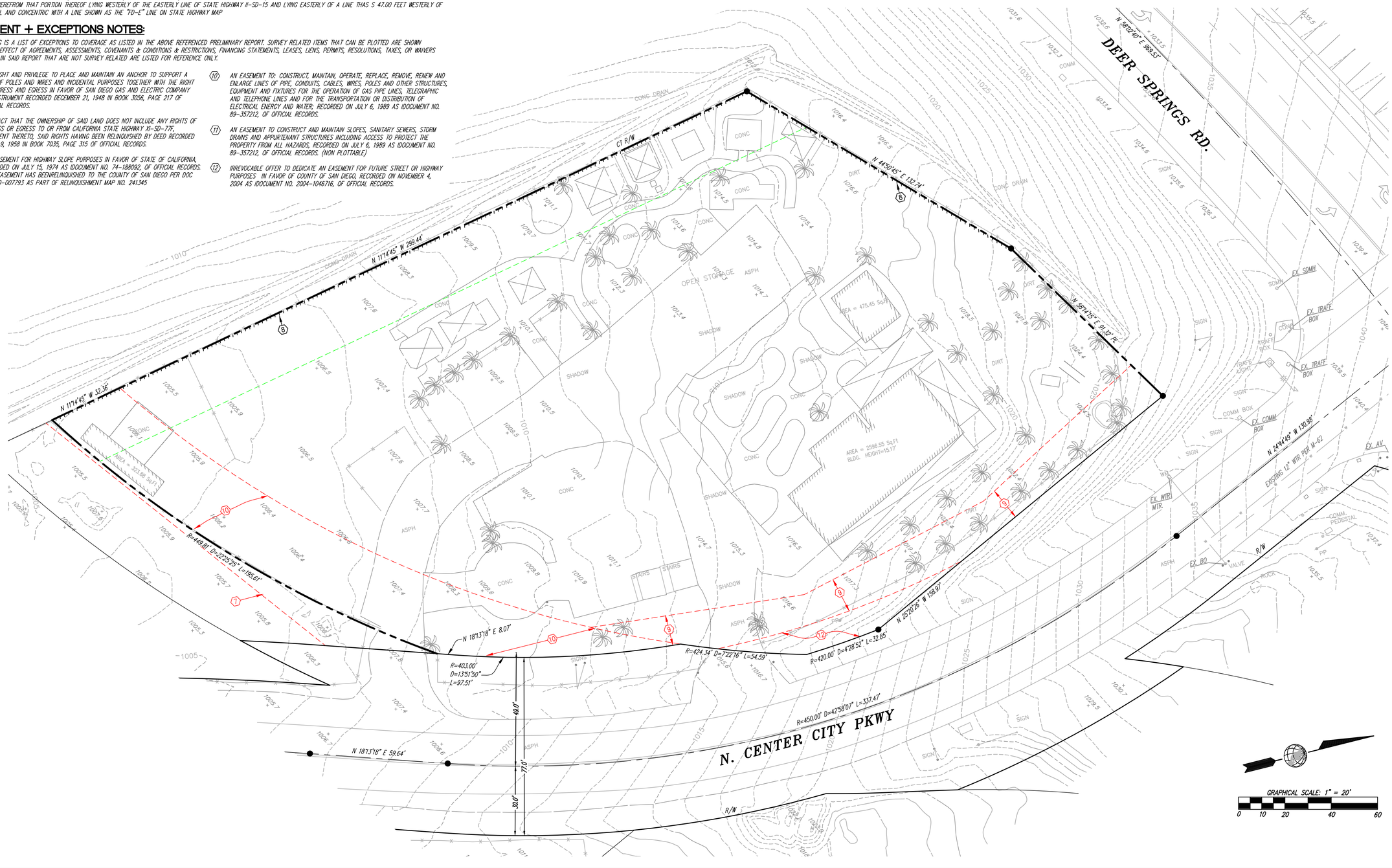
TOPOGRAPHY SHOWN HEREON IS BASED ON AERIAL PHOTOGRAMMETRIC MAPPING CONDUCTED BY PHOTO GEODETIC, INC. AS PHOTOGRAPHED ON 3–21–17. HORIZONTAL AND VERTICAL GROUND CONTROL WERE ESTABLISHED BY OMEGA LAND SURVEYING, INC. ON MARCH 2, 2017 WITH SUPPLEMENTAL DATA COLLECTED ON MARCH 6, 2017.

VERTICAL BENCHMARK:

DESCRIPTION: STATION SIO5
LOCATION: LA JOLLA, CA
ELEVATION: 726.12' (NAVD 88)
SOURCE: SAN DIEGO COUNTY REAL TIME NETWORK

GROSS AREA SUMMARY:

71,691 SQUARE FEET (1.646 ACRES)



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No.	Date	By	Ckd.	Appr.	Revision

CONSTRAINTS MAP
KA ENTERPRISES MEGA MART
Deer Spring Rd / Mountain Meadows
Escondido, CA

For: KA ENTERPRISES

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REGISTERED PROFESSIONAL ENGINEER MARK J. KAHN No. 50940 CIVIL STATE OF CALIFORNIA

Scale: 1"= 20' Horizontal; 1"= 20' Vertical; N/A
Designed SS | Drawn JF | Checked AJK | Approved — | Date 4/18/18

JOB NUMBER

SHEET 7 OF 7

ATTACHMENT #5

5.0 General Requirements

- Each Priority Development Project (PDP) must provide a description of existing site conditions and proposed changes to them, including changes to topography and drainage.
- Has a **Drainage Report** has been prepared for the PDP?

  ☒ **Yes**

  - Review of the Drainage Report must be concurrent with the PDP SWQMP.
  - Include the summary page of the Drainage Report with this cover page, and provide the following information:

    Title: Mountain Meadows Gas Station Drainage Study

    Prepared By: Omega-Engineering Consultants

    Date: 03/14/2019

  - Do not complete the rest of this attachment (also exclude these additional pages from your submittal). Additional documentation of site and drainage conditions is not required unless requested by County staff.

  ☐ **No** -- Complete and submit the remainder of this attachment below.

Hydrology Analysis Summary Page

Existing Rational Calculation Summary

Basin	Impervious %	C	I_{100} (in/hr)		Area (ac)	Q_{100} (cfs)
E-1	40.3%	0.57	6.98		1.74	6.94
-	-	-	-		-	-

The total peak runoff flowrate generated by the existing site is 6.94 cfs

Proposed Rational Calculation Summary

Basin	Impervious %	C	I_{100} (in/hr)	Area (ac)	Unmitigated Q_{100} (cfs)	Mitigated Q_{100} (cfs)
P-1	94.7%	0.53	9.49	0.53	4.34	3.88
P-2	0.0%	0.22	7.71	0.23	0.61	-
P-3	69.4%	0.29	9.49	0.29	1.98	-
P-4	4.4%	0.71	5.22	0.71	1.36	-

The total peak runoff flowrate generated by the Proposed site is 6.89 cfs

Results and Conclusions

The redevelopment of the project site will modify the onsite drainage patterns but the discharge point location will remain unchanged. Through the use of storage and controlled release, the proposed peak storm water flowrate is less than the existing conditions by 0.05 cfs.

See full Drainage Report for specifics.

6.0 General Requirements

- Use this attachment to document all proposed (1) self-mitigating, (2) de minimis, and (3) self-retaining DMAs. Indicate under "DMA Compliance Option" below which design options will be used to satisfy structural performance requirements for one or more DMA.

DMA Compliance Option	Required Sub-attachments	BMPDM Design Resources
☒ **Self-mitigating**	• Sub-attachment 6.1	• BMPDM Section 5.2.1
☒ **De minimis**	• Sub-attachment 6.2	• BMPDM Section 5.2.2
☒ **Self-retaining**[1]	• Sub-attachment 6.3	• BMPDM Section 5.2.3 (all options)
SSD-BMP Type(s)		
☐ **Impervious Area Dispersion**	• Sub-attachment 6.3.1	• Fact Sheet SD-B (Appendix E.8)
☒ **Tree Wells**	• Sub-attachment 6.3.2	• Fact Sheet SD-A (Appendix E.7)

- Submit this cover page and all "Required Sub-attachments" listed for each selected DMA compliance option.
- See the BMPDM sections and appendices listed under "BMPDM Design Resources" for additional explanation of design requirements. Each constructed feature must fully satisfy the requirements described in these resources, and any other guidance identified by the County.
- DMA Exhibits and Construction Plans: DMAs, features, and BMPs identified and described in this attachment must be shown on DMA Exhibits and all applicable construction plans submitted for the project. See Attachment 2 for additional instruction on exhibits and plans.

[1] If "Self-retaining" is selected, also choose the types of Significant Site Design BMPs (SSD-BMPs) to be used. SSD-BMPs are Site Design BMPs that are sized and constructed to fully satisfy all applicable Structural Performance Standards for a DMA.

6.1 Self-mitigating DMAs (complete this page once for ALL self-mitigating DMAs)

Self-mitigating DMAs consist of natural or landscaped areas that drain directly offsite or to the public storm drain system. These DMAs are excluded from DCV calculations.

- Provide the information requested below for each proposed self-mitigating DMA. Add rows or copy the table if additional entries are needed.

DMA #	*a. DMA Area (ft^2)*	*Incidental Impervious Area*		*Permit # and Sheet #*
		b. Size(ft^2)	*c. % (b/a*100)*	
7	1,251	0	0	PDS2017-STP-17-028; PDS2017-BC-17-0069 SHEET# TBD
8	4,100	0	0	PDS2017-STP-17-028; PDS2017-BC-17-0069 SHEET# TBD

- "DMA #", "DMA Area", and "Permit # and Sheet #" are required for all DMAs listed.
- "Incidental Impervious Area" calculations are required only where applicable (see below).
- Each self-mitigating DMA must <u>fully</u> satisfy all design requirements and restrictions described in BMPDM Section 5.2.1 and any other guidance or instruction identified by the County. Check the boxes below to confirm that all required conditions are satisfied <u>for every DMA listed</u>.

☒ Each DMA is hydraulically separate from other DMAs that contain permanent storm water pollutant control BMPs.

<u>Natural and Landscaped Areas</u>

☒ Each DMA consists solely of natural or landscaped areas, except for incidental impervious areas (see below).

☒ Each area drains directly offsite or to the public storm drain system.

☒ Soils are undisturbed native topsoil, or disturbed soils that have been amended and aerated to promote water retention characteristics equivalent to undisturbed native topsoil.

☒ Vegetation is native and/or non-native/non-invasive drought tolerant species that do not require regular application of fertilizers and pesticides.

<u>Incidental Impervious Areas (if applicable; see above)</u>

Minor impervious areas may be permitted within the DMA if they satisfy the following criteria:

☒ They are not hydraulically connected to other impervious areas (unless it is a storm water conveyance system such as a brow ditch).

☐ They comprise less than 5% of the total DMA. Calculate the % incidental impervious area in the table above (c= b/a). DMAs are <u>not</u> self-mitigating if this area is 5% or greater.

6.2 De Minimis DMAs (complete this page once for ALL de minimis DMAs)

De minimis DMAs consist of areas too small to be considered significant contributors of pollutants and not practicable to drain to a BMP. They are excluded from DCV calculations. Examples include driveway aprons connecting to existing streets, portions of sidewalks, retaining walls, and similar features at the external boundaries of a project.

- Provide the information requested below for each proposed de minimis DMA. Add rows or copy the table if additional entries are needed.

DMA #	***DMA Area (ft^2)***	***Permit # and Sheet #***
6	161	PDS2017-STP-17-028; PDS2017-BC-17-0069 SHEET # TBD

- "DMA #", "DMA Area", and "Permit # and Sheet #" are required.
- Check the boxes below to confirm that each required condition is satisfied for ALL de minimis DMAs on the site.

  ☒ Each DMA listed is less than 250 square feet and not adjacent or hydraulically connected to each other.

  ☒ Each DMA listed fully satisfies all design requirements and restrictions described in BMPDM Section 5.2.2 De Minimis DMAs.

6.3 Self-retaining DMAs using Significant Site Design BMPs

Self-retaining DMAs use Site Design BMPs to fully-retain the entire DCV, at a minimum. Site Design BMPs that fully retain the DCV, at a minimum, therefore replacing the need for a Structural BMP (S-BMP), are classified as Significant Site Design BMPs (SSD-BMPs). To satisfy pollutant control requirements only, self-retaining means retention of the entire DCV. However, under some circumstances, a self-retaining DMA can also satisfy hydromodification management requirements by implementing BMPs that retain a greater volume of runoff.

- Provide the information requested below for each proposed self-retaining DMA. Add rows or copy the table if additional entries are needed.

DMA #	DMA Area (ft²)	**BMP Type** (choose one per DMA)		*Permit # and Sheet #*
		Dispersion Area (Att. 6.3.1)	**Tree Wells (Att. 6.3.2)**	
2	5,219	☐	☒	PDS2017-STP-17-028; PDS2017-BC-17-0069 SHEET# TBD
3	3,372	☐	☒	PDS2017-STP-17-028; PDS2017-BC-17-0069 SHEET# TBD
4	3,063	☐	☒	PDS2017-STP-17-028; PDS2017-BC-17-0069 SHEET# TBD
5	1,657	☐	☒	PDS2017-STP-17-028; PDS2017-BC-17-0069 SHEET# TBD
		☐	☐	
		☐	☐	
		☐	☐	
		☐	☐	
		☐	☐	
		☐	☐	
		☐	☐	
		☐	☐	
		☐	☐	
		☐	☐	
		☐	☐	

Copy and Paste table here for additional DMAs

- "DMA #", "DMA Area", and "Permit # and Sheet #" are required.
- Select one BMP Type per DMA. Provide detailed documentation for each DMA in Attachments 6.3.1 (Impervious Dispersion Areas) and/or 6.3.2 (Tree Wells) below.
- Each self-retaining DMA must <u>fully</u> satisfy all design requirements and restrictions described in

[2]Applicants wishing to utilize parameters less conservative than listed here must submit modeling to support their proposal. Consult your project manager for more information.
[3]Including the permeable pavement.

BMPDM Section 5.2.3, applicable BMPDM Appendix E Fact Sheets, and any other guidance or instruction identified by the County.

6.3.1 Self-retaining DMAs with Impervious Dispersion Areas

Impervious area dispersion (dispersion) refers to the practice of effectively disconnecting impervious areas from directly draining to the storm drain system by routing runoff from impervious areas such as rooftops (through downspout disconnection), walkways, and driveways onto the surface of adjacent pervious areas. The intent is to slow runoff discharges and reduce volumes. Dispersion with partial or full infiltration results in significant volume reduction by means of infiltration and evapotranspiration. When adequately sized, dispersion can also be used to satisfy both the pollutant control and hydromodification management structural performance standards for a DMA.

- Each self-retaining DMA with impervious area dispersion must fully satisfy all design requirements and restrictions described in BMPDM Section 5.2.3, Fact Sheet SD-B: Impervious Area Dispersion, and any other guidance or instruction identified by the County.
- Documentation of compliance with all applicable conditions must be submitted with this sub-attachment using the ***Summary Sheet for DMAs with Impervious Area Dispersion*** on the next page. One version of this Summary Sheet must be completed for each applicable DMA.
- Applicants are responsible to comply with all other applicable requirements, regardless of whether they are included in the summary sheet.
- The following applies if the dispersion area is **native soil** (SD-B in Appendix E):
  - For pollutant control only, the DMA is considered self-retaining if the impervious to pervious ratio is:
    - 2:1 when the pervious area is composed of Hydrologic Soil Group A
    - 1:1 when the pervious area is composed of Hydrologic Soil Group B
- The following applies if the dispersion area includes **amended soil** (SD-B in Appendix E):
  - DMAs using impervious area dispersion can be considered to meet both pollutant control and hydromodification flow control requirements if the impervious to pervious area ratio is 1:1 or less and all other design requirements of SD-B are satisfied, including 11 inches of amended soil.
- The following apply if the dispersion area is **permeable pavement** (SD-D in Appendix E):
  - For pollutant control only, a DMA is considered self-retaining if the ratio of total drainage area (including permeable pavement) to area of permeable pavement is 1.5:1 or less, and all other design requirements of SD-D are satisfied.
  - Hydromodification management performance standards can be satisfied using permeable pavement only if constructed to Structural BMP specifications. In this case, the permeable pavement must be sized and constructed in accordance with the requirements of INF-3.

[2]Applicants wishing to utilize parameters less conservative than listed here must submit modeling to support their proposal. Consult your project manager for more information.
[3]Including the permeable pavement.

[2]Applicants wishing to utilize parameters less conservative than listed here must submit modeling to support their proposal. Consult your project manager for more information.
[3]Including the permeable pavement.

Summary Sheet for DMAs with Impervious Area Dispersion (Complete 1 sheet per DMA)

DMA #

A. Minimum Sizing Requirements

Verify that minimum standards are satisfied for the applicable dispersion area type below[2].

Native Soil (Pollutant Control Only) Select one and provide calculations below.

☐ Soil Group A: Ratio I:P is 2:1 or less ☐ Soil Group B: Ratio I:P is 1:1 or less

Impervious Area (ft²)	*Permeable Dispersion Area (ft²)*	*Ratio I:P*

Amended Soil (Pollutant Control plus Hydromodification Management)

Must satisfy both conditions and provide calculations below.

☐ Ratio I:P is 1:1 or less, AND

☐ 11 inches or more of the top of the pervious area consists of amended soils (Fact Sheet SD-F)

Impervious Area (ft²)	*Permeable Dispersion Area (ft²)*	*Ratio I:P*

Permeable Pavement (Pollutant Control Only) Provide calculations below.

☐ Ratio DMA area to area of permeable pavement is 1.5:1 or less

DMA Area[3] (ft²)	*Permeable Pavement Area (ft²)*	*Ratio DMA:Pavement*

B. Minimum Design Criteria

Check the boxes below to confirm that each design criterion has been satisfied for the DMA.

Impervious Areas:

☐ Are graded to ensure area that the full DCV drains to the dispersion area before the runoff discharges from the DMA.

Pervious Dispersion Areas:

☐ Are less than 5% slope and sheet flow over a distance of at least 10 feet from inflow to overflow route.

☐ Have inflow velocities of 3 ft/s or less OR use energy dissipation methods (e.g., riprap, level spreader) for concentrated inflows.

☐ Are densely and robustly vegetated with drought tolerant species.

☐ Consist of soil types capable of supporting or being amended to support vegetation (e.g., with sand or compost). If applicable, media amendments have been tested to verify that they are not a source of pollutants.

☐ Are owned by the project owner and will be dedicated to exclude future uses that might reduce their effectiveness.

Copy and Paste table here for additional DMAs

[2]Applicants wishing to utilize parameters less conservative than listed here must submit modeling to support their proposal. Consult your project manager for more information.

[3]Including the permeable pavement.

6.3.2 Self-retaining DMAs with Tree Wells

Trees wells can provide a variety of benefits such as interception and increased infiltration of rainfall, reduced erosion, energy conservation, air quality improvement, and aesthetic enhancement. They can also be used to satisfy both pollutant control and hydromodification management performance standards for a DMA.

- Each self-retaining DMA with tree wells must fully satisfy all design requirements and restrictions described in BMPDM Section 5.2.3, Fact Sheet SD-A: Tree Wells, and any other guidance or instruction identified by the County.
- For pollutant control only, the DMA must retain the entire DCV. For hydromodification management, an additional volume must be retained in accordance with the sizing requirements presented in the DCV multiplier table in Fact Sheet SD-A.
- Documentation of compliance with applicable conditions must be submitted using the ***Summary Sheet for Self-retaining DMAs with Tree Wells*** on the next page. One version of this Summary Sheet must be completed for each applicable DMA.
- If both pollutant control and hydromodification standards apply, the soil depth of all tree wells in the DMA must be selected before determining the Required Retention Volume (RRV). Each tree well must be constructed to the selected depth. For pollutant control only, tree wells within a DMA may be constructed to different soil depths.
- In most cases tree wells must use Amended Soil per Fact Sheet SD-F. However, Structural Soil is required in some cases (e.g., placing the tree well next to a curb). See ***Structural Requirements for Confined Tree Well Soil Volume*** in Fact Sheet SD-A for additional explanation. If applicable, list the DMAs and Tree Well #s below for all tree wells requiring Structural Soil.

DMA #	**Tree Wells Requiring Structural Soil (list Tree Well #s)**

- The Design Capture Volume (DCV) must be known for each DMA in order to determine the volume to be mitigated by the tree wells. Instructions for DCV calculation are provided in BMPDM Appendix B.1. An automated version of Worksheet B.1 (Calculation of Design Capture Volume) is available at www.sandiegocounty.gov/stormwater under the Development Resources tab.

DMA #: 3	DMA Area (ft^2): 3,372		
Required Retention D (RRV)			
a. Design Capture Volume (DCV; ft^3): 134			
b. DCV Multiplier (Fact Sheet SD-A)			
Applicable Structural Performance Standards (select one)	Tree well soil depth (inches)	Underlying soil type (A, B, C, or D)	DCV Multiplier
☐ Pollutant control only	Any	All	1.0
☒ Pollutant control plus hydromodification	30	D	2.90
c. Required Retention Volume (ft^3) [DCV * DCV Multiplier]			**386**

Tree Well Credit Volume (add records or copy this sheet as needed for additional tree wells)

Provide the information below for each tree well or group of tree wells within the DMA. A single entry can be used for any group of tree wells of the same species and soil depth.

Tree species or name	FROM SD-A TREE PALETT TABLE	**No. tree wells**	1
Mature Canopy Diameter (ft)	30	**Credit Volume per tree well (ft^3)**	420
Tree well ID #(s)	TREE-3	**Combined Volume (ft^3)**	**420**
Tree species or name		**No. tree wells**	
Mature Canopy Diameter (ft)		**Credit Volume per tree well (ft^3)**	
Tree well ID #(s)		**Combined Volume (ft^3)**	
Tree species or name		**No. tree wells**	
Mature Canopy Diameter (ft)		**Credit Volume per tree well (ft^3)**	
Tree well ID #(s)		**Combined Volume (ft^3)**	
Tree species or name		**No. tree wells**	
Mature Canopy Diameter (ft)		**Credit Volume per tree well (ft^3)**	
Tree well ID #(s)		**Combined Volume (ft^3)**	
Tree species or name		**No. tree wells**	
Mature Canopy Diameter (ft)		**Credit Volume per tree well (ft^3)**	
Tree well ID #(s)		**Combined Volume (ft^3)**	

Total Credit Volume (ft3) Add the combined volumes above. Total credit volume must equal or exceed the RRV.	**420**

DMA #: 4	DMA Area (ft^2): 3,063		
Required Retention Volume (RRV)			
a. Design Capture Volume (DCV; ft^3): 124			
b. DCV Multiplier (Fact Sheet SD-A):			
Applicable Structural Performance Standards (select one)	Tree well soil depth (inches)	Underlying soil type (A, B, C, or D)	DCV Multiplier
☐ Pollutant control only	Any	All	1.0
☒ Pollutant control plus hydromodification	30	D	2.90
c. Required Retention Volume (ft^3) [DCV * DCV Multiplier]			**360**

Tree Well Credit Volume (add records or copy this sheet as needed for additional tree wells)

Provide the information below for each tree well or group of tree wells within the DMA. A single entry can be used for any group of tree wells of the same species and soil depth.

Tree species or name	FROM SD-A TREE PALETT TABLE	**No. tree wells**	1
Mature Canopy Diameter (ft)	28	**Credit Volume per tree well (ft^3)**	368
Tree well ID #(s)	TREE-4	**Combined Volume (ft^3)**	**368**
Tree species or name		**No. tree wells**	
Mature Canopy Diameter (ft)		**Credit Volume per tree well (ft^3)**	
Tree well ID #(s)		**Combined Volume (ft^3)**	
Tree species or name		**No. tree wells**	
Mature Canopy Diameter (ft)		**Credit Volume per tree well (ft^3)**	
Tree well ID #(s)		**Combined Volume (ft^3)**	
Tree species or name		**No. tree wells**	
Mature Canopy Diameter (ft)		**Credit Volume per tree well (ft^3)**	
Tree well ID #(s)		**Combined Volume (ft^3)**	
Tree species or name		**No. tree wells**	
Mature Canopy Diameter (ft)		**Credit Volume per tree well (ft^3)**	
Tree well ID #(s)		**Combined Volume (ft^3)**	

Total Credit Volume (ft3) Add the combined volumes above. Total credit volume must equal or exceed the RRV.	**368**

DMA #: 5	DMA Area (ft^2): 1,657		
Required Retention Volume (RRV)			
a. Design Capture Volume (DCV; ft^3): 70			
b. DCV Multiplier (Fact Sheet SD-A)			
Applicable Structural Performance Standards (select one)	Tree well soil depth (inches)	Underlying soil type (A, B, C, or D)	DCV Multiplier
☐ Pollutant control only	Any	All	1.0
☒ Pollutant control plus hydromodification	30	D	2.90
c. Required Retention Volume (ft^3) [DCV * DCV Multiplier]			**203**

Tree Well Credit Volume (add records or copy this sheet as needed for additional tree wells)			
Provide the information below for each tree well or group of tree wells within the DMA. A single entry can be used for any group of tree wells of the same species and soil depth.			
Tree species or name	FROM SD-A TREE PALETT TABLE	**No. tree wells**	1
Mature Canopy Diameter (ft)	22	**Credit Volume per tree well (ft^3)**	224
Tree well ID #(s)	TREE-5	**Combined Volume (ft^3)**	**224**
Tree species or name		**No. tree wells**	
Mature Canopy Diameter (ft)		**Credit Volume per tree well (ft^3)**	
Tree well ID #(s)		**Combined Volume (ft^3)**	
Tree species or name		**No. tree wells**	
Mature Canopy Diameter (ft)		**Credit Volume per tree well (ft^3)**	
Tree well ID #(s)		**Combined Volume (ft^3)**	
Tree species or name		**No. tree wells**	
Mature Canopy Diameter (ft)		**Credit Volume per tree well (ft^3)**	
Tree well ID #(s)		**Combined Volume (ft^3)**	
Tree species or name		**No. tree wells**	
Mature Canopy Diameter (ft)		**Credit Volume per tree well (ft^3)**	
Tree well ID #(s)		**Combined Volume (ft^3)**	
Total Credit Volume (ft3) Add the combined volumes above. Total credit volume must equal or exceed the RRV.			**224**

Summary Sheet for Self-retaining DMAs with Tree Wells (complete one sheet per DMA)

DMA #: 2			**DMA Area (ft²): 5,219**
Required Retention Volume (RRV)			
a. Design Capture Volume (DCV; ft³): 197			
b. DCV Multiplier (Fact Sheet SD-A)			
Applicable Structural Performance Standards (select one)	Tree well soil depth (inches)	Underlying soil type (A, B, C, or D)	DCV Multiplier
☐ Pollutant control only	Any	All	1.0
☒ Pollutant control plus hydromodification	30	D	2.90
c. Required Retention Volume (ft³) [DCV * DCV Multiplier]			**571**

Tree Well Credit Volume (add records or copy this sheet as needed for additional tree wells)

Provide the information below for each tree well or group of tree wells within the DMA. A single entry can be used for any group of tree wells of the same species and soil depth.

Tree species or name	SELECT. FROM SD-A TREE PALETT TABLE	**No. tree wells**	2
Mature Canopy Diameter (ft)	25	**Credit Volume per tree well (ft³)**	290
Tree well ID #(s)	TREE-1 & 2	**Combined Volume (ft³)**	**580**
Tree species or name		**No. tree wells**	
Mature Canopy Diameter (ft)		**Credit Volume per tree well (ft³)**	
Tree well ID #(s)		**Combined Volume (ft³)**	
Tree species or name		**No. tree wells**	
Mature Canopy Diameter (ft)		**Credit Volume per tree well (ft³)**	
Tree well ID #(s)		**Combined Volume (ft³)**	
Tree species or name		**No. tree wells**	
Mature Canopy Diameter (ft)		**Credit Volume per tree well (ft³)**	
Tree well ID #(s)		**Combined Volume (ft³)**	
Tree species or name		**No. tree wells**	
Mature Canopy Diameter (ft)		**Credit Volume per tree well (ft³)**	
Tree well ID #(s)		**Combined Volume (ft³)**	

Total Credit Volume (ft3) Add the combined volumes above. Total credit volume must equal or exceed the RRV.	**580**

7.0 General Requirements

- Submit this cover page and all required Sub-attachments for all structural BMPs proposed for the project.
- See the BMPDM sections and appendices listed under "BMPDM Design Resources" in the table below for additional explanation of design requirements. Constructed features must fully satisfy the requirements described in these resources, and any other guidance identified by the County.
- PDPs subject to hydromodification management requirements must also implement structural BMPs for flow control for hydromodification management. Completion of SWQMP Attachment 8 is also required for these BMPs.
- DMA Exhibits and Construction Plans: DMAs, features, and BMPs identified and described in this attachment must be shown on DMA Exhibits and all applicable construction plans submitted for the project. See Attachment 2 for additional instruction on exhibits and plans.
- Structural BMP Certification. All structural BMPs documented this attachment and in Attachment 8 must be certified by a registered engineer in Sub-attachment 7.1.
- Structural BMP Verification. Structural BMP installation must be verified by the County at the completion of construction. Applicants must complete an Installation Verification Form (Attachment 10).

Sub-attachments (check all that are completed)	**Requirement**	**BMPDM Design Resources**
☒ **7.1: Preparer's Certification**	Required	• N/A
☒ **7.2: Structural BMP Strategy**	Required	• BMPDM Sections 5.1., 5.3, 5.4, and Chapter 6 • BMPDM Appendix E (pages E-78 through E-210)
☒ **7.3: Structural BMP Checklist(s)**	Required	
☒ **7.4: Stormwater Pollutant Control Worksheet Calculations**	Required	• BMPDM Appendix B
☐ **7.5: Identification and Narrative of Receiving Water and Pollutants of Concern**	Required if flow-thru BMPs are proposed	• N/A

7.1 Engineer of Work Certification for Structural BMPs

Project Name Mountain Meadows Gas Station
Permit Application Number PDS2017-STP-17-028; PDS2017-BC-17-0069

CERTIFICATION

I hereby declare that I am the Engineer in Responsible Charge of design of structural storm water best management practices (BMPs) for this project, and that I have exercised responsible charge over the design of the BMPs as defined in Section 6703 of the Business and Professions Code, and that the design is consistent with the PDP requirements of the County of San Diego BMP Design Manual, which is a design manual for compliance with local County of San Diego Watershed Protection Ordinance (Sections 67.801 et seq.) and regional MS4 Permit (California Regional Water Quality Control Board San Diego Region Order No. R9-2013-0001 as amended by R9-2015-0001 and R9-2015-0100) requirements for storm water management. I have read and understand that the County of San Diego has adopted minimum requirements for managing urban runoff, including storm water, from land development activities, as described in the BMP Design Manual.

I certify that this PDP SWQMP has been completed to the best of my ability and accurately reflects the project being proposed and the applicable BMPs proposed to minimize the potentially negative impacts of this project's land development activities on water quality. I understand and acknowledge that the plan check review of this PDP SWQMP by County staff is confined to a review and does not relieve me, as the Engineer in Responsible Charge of design of structural storm water BMPs for this project, of my responsibilities for their design.

☒ In addition to the structural pollutant control BMPs described in this attachment, this certification applies to the Structural Hydromodification Management BMPs described in Attachment 8 (check if applicable).

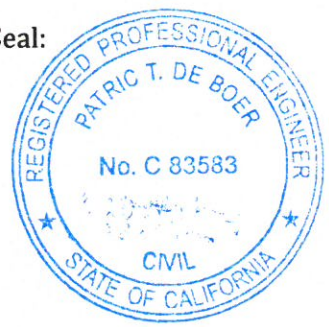
Engineer of Work's Signature, PE Number & Expiration Date

Patric T. de Boer
Print Name

Omega Engineering Consultants
Company

8/13/19
Date

Engineer's Seal:



7.2 Structural BMP Strategy

7.2.1 Narrative Strategy (Continue description on subsequent pages as necessary)

Describe the general strategy for structural BMP implementation at the project site. For pollutant control BMPs, your description must address the key points outlined in Section 5.1 of the BMP Design Manual, and the type of BMPs selected. For projects requiring hydromodification flow control BMPs, indicate whether pollutant control and flow control BMPs are integrated or separate.

The use of structural BMP's has been thoroughly evaluated, as the selection has significant costs associated for construction and long-term maintenance. The use of Partial and Full Infiltration BMP's were deemed infeasible, as the site is underlain with soils that have low infiltration rates. Boring logs showed silty and clayey sands which are consistent with Hydrologic Soil Group of 'D'. Per soils report conducted by So Cal Geotechnical Dated May 8th, 2017. Furthermore, infiltration BMP's are not being proposed as ground water contamination is a concern for this site, due to the fueling facility being proposed. The project does not generate enough demand through irrigation or toilet/urinal flushing to warrant the use of a rainwater harvesting system. Thus, these types of BMP's were deemed infeasible as well. The proposed BMP's that were elected for use are described below.

The west side of the site, and a single DMA at the south easterly corner of the site are proposed to be treated by Tree Wells. Tree wells were selected to provide hydromodification and pollutant control requirements for the tributary areas by utilizing DCV Multipliers. There are various sizes of mature canopy diameters selected, and the areas of soil amendment have been given accordingly. Which also allow retention requirements to be met.

See attachment 6 and the DMA map within Attachment 2 for construction specification and details for these BMP's.

The majority of the drive aisles and the fueling canopy are treated by a fully lined Biofiltration Basin located on the east side of the site. The proposed Biofiltration Basin will provide the hydromodification and pollutant control requirements for the tributary drainage areas. The Biofiltration Basin will meet hydromodification requirements by providing an orifice at the outlet point which will constrict low flows and a V-notch weir which will allow high storm events to discharge at a controlled rate. See the DMA map within Attachment 2 for construction specification and details for this BMP. Retention requirements are met by the Basin storage below the underdrain.

The area under the fueling canopy is not subject to direct rainfall, this area however may receive water that is tracked in by vehicles and gasoline/diesel that is spilled in the fueling area. This covered area will drain to a chambered clarifier system located beneath the fueling area. After oils and other floatable pollutants are removed by the clarifier, water will drain into the biofiltration basin. The clarifier is not considered a structural stormwater BMP as it functions to clean spills and nuisance water from a covered area prior to discharge to a BMP.

There are (2) Self-Mitigating DMA's located at the north easterly corner of the site, and along the southerly side. These areas were deemed as self-mitigating as they meet all of the requirements shown within Section 5.2.1 of the BMPDM and there was not enough room for proposed

biofiltration basin to be sized to treat these areas. Due to lack of space, the biofiltration basin had to be sized to only treat DMA-1. Furthermore, the southerly Self-mitigating area is not feasible to treat as a pump would be required to direct flow.

There is a single de-minimus area located on-site, being along the southerly side of the driveway entrance. This area is not feasible to be treated as it drains directly to an B-Inlet and is located downstream of the ribbon gutter which directs flow to the Biofiltration basin. However, the area meets all requirements within section 5.2.1 of the BMPDM.

7.2.2 Structural BMP Summary Table (Complete for all proposed structural BMPs)

- List and provide the information requested below for all pollutant control and hydromodification management BMPs proposed for the project.
- For each BMP listed, complete the Structural BMP Checklist on the next page. Copy the Checklist as many times as needed.

			Structural BMP Type							
BMP ID #	**DMA #**	**DMA Area (ft^2)**	Harvest and Use	Infiltration	Unlined Biofiltration	Lined Biofiltration	Flow-thru treatment	Hydromodification Management [1]	Other	**Permit # and Sheet #**
1	1	22,901	☐	☐	☐	☒	☐	☐	☐	PDS2017-STP-17-028; PDS2017-BC-17-0069 SHEET# TBD
			☐	☐	☐	☐	☐	☐	☐	
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[1] Hydromodification Management BMPs must be accompanied by BMPs that provide pollutant control.

7.3 Structural BMP Checklist (Complete once for each proposed structural BMP)

Structural BMP ID #	1	**Permit # and Sheet #**	PDS2017-STP-17-028; PDS2017-BC-17-0069 SHEET# TBD

BMP Type

Infiltration
- ☐ Infiltration basin (INF-1)
- ☐ Bioretention (INF-2)
- ☐ Permeable pavement (INF-3)

Unlined Biofiltration
- ☐ Biofiltration with partial retention (PR-1)

Lined Biofiltration
- ☒ Biofiltration (BF-1)
- ☐ Nutrient Sensitive Media Design (BF-2)
- ☐ Proprietary Biofiltration (BF-3)

Harvest and Use
- ☐ Cistern (HU-1)

Flow-thru Treatment (describe below)
- ☐ With prior lawful approval to meet earlier PDP requirements
- ☐ Pre-treatment/forebay for an onsite retention or biofiltration BMP[2]
- ☐ With alternative compliance

Hydromodification Management[3]
- ☐ Detention pond or vault
- ☐ **Other** (describe below)

BMP Purpose
- ☐ Pollutant control only
- ☐ Hydromodification control only
- ☒ Combined pollutant control and hydromodification
- ☐ Pre-treatment/forebay for another BMP
- ☐ Other (describe below)

BMP Verification (See BMPDM Section 8.3)

Provide name and contact information for the party responsible to sign BMP verification forms	Ken Assi, Manager 5820 Oberlin Dr. # 201, 92121 (858) 404-6080

BMP Ownership and Maintenance (See BMPDM Section 7.3 and Attachment 11)

BMP Maintenance Category	Cat. 1 ☐	Cat. 2 ☒	Cat. 3 ☐	Cat. 4 ☐
Final owner of BMP	☐ HOA	☒ Property Owner	☐ County	☐ Other (describe):
Maintenance of BMP into perpetuity	☐ HOA	☒ Property Owner	☐ County	☐ Other (describe):

Discussion (As needed; Continue on subsequent pages as necessary)

[2] Indicate which onsite retention or biofiltration BMP the pre-treatment/forebay serves.
[3] Hydromodification Management BMPs must be accompanied by BMPs that provide pollutant control.

7.4 Storm Water Pollutant Control Worksheet Calculations

- Use this page as a cover sheet for the submittal of any required worksheets below.
- Complete the checklist to identify which BMPDM Appendix B (Storm Water Pollutant Control Hydrologic Calculations and Sizing Methods) worksheets are included with this attachment.
- See BMPDM Appendix B for an explanation of the applicability of individual worksheets and detailed guidance on their completion.

Worksheet	Requirement
☒ Worksheet B.1 Calculation of Design Capture Volume (DCV)	Required
☒ Worksheet B.2 Retention Requirements	Required
☒ Worksheet B.3 BMP Performance	Required
☐ Worksheet B.4 Major Maintenance Intervals for Reduced-sized BMPs	If applicable
☐ Other worksheets	As required

Automated Worksheet B.1: Calculation of Design Capture Volume (V2.0)

Category	#	Description	*i*	*ii*	*iii*	*iv*	*v*	*vi*	*vii*	*viii*	*ix*	*x*	Units
Standard Drainage Basin Inputs	1	Drainage Basin ID or Name	DMA-1	DMA-2	DMA-3	DMA-4	DMA-5						unitless
	2	85th Percentile 24-hr Storm Depth	0.68	1.96	1.96	1.96	1.96						inches
	3	Impervious Surfaces Not Directed to Dispersion Area (C=0.90)	21,707	3,731	2,547	2,379	1,348						sq-ft
	4	Semi-Pervious Surfaces Not Serving as Dispersion Area (C=0.30)											sq-ft
	5	Engineered Pervious Surfaces Not Serving as Dispersion Area (C=0.10)	1,194	1,488	825	684	309						sq-ft
	6	Natural Type A Soil Not Serving as Dispersion Area (C=0.10)											sq-ft
	7	Natural Type B Soil Not Serving as Dispersion Area (C=0.14)											sq-ft
	8	Natural Type C Soil Not Serving as Dispersion Area (C=0.23)											sq-ft
	9	Natural Type D Soil Not Serving as Dispersion Area (C=0.30)											sq-ft
Dispersion Area, Tree Well & Rain Barrel Inputs (Optional)	10	Does Tributary Incorporate Dispersion, Tree Wells, and/or Rain Barrels?	No	Yes	Yes	Yes	Yes	No	No	No	No	No	yes/no
	11	Impervious Surfaces **Directed to Dispersion Area** per SD-B (Ci=0.90)											sq-ft
	12	Semi-Pervious Surfaces **Serving as Dispersion Area** per SD-B (Ci=0.30)											sq-ft
	13	Engineered Pervious Surfaces **Serving as Dispersion Area** per SD-B (Ci=0.10)											sq-ft
	14	Natural Type A Soil **Serving as Dispersion Area** per SD-B (Ci=0.10)											sq-ft
	15	Natural Type B Soil **Serving as Dispersion Area** per SD-B (Ci=0.14)											sq-ft
	16	Natural Type C Soil **Serving as Dispersion Area** per SD-B (Ci=0.23)											sq-ft
	17	Natural Type D Soil **Serving as Dispersion Area** per SD-B (Ci=0.30)											sq-ft
	18	Number of Tree Wells Proposed per SD-A		2	1	1	1						#
	19	Average Mature Tree Canopy Diameter		25	30	28	22						ft
	20	Number of Rain Barrels Proposed per SD-E											#
	21	Average Rain Barrel Size											gal
Initial Runoff Factor Calculation	22	Total Tributary Area	22,901	5,219	3,372	3,063	1,657	0	0	0	0	0	sq-ft
	23	Initial Runoff Factor for Standard Drainage Areas	0.86	0.67	0.70	0.72	0.75	0.00	0.00	0.00	0.00	0.00	unitless
	24	Initial Runoff Factor for Dispersed & Dispersion Areas	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	unitless
	25	Initial Weighted Runoff Factor	0.86	0.67	0.70	0.72	0.75	0.00	0.00	0.00	0.00	0.00	unitless
	26	Initial Design Capture Volume	1,108	571	386	360	203	0	0	0	0	0	cubic-feet
Dispersion Area Adjustments	27	Total Impervious Area Dispersed to Pervious Surface	0	0	0	0	0	0	0	0	0	0	sq-ft
	28	Total Pervious Dispersion Area	0	0	0	0	0	0	0	0	0	0	sq-ft
	29	Ratio of Dispersed Impervious Area to Pervious Dispersion Area	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	ratio
	30	Adjustment Factor for Dispersed & Dispersion Areas	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	ratio
	31	Runoff Factor After Dispersion Techniques	0.86	0.67	0.70	0.72	0.75	n/a	n/a	n/a	n/a	n/a	unitless
	32	Design Capture Volume After Dispersion Techniques	1,108	571	386	360	203	0	0	0	0	0	cubic-feet
Tree & Barrel Adjustments	33	Total Tree Well Volume Reduction	0	580	420	368	224	0	0	0	0	0	cubic-feet
	34	Total Rain Barrel Volume Reduction	0	0	0	0	0	0	0	0	0	0	cubic-feet
Results	35	Final Adjusted Runoff Factor	0.86	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	unitless
	36	Final Effective Tributary Area	19,695	0	0	0	0	0	0	0	0	0	sq-ft
	37	Initial Design Capture Volume Retained by Site Design Elements	0	580	420	368	224	0	0	0	0	0	cubic-feet
	38	Final Design Capture Volume Tributary to BMP	1,108	0	0	0	0	0	0	0	0	0	cubic-feet

No Warning Messages

Automated Worksheet B.2: Retention Requirements (V2.0)

Category	#	Description	*i*	*ii*	*iii*	*iv*	*v*	*vi*	*vii*	*viii*	*ix*	*x*	Units
Basic Analysis	1	Drainage Basin ID or Name	DMA-1	DMA-2	DMA-3	DMA-4	DMA-5	-	-	-	-	-	unitless
	2	85th Percentile Rainfall Depth	0.68	1.96	1.96	1.96	1.96	-	-	-	-	-	inches
	3	Predominant NRCS Soil Type Within BMP Location	D	D	D	D	D						unitless
	4	Is proposed BMP location Restricted or Unrestricted for Infiltration Activities?	Restricted	Restricted	Restricted	Restricted	Restricted						unitless
	5	Nature of Restriction	Soil Type	Soil Type	Soil Type	Soil Type	Soil Type						unitless
	6	Do Minimum Retention Requirements Apply to this Project?	Yes	Yes	Yes	Yes	Yes						yes/no
	7	Are Habitable Structures Greater than 9 Stories Proposed?	No	No	No	No	No						yes/no
Advanced Analysis	8	Has Geotechnical Engineer Performed an Infiltration Analysis?	Yes	Yes	Yes	Yes	Yes						yes/no
	9	Design Infiltration Rate Recommended by Geotechnical Engineer	0.000	0.000	0.000	0.000	0.000						in/hr
Result	10	Design Infiltration Rate Used To Determine Retention Requirements	0.000	0.000	0.000	0.000	0.000	-	-	-	-	-	in/hr
	11	Percent of Average Annual Runoff that Must be Retained within DMA	1.5%	1.5%	1.5%	1.5%	1.5%	-	-	-	-	-	percentage
	12	Fraction of DCV Requiring Retention	0.01	0.01	0.01	0.01	0.01	-	-	-	-	-	ratio
	13	Required Retention Volume	11	0	0	0	0	-	-	-	-	-	cubic-feet

No Warning Messages

Automated Worksheet B.3: BMP Performance (V2.0)

Category	#	Description	*i*	*ii*	*iii*	*iv*	*v*	*vi*	*vii*	*viii*	*ix*	*x*	Units
BMP Inputs	1	Drainage Basin ID or Name	DMA-1	DMA-2	DMA-3	DMA-4	DMA-5	-	-	-	-	-	sq-ft
	2	Design Infiltration Rate Recommended	0.000	0.000	0.000	0.000	0.000	-	-	-	-	-	in/hr
	3	Design Capture Volume Tributary to BMP	1,108	0	0	0	0	-	-	-	-	-	cubic-feet
	4	Is BMP Vegetated or Unvegetated?	Vegetated										unitless
	5	Is BMP Impermeably Lined or Unlined?	Lined										unitless
	6	Does BMP Have an Underdrain?	Underdrain										unitless
	7	Does BMP Utilize Standard or Specialized Media?	Standard										unitless
	8	Provided Surface Area	595										sq-ft
	9	Provided Surface Ponding Depth	8										inches
	10	Provided Soil Media Thickness	18										inches
	11	Provided Gravel Thickness (Total Thickness)	15										inches
	12	Underdrain Offset	3										inches
	13	Diameter of Underdrain or Hydromod Orifice (Select Smallest)	0.63										inches
	14	Specialized Soil Media Filtration Rate	~~5.00~~										in/hr
	15	Specialized Soil Media Pore Space for Retention	~~0.20~~										unitless
	16	Specialized Soil Media Pore Space for Biofiltration	~~0.20~~										unitless
	17	Specialized Gravel Media Pore Space	~~0.40~~										unitless
Retention Calculations	18	Volume Infiltrated Over 6 Hour Storm	0	0	0	0	0	0	0	0	0	0	cubic-feet
	19	Ponding Pore Space Available for Retention	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	unitless
	20	Soil Media Pore Space Available for Retention	0.20	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	unitless
	21	Gravel Pore Space Available for Retention (Above Underdrain)	0.00	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	unitless
	22	Gravel Pore Space Available for Retention (Below Underdrain)	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	unitless
	23	Effective Retention Depth	4.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	inches
	24	Fraction of DCV Retained (Independent of Drawdown Time)	0.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	ratio
	25	Calculated Retention Storage Drawdown Time	120	0	0	0	0	0	0	0	0	0	hours
	26	Efficacy of Retention Processes	0.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	ratio
	27	Volume Retained by BMP (Considering Drawdown Time)	254	0	0	0	0	0	0	0	0	0	cubic-feet
	28	Design Capture Volume Remaining for Biofiltration	854	0	0	0	0	0	0	0	0	0	cubic-feet
Biofiltration Calculations	29	Max Hydromod Flow Rate through Underdrain	0.0185	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	cfs
	30	Max Soil Filtration Rate Allowed by Underdrain Orifice	1.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	in/hr
	31	Soil Media Filtration Rate per Specifications	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	in/hr
	32	Soil Media Filtration Rate to be used for Sizing	1.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	in/hr
	33	Depth Biofiltered Over 6 Hour Storm	8.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	inches
	34	Ponding Pore Space Available for Biofiltration	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	unitless
	35	Soil Media Pore Space Available for Biofiltration	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	unitless
	36	Gravel Pore Space Available for Biofiltration (Above Underdrain)	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	unitless
	37	Effective Depth of Biofiltration Storage	16.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	inches
	38	Drawdown Time for Surface Ponding	6	0	0	0	0	0	0	0	0	0	hours
	39	Drawdown Time for Effective Biofiltration Depth	12	0	0	0	0	0	0	0	0	0	hours
	40	Total Depth Biofiltered	24.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	inches
	41	Option 1 - Biofilter 1.50 DCV: Target Volume	1,280	0	0	0	0	0	0	0	0	0	cubic-feet
	42	Option 1 - Provided Biofiltration Volume	1,212	0	0	0	0	0	0	0	0	0	cubic-feet
	43	Option 2 - Store 0.75 DCV: Target Volume	640	0	0	0	0	0	0	0	0	0	cubic-feet
	44	Option 2 - Provided Storage Volume	640	0	0	0	0	0	0	0	0	0	cubic-feet
	45	Portion of Biofiltration Performance Standard Satisfied	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	ratio
Result	46	Do Site Design Elements and BMPs Satisfy Annual Retention Requirements?	Yes	Yes	Yes	Yes	Yes	-	-	-	-	-	yes/no
	47	Overall Portion of Performance Standard Satisfied (BMP Efficacy Factor)	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	ratio
	48	**Deficit of Effectively Treated Stormwater**	**0**	**n/a**	**n/a**	**n/a**	**n/a**	**n/a**	**n/a**	**n/a**	**n/a**	**n/a**	cubic-feet

No Warning Messages

8.0 General Requirements

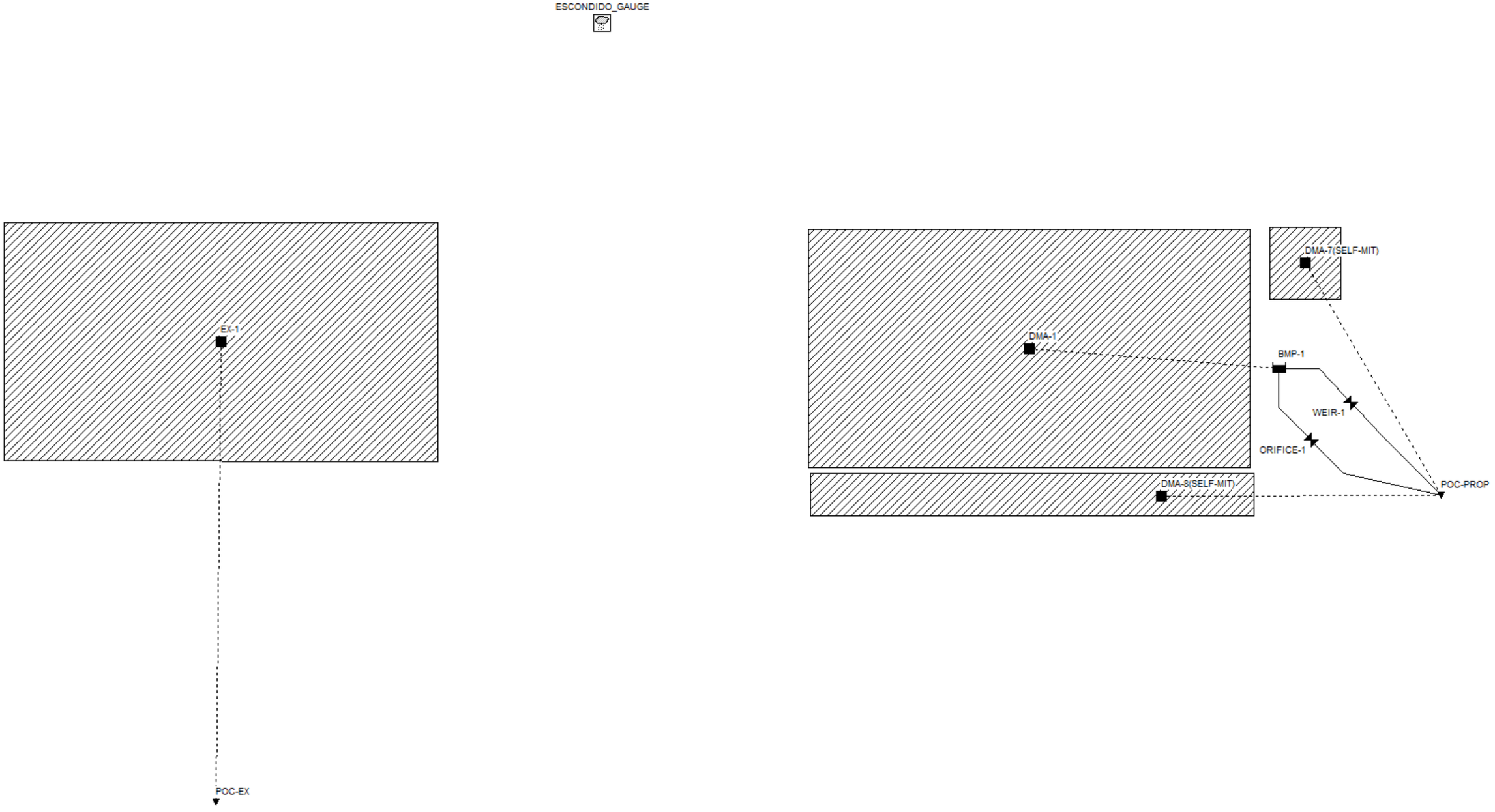
- Completion of this attachment is required for all PDPs subject to hydromodification management requirements (see PDP SWQMP Form Table 5). Do not submit this attachment if exempt from Hydromodification Management requirements. Document the PDP exemption in Attachment 9.
- Submit this cover page and all required Sub-attachments for all structural hydromodification management BMPs proposed for the project.
- Constructed features must fully satisfy the requirements described in applicable BMPDM sections and appendices, and any other guidance identified by the County.
- DMA Exhibits and Construction Plans: DMAs, features, and BMPs identified and described in this attachment must be shown on DMA Exhibits and all applicable construction plans submitted for the project. See Attachment 2 for additional instruction on exhibits and plans.
- Structural BMP Certification. All structural hydromodification management BMPs documented this attachment must be certified by a registered engineer in Attachment 7, Sub-attachment 7.1.
- Structural BMP Verification. BMP installation must be verified by the County at the completion of construction. Applicants must complete an Installation Verification Form (Attachment 10).

Sub-attachments (check all that are completed)
☒ **8.1: Flow Control Facility Design** (required)[1] Submit using ☒ the Sub-attachment 8.1 cover sheet provided, or ☐ as a separate stand-alone document labeled Sub-attachment 8.1.
☒ **8.2: Hydromodification Management Points of Compliance** (required) Complete the table provided in Sub-attachment 8.2.
8.3: Geomorphic Assessment of Receiving Channels 1. Has a geomorphic assessment been performed for the receiving channel(s)? ☒ No, the low flow threshold is 0.1Q2 (default low flow threshold)
☐ Yes (provide the information below): Low flow threshold: ☐ 0.1Q2 ☐ 0.3Q2 ☐ 0.5Q2
Title: Date: Preparer:
Submit using ☐ the Sub-attachment 8.3 cover sheet provided, or ☐ as a separate stand-alone document labeled Sub-attachment 8.3.
8.4: Vector Control Plan (required if BMPs will not drain in less than 96 hours) ☐ Included with this attachment ☒ Not required

[1] Including Structural BMP Drawdown Calculations and Overflow Design Summary. See BMPDM Chapter 6 and Appendix G for additional design guidance.

8.1 Flow Control Facility Design

Insert Flow Control Facility Design behind this cover page or submit as a separate stand-alone document labeled Sub-attachment 8.1.


ESCONDIDO_GAUGE
EX-1
POC-EX
DMA-1
DMA-7(SELF-MIT)
BMP-1
WEIR-1
ORIFICE-1
DMA-8(SELF-MIT)
POC-PROP

```
[TITLE]
;;Project Title/Notes

[OPTIONS]
;;Option             Value
FLOW_UNITS           CFS
INFILTRATION         GREEN_AMPT
FLOW_ROUTING         KINWAVE
LINK_OFFSETS         DEPTH
MIN_SLOPE            0
ALLOW_PONDING        NO
SKIP_STEADY_STATE    NO

START_DATE           09/24/1964
START_TIME           00:00:00
REPORT_START_DATE    09/24/1964
REPORT_START_TIME    00:00:00
END_DATE             05/23/2008
END_TIME             22:00:00
SWEEP_START          01/01
SWEEP_END            12/31
DRY_DAYS             0
REPORT_STEP          01:00:00
WET_STEP             00:05:00
DRY_STEP             04:00:00
ROUTING_STEP         0:01:00

INERTIAL_DAMPING     PARTIAL
NORMAL_FLOW_LIMITED  BOTH
FORCE_MAIN_EQUATION  H-W
VARIABLE_STEP        0.75
LENGTHENING_STEP     0
MIN_SURFAREA         12.557
MAX_TRIALS           8
HEAD_TOLERANCE       0.005
SYS_FLOW_TOL         5
LAT_FLOW_TOL         5
MINIMUM_STEP         0.5
THREADS              1

[EVAPORATION]
;;Data Source    Parameters
;;-------------- ----------------
MONTHLY          0.06   0.08   0.11   0.16   0.18   0.21   0.21   0.20   0.16   0.12   0.08   0.06
DRY_ONLY         NO

[RAINGAGES]
;;Name           Format    Interval SCF      Source
;;-------------- --------- ------ ------ ----------
ESCONDIDO_GAUGE  INTENSITY 1:00     1.0      TIMESERIES Escondido_Gauge
```

[SUBCATCHMENTS]

;;Name	Rain Gage	Outlet	Area	%Imperv	Width	%Slope	CurbLen	SnowPack
EX-1	ESCONDIDO_GAUGE	POC-EX	0.649	0.0	140	5.0	0	
DMA-1	ESCONDIDO_GAUGE	BMP-1	0.526	95.0	140	1.0	0	
DMA-8(SELF-MIT)	ESCONDIDO_GAUGE	POC-PROP	0.094	0	200	50	0	
DMA-7(SELF-MIT)	ESCONDIDO_GAUGE	POC-PROP	0.029	0.0	20	1.0	0	

[SUBAREAS]

;;Subcatchment	N-Imperv	N-Perv	S-Imperv	S-Perv	PctZero	RouteTo	PctRouted
EX-1	0.01	0.04	0.05	0.10	25	OUTLET	
DMA-1	0.01	0.06	0.05	0.10	25	PERVIOUS	100
DMA-8(SELF-MIT)	0.01	0.1	0.05	0.05	25	OUTLET	
DMA-7(SELF-MIT)	0.01	0.06	0.05	0.10	25	OUTLET	

[INFILTRATION]

;;Subcatchment	Suction	Ksat	IMD
EX-1	9.0	0.025	0.33
DMA-1	3.5	0.5	0.25
DMA-8(SELF-MIT)	9.0	0.025	0.33
DMA-7(SELF-MIT)	9.0	0.025	0.33

[OUTFALLS]

;;Name	Elevation	Type	Stage Data	Gated	Route To
POC-EX	0	FREE		NO	
POC-PROP	0	FREE		NO	

[STORAGE]

;;Name	Elev.	MaxDepth	InitDepth	Shape	Curve Name/Params	N/A	Fevap	Psi	Ksat	IMD
BMP-1	0	5.5	0	TABULAR	BMP-1	0	0			

[ORIFICES]

;;Name	From Node	To Node	Type	Offset	Qcoeff	Gated	CloseTime
ORIFICE-1	BMP-1	POC-PROP	SIDE	0	0.65	NO	0

[WEIRS]

;;Name	From Node	To Node	Type	CrestHt	Qcoeff	Gated	EndCon	EndCoeff	Surcharge	RoadWidth	RoadSurf
WEIR-1	BMP-1	POC-PROP	V-NOTCH	4.25	3.33	NO	2	0	YES		

[XSECTIONS]

;;Link	Shape	Geom1	Geom2	Geom3	Geom4	Barrels	Culvert
ORIFICE-1	CIRCULAR	0.055	0	0	0		
WEIR-1	TRIANGULAR	1	3.0	0.5	0.5		

```
[CURVES]
;;Name           Type       X-Value    Y-Value
;;-------------- ---------- ---------- ----------
BMP-1            Storage    0          240
BMP-1                       2.0        240
BMP-1                       2.01       120
BMP-1                       3.5        120
BMP-1                       3.51       600
BMP-1                       5.5        600

[TIMESERIES]
;;Name           Date       Time       Value
;;-------------- ---------- ---------- ----------
Escondido_Gauge  9/24/1964  13:00      0.2
Escondido_Gauge  10/15/1964 8:00       0.1
Escondido_Gauge  10/15/1964 9:00       0.2
Escondido_Gauge  10/15/1964 10:00      0.1
Escondido_Gauge  10/15/1964 13:00      0.1
Escondido_Gauge  11/9/1964  11:00      0.1
Escondido_Gauge  11/9/1964  12:00      0.2
Escondido_Gauge  11/9/1964  14:00      0.1
Escondido_Gauge  11/9/1964  15:00      0.1
Escondido_Gauge  11/10/1964 15:00      0.1
Escondido_Gauge  11/10/1964 16:00      0.2
Escondido_Gauge  11/10/1964 17:00      0.1
Escondido_Gauge  11/12/1964 2:00       0.1
Escondido_Gauge  11/12/1964 4:00       0.1
Escondido_Gauge  11/17/1964 12:00      0.1
Escondido_Gauge  11/17/1964 14:00      0.1
Escondido_Gauge  11/17/1964 15:00      0.1
Escondido_Gauge  11/17/1964 17:00      0.3
Escondido_Gauge  11/17/1964 18:00      0.2
Escondido_Gauge  11/17/1964 20:00      0.1
Escondido_Gauge  11/17/1964 22:00      0.2
Escondido_Gauge  11/26/1964 11:00      0.02
Escondido_Gauge  11/26/1964 12:00      0.01
Escondido_Gauge  11/26/1964 13:00      0.01
Escondido_Gauge  11/26/1964 14:00      0.01
Escondido_Gauge  11/26/1964 17:00      0.01
Escondido_Gauge  12/27/1964 6:00       0.04
Escondido_Gauge  12/27/1964 7:00       0.05
Escondido_Gauge  12/27/1964 8:00       0.06
Escondido_Gauge  12/27/1964 9:00       0.09
Escondido_Gauge  12/27/1964 10:00      0.1
Escondido_Gauge  12/27/1964 11:00      0.11
Escondido_Gauge  12/27/1964 12:00      0.07
Escondido_Gauge  12/27/1964 13:00      0.18
Escondido_Gauge  12/27/1964 14:00      0.17
Escondido_Gauge  12/27/1964 15:00      0.13
Escondido_Gauge  12/27/1964 16:00      0.01
Escondido_Gauge  12/27/1964 17:00      0.03
```

```
Escondido_Gauge  12/27/1964 18:00      0.01
Escondido_Gauge  12/27/1964 19:00      0.03
Escondido_Gauge  12/27/1964 20:00      0.02
Escondido_Gauge  12/28/1964 3:00       0.11
Escondido_Gauge  12/28/1964 4:00       0.01
Escondido_Gauge  12/28/1964 5:00       0.01
Escondido_Gauge  12/28/1964 7:00       0.02
Escondido_Gauge  12/28/1964 8:00       0.05
Escondido_Gauge  12/28/1964 16:00      0.01
Escondido_Gauge  12/28/1964 24:00      0.01
Escondido_Gauge  12/29/1964 1:00       0.01
Escondido_Gauge  12/29/1964 3:00       0.01
Escondido_Gauge  12/29/1964 7:00       0.01
Escondido_Gauge  1/7/1965   9:00       0.02
Escondido_Gauge  1/7/1965   10:00      0.07
Escondido_Gauge  1/7/1965   11:00      0.02
Escondido_Gauge  1/7/1965   12:00      0.01
Escondido_Gauge  1/7/1965   13:00      0.03
Escondido_Gauge  1/24/1965  5:00       0.01
Escondido_Gauge  1/24/1965  6:00       0.09
Escondido_Gauge  1/24/1965  7:00       0.13
Escondido_Gauge  1/24/1965  8:00       0.08
Escondido_Gauge  1/24/1965  9:00       0.01
Escondido_Gauge  2/5/1965   23:00      0.1
Escondido_Gauge  2/6/1965   1:00       0.1
Escondido_Gauge  2/6/1965   2:00       0.1
Escondido_Gauge  2/6/1965   3:00       0.2
Escondido_Gauge  2/6/1965   7:00       0.1
Escondido_Gauge  2/6/1965   9:00       0.1
Escondido_Gauge  2/6/1965   11:00      0.1
Escondido_Gauge  2/6/1965   13:00      0.1
Escondido_Gauge  2/6/1965   15:00      0.1
Escondido_Gauge  2/6/1965   17:00      0.2
Escondido_Gauge  2/6/1965   24:00      0.1
Escondido_Gauge  3/6/1965   24:00      0.04
Escondido_Gauge  3/7/1965   1:00       0.01
Escondido_Gauge  3/7/1965   4:00       0.01
Escondido_Gauge  3/7/1965   5:00       0.03
Escondido_Gauge  3/7/1965   9:00       0.01
Escondido_Gauge  3/11/1965  6:00       0.01
Escondido_Gauge  3/11/1965  7:00       0.04
Escondido_Gauge  3/11/1965  8:00       0.04
Escondido_Gauge  3/11/1965  9:00       0.01
Escondido_Gauge  3/11/1965  10:00      0.01
Escondido_Gauge  3/11/1965  13:00      0.23
Escondido_Gauge  3/11/1965  14:00      0.02
Escondido_Gauge  3/11/1965  16:00      0.01
Escondido_Gauge  3/13/1965  5:00       0.01
Escondido_Gauge  3/13/1965  6:00       0.04
Escondido_Gauge  3/13/1965  7:00       0.02
Escondido_Gauge  3/13/1965  8:00       0.02
```

EVENT THRESHOLD CALCULATION

Pre-project Flow Frequency - Long-term Simulation

Statistics - Node POC-EX Total Inflow

Rank	Start Date	Event Duration (hours)	Event Peak (CFS)	Exceedance Frequency (percent)	Return Period (years)
1	1/6/1993	99	0.509	0.34	45
2	2/23/1971	8	0.469	0.68	22.5
3	2/15/1986	9	0.461	1.02	15
4	1/25/1995	15	0.428	1.36	11.25
5	1/4/1995	8	0.394	1.69	9
6	2/14/1998	11	0.385	2.03	7.5
7	12/25/1983	14	0.379	2.37	6.43
8	11/19/1967	21	0.377	2.71	5.63
9	3/1/1983	43	0.361	3.05	5
10	1/16/1978	8	0.357	3.39	4.5
11	3/17/1978	36	0.357	3.73	4.09
12	12/5/1966	47	0.352	4.07	3.75
13	4/20/1988	39	0.35	4.41	3.46
14	2/9/1981	4	0.337	4.75	3.21
15	1/31/2007	2	0.331	5.08	3
16	11/14/1972	2	0.328	5.42	2.81
17	11/25/1983	3	0.326	5.76	2.65
18	4/11/1967	20	0.313	6.1	2.5
19	1/9/2005	19	0.307	6.44	2.37
20	1/11/2005	8	0.306	6.78	2.25
21	8/26/2007	3	0.305	7.12	2.14
22	1/24/1969	35	0.296	7.46	2.05
23	1/9/1998	27	0.289	7.8	1.96
24	2/16/1980	103	0.288	8.14	1.88
25	1/28/1980	48	0.285	8.47	1.8
26	1/12/1993	31	0.28	8.81	1.73
27	12/18/1967	25	0.279	9.15	1.67
28	11/30/2007	15	0.279	9.49	1.61
29	3/20/1991	20	0.272	9.83	1.55
30	10/18/2004	3	0.268	10.17	1.5
31	2/3/1998	5	0.263	10.51	1.45
32	2/15/1992	5	0.262	10.85	1.41
33	10/19/2004	25	0.257	11.19	1.36
34	11/22/1965	26	0.255	11.53	1.32
35	2/8/1993	11	0.255	11.86	1.29
36	11/25/1985	7	0.249	12.2	1.25
37	3/2/1980	8	0.241	12.54	1.22
38	3/19/1981	2	0.238	12.88	1.18
39	12/4/1974	2	0.23	13.22	1.15
40	3/18/1982	24	0.228	13.56	1.13
41	2/27/1983	5	0.227	13.9	1.1
42	4/4/2006	16	0.226	14.24	1.07
43	2/5/1978	27	0.221	14.58	1.05
44	1/17/1979	29	0.22	14.92	1.02
45	10/27/2004	6	0.22	15.25	1
46	2/25/2003	2	0.219	15.59	0.98
47	4/14/1976	2	0.217	15.93	0.96
48	3/4/1970	3	0.216	16.27	0.94
49	11/29/1970	10	0.216	16.61	0.92
50	11/14/1993	2	0.215	16.95	0.9
51	1/10/1980	16	0.212	17.29	0.88
52	1/5/1979	24	0.211	17.63	0.87
53	2/11/2003	50	0.209	17.97	0.85
54	12/17/1978	19	0.202	18.31	0.83
55	2/27/1991	46	0.202	18.64	0.82
56	2/11/1973	45	0.199	18.98	0.8
57	1/1/1982	4	0.198	19.32	0.79
58	2/6/1969	4	0.196	19.66	0.78
59	2/26/2004	3	0.196	20	0.76
60	3/3/1976	3	0.194	20.34	0.75
61	2/28/1970	40	0.19	20.68	0.74
62	5/8/1977	4	0.189	21.02	0.73
63	1/4/1974	9	0.188	21.36	0.71
64	3/5/1995	18	0.187	21.69	0.7
65	12/22/1982	2	0.183	22.03	0.69
66	12/13/1965	2	0.183	22.37	0.68
67	2/22/2004	14	0.182	22.71	0.67
68	2/8/1998	5	0.177	23.05	0.66
69	11/29/1985	11	0.173	23.39	0.65
70	3/19/1991	4	0.17	23.73	0.64
71	12/31/1976	4	0.17	24.07	0.63
72	2/7/1994	7	0.168	24.41	0.63
73	3/23/1983	5	0.167	24.75	0.62
74	4/8/1965	35	0.167	25.08	0.61
75	1/14/1978	14	0.166	25.42	0.6
76	3/25/1994	16	0.164	25.76	0.59
77	1/24/1967	8	0.164	26.1	0.58
78	2/6/1992	8	0.164	26.44	0.58
79	4/14/2003	2	0.163	26.78	0.57
80	3/1/1981	13	0.163	27.12	0.56
81	12/21/1970	8	0.162	27.46	0.56
82	3/8/1974	13	0.162	27.8	0.55
83	3/15/2003	25	0.16	28.14	0.54
84	12/29/1991	2	0.159	28.47	0.54
85	3/11/1995	23	0.158	28.81	0.53

10-year Q: 0.409 cfs (Adjust Column "I" to interpolate from Table)

2-year Q: 0.292 cfs

Lower Flow Threshold: 10%

0.1xQ2 (Pre): 0.029 cfs

86	2/22/1998	51	0.158	29.15	0.52
87	2/25/1981	4	0.156	29.49	0.52
88	2/8/1976	13	0.154	29.83	0.51
89	1/2/2006	2	0.151	30.17	0.51
90	2/17/1998	4	0.151	30.51	0.5
91	3/25/1991	52	0.151	30.85	0.49
92	3/1/1979	8	0.15	31.19	0.49
93	12/29/1965	2	0.149	31.53	0.48
94	11/21/1967	3	0.149	31.86	0.48
95	1/31/1996	11	0.149	32.2	0.47
96	3/15/1982	11	0.149	32.54	0.47
97	11/13/1978	2	0.148	32.88	0.46
98	3/6/1980	10	0.147	33.22	0.46
99	11/21/1996	8	0.147	33.56	0.45
100	12/4/1972	2	0.147	33.9	0.45
101	1/5/1992	13	0.146	34.24	0.45
102	1/7/1987	2	0.145	34.58	0.44
103	1/27/1983	7	0.145	34.92	0.44
104	2/17/1994	3	0.145	35.25	0.43
105	3/8/1975	5	0.143	35.59	0.43
106	12/9/1965	29	0.142	35.93	0.42
107	2/6/1976	29	0.142	36.27	0.42
108	1/3/2005	22	0.142	36.61	0.42
109	11/20/1983	23	0.142	36.95	0.41
110	12/24/1988	4	0.14	37.29	0.41
111	3/12/1978	62	0.14	37.63	0.41
112	2/3/2004	2	0.139	37.97	0.4
113	4/28/1994	2	0.139	38.31	0.4
114	12/20/2002	4	0.139	38.64	0.39
115	2/12/1992	14	0.138	38.98	0.39
116	1/16/1973	3	0.137	39.32	0.39
117	12/3/1966	8	0.135	39.66	0.38
118	1/14/1969	7	0.134	40	0.38
119	1/22/1967	8	0.133	40.34	0.38
120	2/6/1998	3	0.132	40.68	0.38
121	1/15/1993	32	0.131	41.02	0.37
122	11/17/1986	5	0.131	41.36	0.37
123	3/28/1998	25	0.131	41.69	0.37
124	1/17/1988	10	0.13	42.03	0.36
125	2/14/1980	9	0.128	42.37	0.36
126	1/17/1990	2	0.128	42.71	0.36
127	11/17/1964	6	0.127	43.05	0.35
128	2/22/2005	17	0.127	43.39	0.35
129	2/3/2008	8	0.127	43.73	0.35
130	2/21/2005	12	0.126	44.07	0.35
131	3/28/1993	2	0.125	44.41	0.34
132	12/16/2002	3	0.125	44.75	0.34
133	1/17/1993	18	0.124	45.08	0.34
134	3/11/1973	5	0.124	45.42	0.34
135	1/11/2001	30	0.122	45.76	0.33
136	11/16/1965	6	0.122	46.1	0.33
137	5/12/1998	2	0.122	46.44	0.33
138	11/22/1973	4	0.122	46.78	0.33
139	3/10/1986	6	0.121	47.12	0.32
140	11/24/2001	2	0.121	47.46	0.32
141	12/9/1996	3	0.12	47.8	0.32
142	1/9/1980	15	0.119	48.14	0.32
143	11/8/2002	25	0.119	48.47	0.31
144	12/29/1992	7	0.118	48.81	0.31
145	3/10/2006	12	0.118	49.15	0.31
146	2/14/1995	2	0.117	49.49	0.31
147	3/23/1995	2	0.11	49.83	0.31
148	2/20/1994	1	0.11	50.17	0.3
149	2/8/1986	3	0.11	50.51	0.3
150	3/8/1968	4	0.108	50.85	0.3
151	12/16/1987	4	0.106	51.19	0.3
152	11/7/1966	3	0.106	51.53	0.3
153	12/25/1971	22	0.106	51.86	0.29
154	2/23/1969	49	0.106	52.2	0.29
155	1/20/1969	32	0.106	52.54	0.29
156	1/6/1974	40	0.105	52.88	0.29
157	2/22/2008	7	0.105	53.22	0.29
158	11/4/1987	7	0.105	53.56	0.28
159	12/29/2004	4	0.103	53.9	0.28
160	3/8/1970	8	0.103	54.24	0.28
161	3/10/1975	28	0.102	54.58	0.28
162	3/8/1973	8	0.101	54.92	0.28
163	2/8/1983	3	0.101	55.25	0.28
164	1/4/1987	7	0.1	55.59	0.27
165	2/10/1982	12	0.1	55.93	0.27
166	3/18/1983	16	0.1	56.27	0.27
167	3/13/1967	7	0.099	56.61	0.27
168	12/14/1965	2	0.098	56.95	0.27
169	1/29/1983	3	0.098	57.29	0.27
170	11/16/1972	5	0.098	57.63	0.26
171	12/7/1992	7	0.098	57.97	0.26
172	4/8/1975	23	0.097	58.31	0.26
174	2/21/2000	3	0.095	58.98	0.26
174	11/29/2002	3	0.095	58.98	0.26
175	1/12/1997	20	0.094	59.32	0.26
176	12/27/1971	24	0.094	59.66	0.26
177	12/21/1988	1	0.094	60	0.25
178	3/27/1979	6	0.094	60.34	0.25
179	5/7/1971	2	0.094	60.68	0.25

180	11/11/1985	7	0.094	61.02	0.25
181	1/19/1980	1	0.093	61.36	0.25
182	3/17/1979	3	0.093	61.69	0.25
183	1/5/2008	49	0.093	62.03	0.25
184	3/20/1983	8	0.093	62.37	0.24
185	1/7/2005	2	0.092	62.71	0.24
186	4/11/1998	2	0.092	63.05	0.24
187	3/10/1980	2	0.09	63.39	0.24
188	11/12/1976	8	0.09	63.73	0.24
189	1/7/1995	9	0.09	64.07	0.24
190	11/25/1988	4	0.09	64.41	0.24
191	2/22/1969	5	0.09	64.75	0.24
192	3/15/1986	21	0.089	65.08	0.23
193	1/18/1973	6	0.089	65.42	0.23
194	2/19/1993	6	0.088	65.76	0.23
195	12/6/1997	2	0.088	66.1	0.23
196	12/19/1970	5	0.088	66.44	0.23
197	11/30/1982	8	0.086	66.78	0.23
198	3/25/1998	25	0.086	67.12	0.23
199	3/1/1976	3	0.085	67.46	0.23
200	4/18/1995	4	0.085	67.8	0.22
201	1/14/1990	2	0.085	68.14	0.22
202	3/12/1986	1	0.083	68.47	0.22
203	4/30/1983	2	0.083	68.81	0.22
204	3/2/2004	2	0.083	69.15	0.22
205	9/10/1976	16	0.082	69.49	0.22
206	3/22/1973	3	0.08	69.83	0.22
207	2/25/1996	15	0.08	70.17	0.22
208	12/16/1965	3	0.08	70.51	0.22
209	4/22/1967	3	0.079	70.85	0.22
210	2/23/1993	7	0.079	71.19	0.21
211	1/7/1992	3	0.079	71.53	0.21
212	1/12/1995	6	0.078	71.86	0.21
213	3/13/1969	5	0.077	72.2	0.21
214	3/5/1981	8	0.076	72.54	0.21
215	8/17/1977	10	0.075	72.88	0.21
216	3/2/1992	1	0.075	73.22	0.21
217	4/13/1976	5	0.074	73.56	0.21
218	9/25/1986	4	0.074	73.9	0.21
219	11/10/1982	15	0.072	74.24	0.21
220	2/18/1969	2	0.072	74.58	0.2
221	1/21/1996	1	0.072	74.92	0.2
222	2/28/2006	8	0.071	75.25	0.2
223	11/11/1972	1	0.07	75.59	0.2
224	1/28/1982	1	0.07	75.93	0.2
225	4/1/1965	5	0.07	76.27	0.2
226	2/21/1979	13	0.07	76.61	0.2
227	1/31/1979	1	0.067	76.95	0.2
228	12/26/1977	15	0.064	77.29	0.2
229	3/17/2002	1	0.063	77.63	0.2
230	4/7/1978	2	0.062	77.97	0.2
231	3/28/2006	4	0.061	78.31	0.19
232	4/5/1975	17	0.06	78.64	0.19
233	4/26/1994	1	0.06	78.98	0.19
234	3/22/2005	1	0.059	79.32	0.19
235	5/1/1983	2	0.058	79.66	0.19
236	3/31/1978	1	0.058	80	0.19
237	2/13/2000	1	0.058	80.34	0.19
238	4/1/1968	1	0.056	80.68	0.19
239	1/20/1982	3	0.053	81.02	0.19
240	12/11/1996	3	0.051	81.36	0.19
241	1/25/1997	11	0.051	81.69	0.19
242	10/20/1979	2	0.051	82.03	0.19
243	3/20/1973	3	0.05	82.37	0.19
244	12/25/1994	1	0.049	82.71	0.18
245	1/30/1978	2	0.049	83.05	0.18
246	12/21/2001	1	0.048	83.39	0.18
247	12/20/1995	1	0.047	83.73	0.18
248	1/31/1993	1	0.046	84.07	0.18
249	12/2/1985	4	0.044	84.41	0.18
250	3/23/1992	1	0.044	84.75	0.18
251	6/10/1990	2	0.043	85.08	0.18
252	1/26/1969	2	0.043	85.42	0.18
253	3/19/1979	27	0.04	85.76	0.18
254	12/25/2003	1	0.04	86.1	0.18
255	2/14/2008	2	0.039	86.44	0.18
256	2/12/2005	13	0.038	86.78	0.18
257	3/21/2006	1	0.038	87.12	0.18
258	1/28/1969	1	0.037	87.46	0.17
259	12/8/1972	2	0.036	87.8	0.17
260	2/6/1965	1	0.036	88.14	0.17
261	11/21/1978	1	0.036	88.47	0.17
262	3/6/1973	3	0.034	88.81	0.17
263	3/22/1983	3	0.032	89.15	0.17
264	4/2/1982	4	0.031	89.49	0.17
265	1/4/1977	1	0.03	89.83	0.17
266	2/2/1979	1	0.03	90.17	0.17
267	4/3/1965	13	0.029	90.51	0.17
268	11/2/1987	2	0.028	90.85	0.17
269	2/10/1975	1	0.028	91.19	0.17
270	3/11/1970	5	0.028	91.53	0.17
271	2/18/2005	19	0.027	91.86	0.17
272	4/15/1976	1	0.027	92.2	0.17
273	2/1/1979	1	0.025	92.54	0.16

274	5/3/2003	1	0.025	92.88	0.16
275	2/28/1973	2	0.021	93.22	0.16
276	1/29/1998	1	0.021	93.56	0.16
277	11/28/1981	2	0.02	93.9	0.16
278	3/6/1970	3	0.019	94.24	0.16
279	2/17/2000	1	0.019	94.58	0.16
280	4/2/1974	3	0.016	94.92	0.16
281	3/26/1980	2	0.016	95.25	0.16
282	11/23/1978	1	0.015	95.59	0.16
283	3/13/1986	3	0.015	95.93	0.16
284	12/8/2007	1	0.013	96.27	0.16
285	3/21/1969	1	0.011	96.61	0.16
286	12/31/2004	2	0.011	96.95	0.16
287	12/3/1983	1	0.008	97.29	0.16
288	10/29/1974	3	0.008	97.63	0.16
289	11/25/1965	1	0.007	97.97	0.16
290	4/21/1983	1	0.006	98.31	0.16
291	3/26/1992	1	0.006	98.64	0.15
292	12/6/1986	1	0.006	98.98	0.15
293	4/28/2005	1	0.005	99.32	0.15
294	2/25/1983	1	0.002	99.66	0.15
295	4/28/2005	1	0.004	99.33	0.15
296	2/25/1983	1	0.002	99.66	0.15

FLOW DURATION CURVE CALCULATION

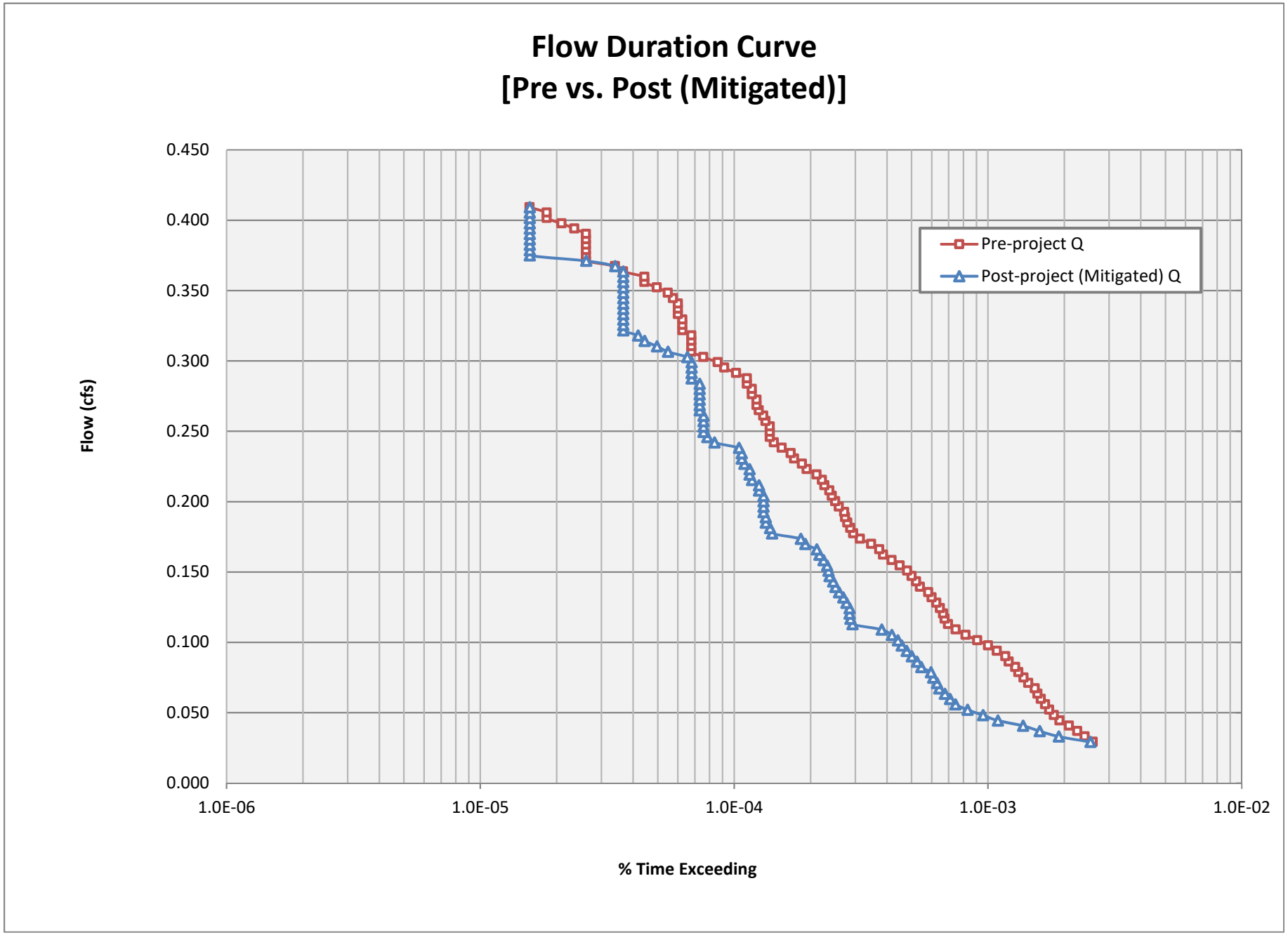
Low-flow Threshold:	10%	
0.1xQ2 (Pre):	0.029	cfs
Q10 (Pre):	0.409	cfs
Ordinate #:	100	
Incremental Q (Pre):	0.00380	cfs
Total Hourly Data:	382749	hours

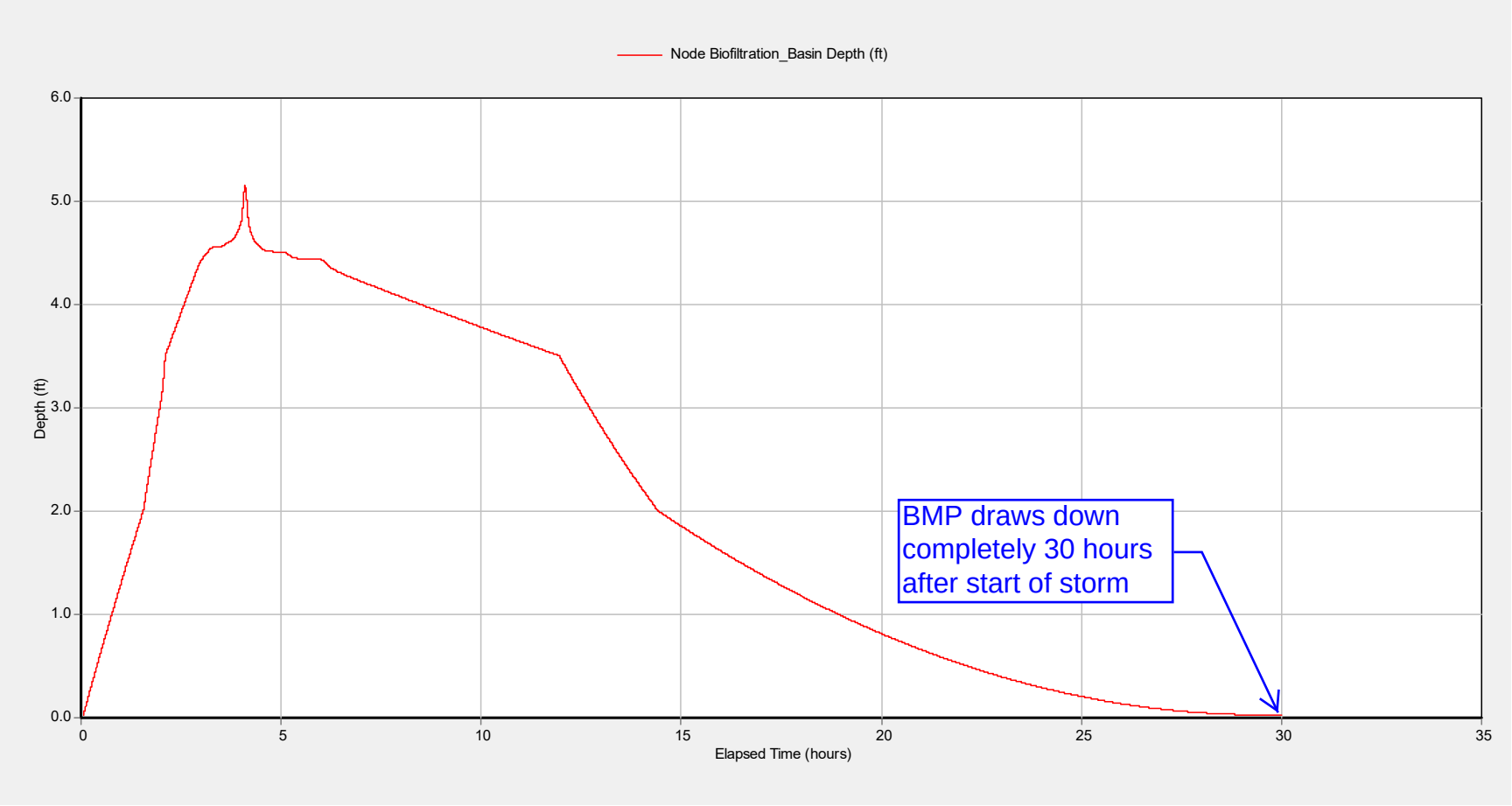
The proposed BMP: PASSED

Interval	Pre-project Flow (cfs)	Pre-project Hours	Pre-project % Time Exceeding	Post-project Hours	Post-project % Time Exceeding	Percentage	Pass/Fail
0	0.029	993	2.59E-03	970	2.53E-03	98%	Pass
1	0.033	921	2.41E-03	728	1.90E-03	79%	Pass
2	0.037	862	2.25E-03	612	1.60E-03	71%	Pass
3	0.041	799	2.09E-03	526	1.37E-03	66%	Pass
4	0.044	733	1.92E-03	419	1.09E-03	57%	Pass
5	0.048	697	1.82E-03	366	9.56E-04	53%	Pass
6	0.052	668	1.75E-03	318	8.31E-04	48%	Pass
7	0.056	644	1.68E-03	285	7.45E-04	44%	Pass
8	0.060	620	1.62E-03	271	7.08E-04	44%	Pass
9	0.063	601	1.57E-03	259	6.77E-04	43%	Pass
10	0.067	586	1.53E-03	246	6.43E-04	42%	Pass
11	0.071	553	1.44E-03	241	6.30E-04	44%	Pass
12	0.075	529	1.38E-03	233	6.09E-04	44%	Pass
13	0.079	505	1.32E-03	228	5.96E-04	45%	Pass
14	0.082	491	1.28E-03	209	5.46E-04	43%	Pass
15	0.086	463	1.21E-03	201	5.25E-04	43%	Pass
16	0.090	449	1.17E-03	192	5.02E-04	43%	Pass
17	0.094	415	1.08E-03	183	4.78E-04	44%	Pass
18	0.098	384	1.00E-03	175	4.57E-04	46%	Pass
19	0.101	348	9.09E-04	169	4.42E-04	49%	Pass
20	0.105	313	8.18E-04	160	4.18E-04	51%	Pass
21	0.109	286	7.47E-04	146	3.81E-04	51%	Pass
22	0.113	267	6.98E-04	112	2.93E-04	42%	Pass
23	0.117	259	6.77E-04	110	2.87E-04	42%	Pass
24	0.120	255	6.66E-04	109	2.85E-04	43%	Pass
25	0.124	248	6.48E-04	109	2.85E-04	44%	Pass
26	0.128	240	6.27E-04	106	2.77E-04	44%	Pass
27	0.132	230	6.01E-04	103	2.69E-04	45%	Pass
28	0.136	223	5.83E-04	99	2.59E-04	44%	Pass
29	0.139	207	5.41E-04	96	2.51E-04	46%	Pass
30	0.143	200	5.23E-04	94	2.46E-04	47%	Pass
31	0.147	192	5.02E-04	91	2.38E-04	47%	Pass
32	0.151	184	4.81E-04	90	2.35E-04	49%	Pass
33	0.155	172	4.49E-04	89	2.33E-04	52%	Pass
34	0.158	160	4.18E-04	86	2.25E-04	54%	Pass
35	0.162	148	3.87E-04	83	2.17E-04	56%	Pass
36	0.166	143	3.74E-04	81	2.12E-04	57%	Pass
37	0.170	133	3.47E-04	73	1.91E-04	55%	Pass
38	0.174	120	3.14E-04	70	1.83E-04	58%	Pass
39	0.177	113	2.95E-04	54	1.41E-04	48%	Pass
40	0.181	110	2.87E-04	53	1.38E-04	48%	Pass
41	0.185	107	2.80E-04	51	1.33E-04	48%	Pass
42	0.189	105	2.74E-04	51	1.33E-04	49%	Pass
43	0.193	104	2.72E-04	50	1.31E-04	48%	Pass
44	0.196	99	2.59E-04	50	1.31E-04	51%	Pass
45	0.200	96	2.51E-04	50	1.31E-04	52%	Pass
46	0.204	93	2.43E-04	50	1.31E-04	54%	Pass
47	0.208	91	2.38E-04	48	1.25E-04	53%	Pass
48	0.212	87	2.27E-04	48	1.25E-04	55%	Pass
49	0.215	85	2.22E-04	45	1.18E-04	53%	Pass
50	0.219	81	2.12E-04	44	1.15E-04	54%	Pass
51	0.223	74	1.93E-04	44	1.15E-04	59%	Pass
52	0.227	71	1.86E-04	42	1.10E-04	59%	Pass
53	0.231	66	1.72E-04	41	1.07E-04	62%	Pass
54	0.234	64	1.67E-04	41	1.07E-04	64%	Pass
55	0.238	59	1.54E-04	40	1.05E-04	68%	Pass
56	0.242	55	1.44E-04	32	8.36E-05	58%	Pass
57	0.246	53	1.38E-04	30	7.84E-05	57%	Pass

FLOW DURATION CURVE CALCULATION

Interval	Pre-project Flow (cfs)	Pre-project Hours	Pre-project % Time Exceeding	Post-project Hours	Post-project % Time Exceeding	Percentage	Pass/Fail
58	0.250	53	1.38E-04	29	7.58E-05	55%	Pass
59	0.253	53	1.38E-04	29	7.58E-05	55%	Pass
60	0.257	51	1.33E-04	29	7.58E-05	57%	Pass
61	0.261	50	1.31E-04	29	7.58E-05	58%	Pass
62	0.265	48	1.25E-04	28	7.32E-05	58%	Pass
63	0.269	47	1.23E-04	28	7.32E-05	60%	Pass
64	0.272	47	1.23E-04	28	7.32E-05	60%	Pass
65	0.276	45	1.18E-04	28	7.32E-05	62%	Pass
66	0.280	45	1.18E-04	28	7.32E-05	62%	Pass
67	0.284	43	1.12E-04	28	7.32E-05	65%	Pass
68	0.288	43	1.12E-04	26	6.79E-05	60%	Pass
69	0.291	39	1.02E-04	26	6.79E-05	67%	Pass
70	0.295	35	9.14E-05	26	6.79E-05	74%	Pass
71	0.299	33	8.62E-05	26	6.79E-05	79%	Pass
72	0.303	29	7.58E-05	25	6.53E-05	86%	Pass
73	0.307	26	6.79E-05	21	5.49E-05	81%	Pass
74	0.310	26	6.79E-05	19	4.96E-05	73%	Pass
75	0.314	26	6.79E-05	17	4.44E-05	65%	Pass
76	0.318	26	6.79E-05	16	4.18E-05	62%	Pass
77	0.322	24	6.27E-05	14	3.66E-05	58%	Pass
78	0.326	24	6.27E-05	14	3.66E-05	58%	Pass
79	0.329	24	6.27E-05	14	3.66E-05	58%	Pass
80	0.333	23	6.01E-05	14	3.66E-05	61%	Pass
81	0.337	23	6.01E-05	14	3.66E-05	61%	Pass
82	0.341	23	6.01E-05	14	3.66E-05	61%	Pass
83	0.345	22	5.75E-05	14	3.66E-05	64%	Pass
84	0.348	21	5.49E-05	14	3.66E-05	67%	Pass
85	0.352	19	4.96E-05	14	3.66E-05	74%	Pass
86	0.356	17	4.44E-05	14	3.66E-05	82%	Pass
87	0.360	17	4.44E-05	14	3.66E-05	82%	Pass
88	0.364	14	3.66E-05	14	3.66E-05	100%	Pass
89	0.367	13	3.40E-05	13	3.40E-05	100%	Pass
90	0.371	10	2.61E-05	10	2.61E-05	100%	Pass
91	0.375	10	2.61E-05	6	1.57E-05	60%	Pass
92	0.379	10	2.61E-05	6	1.57E-05	60%	Pass
93	0.383	10	2.61E-05	6	1.57E-05	60%	Pass
94	0.386	10	2.61E-05	6	1.57E-05	60%	Pass
95	0.390	10	2.61E-05	6	1.57E-05	60%	Pass
96	0.394	9	2.35E-05	6	1.57E-05	67%	Pass
97	0.398	8	2.09E-05	6	1.57E-05	75%	Pass
98	0.402	7	1.83E-05	6	1.57E-05	86%	Pass
99	0.405	7	1.83E-05	6	1.57E-05	86%	Pass
100	0.409	6	1.57E-05	6	1.57E-05	100%	Pass


Flow Duration Curve
[Pre vs. Post (Mitigated)]
Flow (cfs)
0.450
0.400
0.350
0.300
0.250
0.200
0.150
0.100
0.050
0.000
1.0E-06
1.0E-05
1.0E-04
1.0E-03
1.0E-02
% Time Exceeding
Pre-project Q
Post-project (Mitigated) Q


Node Biofiltration_Basin Depth (ft)
6.0
5.0
4.0
3.0
2.0
1.0
0.0
Depth (ft)
0
5
10
15
20
25
30
35
Elapsed Time (hours)
BMP draws down completely 30 hours after start of storm

8.2 Hydromodification Management Points of Compliance

- List and describe all points of compliance (POCs) for flow control for hydromodification management.
- For each POC, provide a POC identification name or number, and a receiving channel identification name or number correlating to the project's HMP Exhibit (see Attachment 2).

POC name or #	Channel name or #	POC Description
1	San Marcos Creek	The point of compliance is the point were runoff flows across the property line at the south corner of the lot.

9.0 General Requirements

- Complete the table below to indicate which compliance pathway was selected in PDP SWQMP Table 6. Include the corresponding sub-attachment with your SWQMP submittal. Other sub-attachments do not need to be included.
- See the BMPDM sections and appendices listed under "BMPDM Design Resources" for additional explanation of design requirements. Constructed features must fully satisfy the requirements described in these resources, and any other guidance identified by the County.
- DMA Exhibits and Construction Plans: CCSYAs and applicable BMPs identified and described in this attachment must be shown on DMA Exhibits and all applicable construction plans submitted for the project. See Attachment 2 for additional instruction on exhibits and plans.

Sub-attachments	BMPDM Design Resources
☐ **9.1: Documentation of Hydromodification Management Exemption**[1]	Section 1.6
☒ **9.2: Watershed Management Area Analysis (WMAA) Mapping**[1]	Appendix H.1.1.2
☐ **9.3: Resource Protection Ordinance (RPO) Methods**	Appendix H.1.1.1
☐ **9.4: No Net Impact Analysis**	Appendix H.4

[1] The San Diego County Regional comprehensive WMAA mapping data can be found on the Project Clean Water website here: http://www.projectcleanwater.org/download/wmaa_attc_data/

9.2 Watershed Management Area Analysis (WMAA) Mapping (BMPDM Appendix H.1.1.2)

Watershed Management Area Analysis (WMAA) mapping is a simple way to screen projects to determine the presence of onsite or offsite upstream Potential Critical Coarse Sediment Yield Areas (PCCSYAs). The San Diego County Regional WMAA mapping data can be found on the Project Clean Water website here: http://www.projectcleanwater.org/download/wmaa_attc_data/ .[3]

- Based on the WMAA map and the proposed project design, demonstrate below that both of the following conditions apply to the PDP:

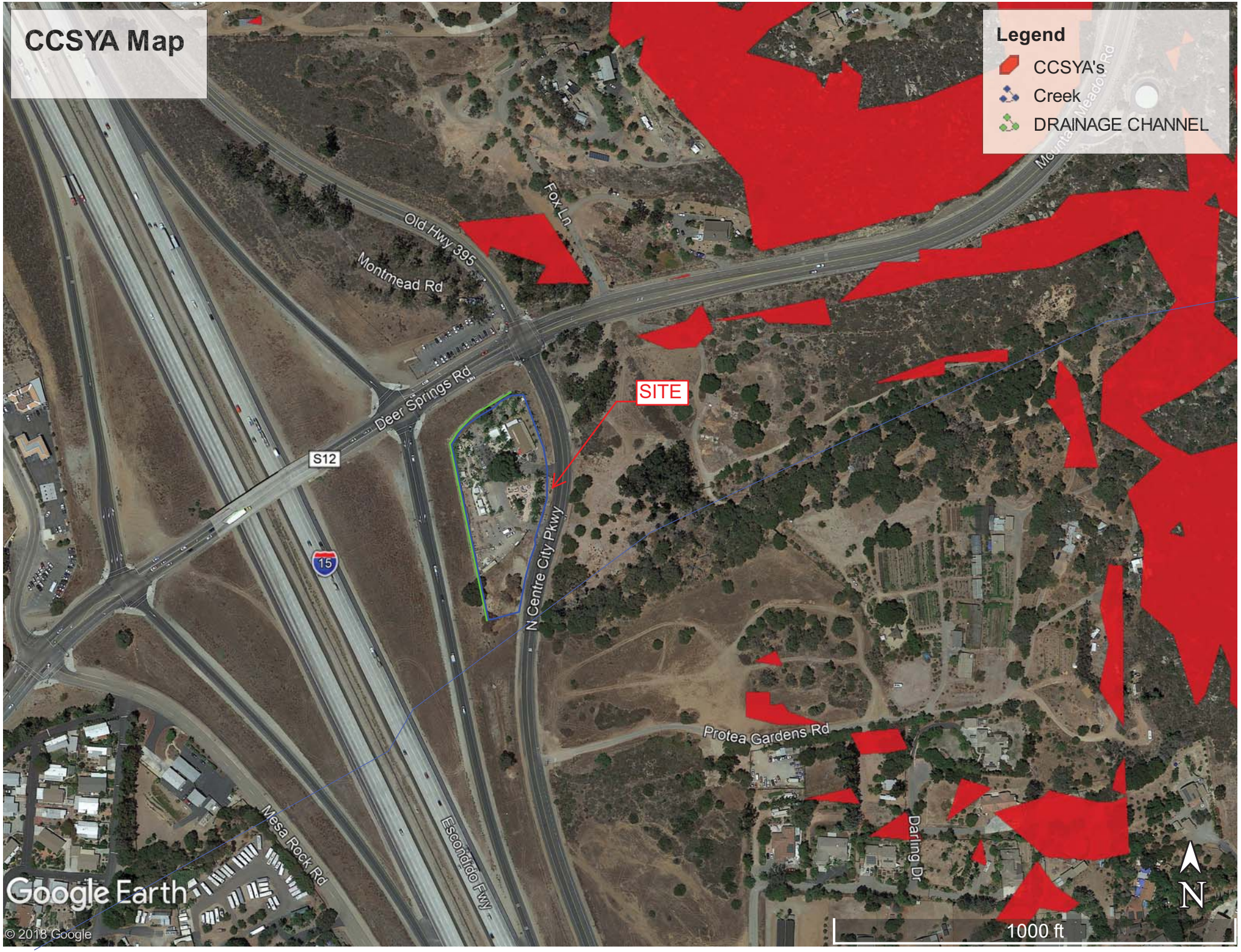
  (a) Less than 5% of PCCSYAs will be impacted (built on or obstructed) by the PDP, and

  (b) All upstream offsite PCCYSAs will be bypassed (see BMPDM Appendix H.3).

A. Mapping Results -- At a minimum, show: (1) the project footprint, (2) areas of proposed development, (3) impacted onsite PCCSYAs, (4) offsite tributary areas[4], and (5) bypass of upstream offsite PCCSYAs.

SEE NEXT PAGE FOR CCSYA MAPPING

[3] Applicants may refine initial mapping results using options identified in BMPDM Appendix H.1.2.
[4] Tributary areas must be shown to demonstrate that upstream offsite PCCSYAs do not exist. If bypassing these areas, only the bypass should be shown.


CCSYA Map
Legend
CCSYA's
Creek
DRAINAGE CHANNEL
Old Hwy 395
Montmead Rd
Fox Ln
Deer Springs Rd
SITE
S12
15
N Centre City Pkwy
Protea Gardens Rd
Darling Dr
Mesa Rock Rd
Escondido Fwy
Google Earth
© 2018 Google
N
1000 ft

B. Explanation -- Provide documentation as needed to demonstrate that (1) impacts to PCCSYAs are below 5%, and (2) upstream offsite PCCYSAs are effectively bypassed. Add pages as necessary.

(1) & (2): Potential Critical Course Sediment Yield Areas do not existing on-site. Nor, are any located on the upstream off-site areas.

This form must be accepted by the County prior to the release of construction permits or granting of occupancy for applicable portions of a Priority Development Project (PDP). Its purpose is to provide documentation of the final installation of permanent Best Management Practices (BMPs) used to satisfy Structural Performance Standards for the development project. Compliance with these standards reduces the discharge of pollutants and flows from the completed project site. Applicable standards may be satisfied using Structural BMPs (S-BMPs), Significant Site Design BMPs (SSD-BMPs), or both. Applicants are responsible for providing all requested information. Do not leave any fields blank; indicate *N/A* for any requested item that is not applicable.

PART 1 General Project and Applicant Information

Table 1: Project and Applicant Information

A. Project Summary Information	**ID No. IVF-20___-____ To be assigned by DPW-WPP**
Project Name	Mountain Meadows Gas Station
Record ID (e.g. grading/improvement plan number, building permit)	PDS2017-STP-17-028; PDS2017-BC-17-0069
Project Address	26746 Mountain Meadows Road, Escondido, CA 92026
Assessor's Parcel Number(s) APN(s)	186-093-19-00, 186-093-23-00, & 186-093-37-00
Project Watershed (complete Hydrologic Unit, Area, and Subarea Name with Numeric Identifier)	CARLSBAD, Twin Oaks, 904.53
B. Owner Information	
Name	Ken Assi
Address	5820 Oberlin Drive # 201, 92121
Email Address	jason@kaenterprises.net
Phone Number	(858) 404-6080

****THIS PAGE IS FOR PARTIAL RECORD PLAN VERIFICATIONS ONLY ****

If this is a partial Installation Verification Form submittal, list ALL DMAs and BMPs for the Priority Development Project in **Table 2**. Provide acceptance information where applicable.

Table 2: Information for Partial IVF Submittals

A: DMA and BMP Information

DMA #	Structural and Significant Site Design BMPs	WPP Acceptance Date	IVF ID No. (e.g. 2018-001)

B: DMA and BMP Map

Please attach a map showing (1) all DMAs for the project site, (2) the DMAs and/or lots accepted under previous Verification Forms, and (3) the locations of Structural BMPs and Significant Site Design BMPs previously accepted.

TO BE PROVIDED DURIN MINISTERIAL REVIEW

PART 2 DMA and BMP Inventory Information

Use this table to document Structural BMPs (S-BMPs) and Significant Site Design BMPs (SSD-BMPs) for the PDP. All DMAs that are not self-mitigating or de minimis must have at least one Structural BMP or Significant Site Design BMP.

- In **Part A**, list all Structural BMPs (including both Pollutant Control and/or Hydromodification as applicable) by DMA.
- Complete **Part B** for all DMAs that contain only Significant Site Design BMPs. SSD-BMPs are Site Design BMPs (SD-BMPs) that are sized and constructed to satisfy Structural Performance Standards for a DMA.
- Documentation of SD-BMPs is not required in this table for any DMA that also contains S-BMPs.
- The information provided for each BMP in the table must match that provided in the Stormwater Quality Management Plan (SWQMP), construction plans, maintenance agreements, and other relevant project documentation.

Table 3: Required Information for Structural BMPs and Significant Site Design BMPs

DMA #	BMP Information			Maintenance Category	Maintenance Agreement or Maintenance Notification Recorded Doc. #	Construction Plan Sheet #	Landscape Plan # & Sheet # (For Vegetated BMPs Only)	FOR DPW-WPP USE ONLY *Reviewer concurs that the BMP(s) may be accepted into inventory (date and initial)*
	Quantity	Description/Type of Structural BMP	BMP ID #(s)					
Part A Structural BMPs (S-BMPs)								
		TO BE PROVIDED AT MINISTERIAL SUBMITTAL.						
Add rows as needed								
Part B Significant Site Design BMPs (SSD-BMPs)								
		Choose an item.		---	---			
		Choose an item. TO BE PROVIDED AT MINISTERIAL SUBMITTAL.		---	---			
		Choose an item.		---	---			
Add rows as needed								

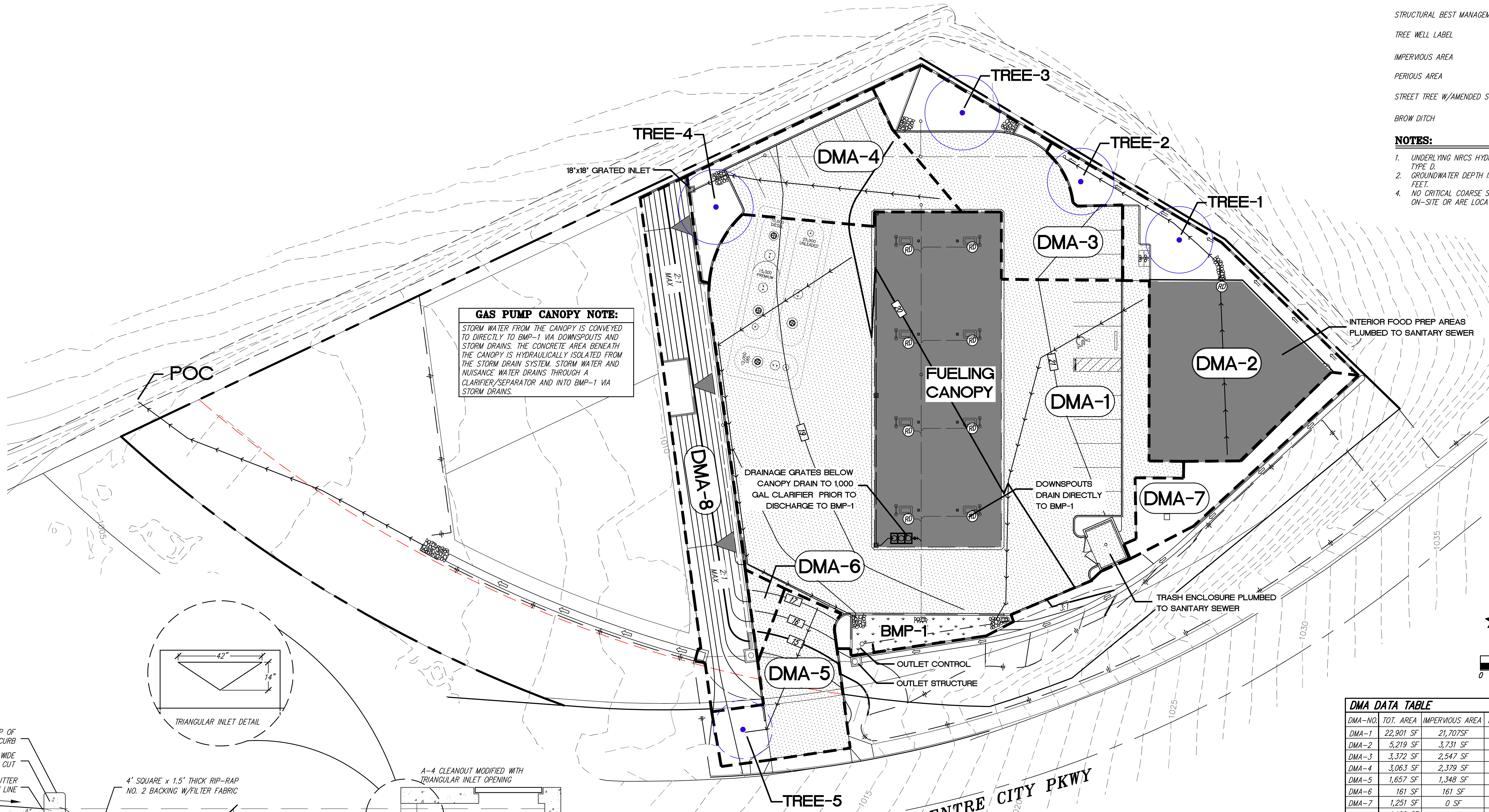
2.0 General Requirements

- Attachment 2 consolidates exhibits and plans required for the entire project.
- Complete the table below to indicate which sub-attachments are included with the submittal. Sub-attachments that are not applicable can be excluded from the submittal.
- Unless otherwise stated, features and BMPs identified and described in each corresponding Attachment (6 through 9) must be shown on applicable DMA Exhibits and construction plans submitted for the project.

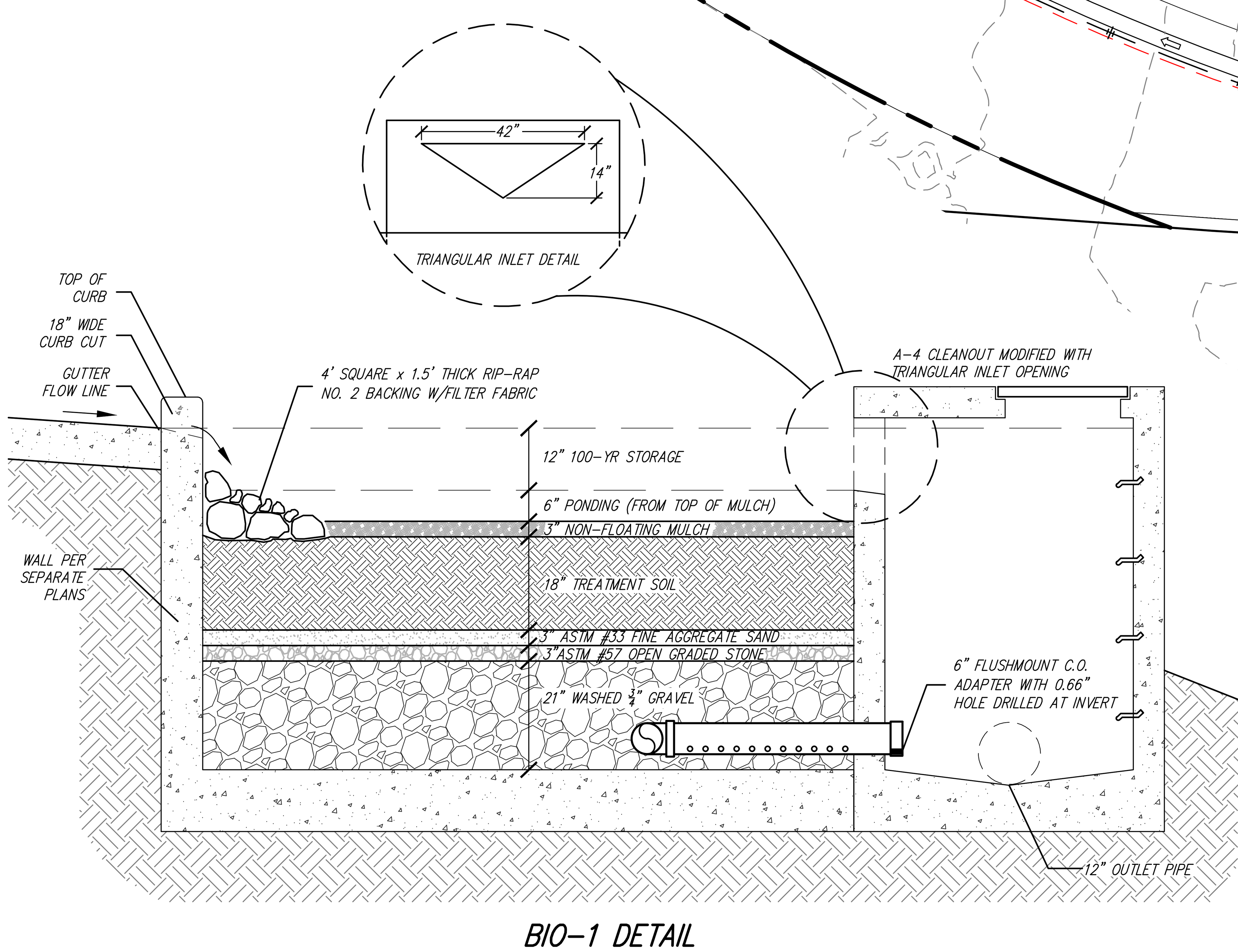
Sub-attachments	Requirement
☒ **2.1: DMA Exhibits**	All PDPs
☒ **2.2: Individual Structural BMP DMA Mapbook**	PDPs with structural BMPs
☒ **2.3: Construction Plan Sets**	All projects

DMA/BMP MAP

KA ENTERPRISES MEGA MART
DEER SPRINGS ROAD AND N. CENTRE CITY PKWY ESCONDIDO, CA



GRAPHICAL SCALE: 1" = 20'
0 10 20 40 60



BIO-1 DETAIL
NOT TO SCALE

LEGEND:

DMA BOUNDARY	(dashed line)
DRAINAGE ARROWS	(arrows)
DRAINAGE MANAGEMENT AREA	DMA-1
POINT OF COMPLIANCE	POC
STRUCTURAL BEST MANAGEMENT PRACTICE	BMP-#
TREE WELL LABEL	TREE-#
IMPERVIOUS AREA	(dotted hatch)
PERIOUS AREA	(blank box)
STREET TREE W/AMENDED SOIL	(circle)
BROW DITCH	⇒ ⇒ ⇒

NOTES:

1. UNDERLYING NRCS HYDROLOGIC SOIL GROUP FOR SITE IS TYPE D.
2. GROUNDWATER DEPTH IS ASSUMED GREATER THAN 15 FEET.
4. NO CRITICAL COARSE SEDIMENT YIELD AREAS EXISTING ON-SITE OR ARE LOCATED UP-STREAM OF THE SITE.

DMA DATA TABLE

DMA-NO.	TOT. AREA	IMPERVIOUS AREA	IMPERVIOUS %	DCV	TYPE/TREATED BY
DMA-1	22,901 SF	21,707SF	95%	1,108 CF	DRAINS TO BMP-1
DMA-2	5,219 SF	3,731 SF	72%	571 CF	TREE WELL
DMA-3	3,372 SF	2,547 SF	76%	386 CF	TREE WELL
DMA-4	3,063 SF	2,379 SF	78%	360 CF	TREE WELL
DMA-5	1,657 SF	1,348 SF	81%	203 CF	TREE WELL
DMA-6	161 SF	161 SF	100%	N/A	DE MINIMIS
DMA-7	1,251 SF	0 SF	0%	N/A	SELF MITIGATING
DMA-8	4,100 SF	0 SF	0%	N/A	SELF MITIGATING

STREET TREE DATA TABLE

TREE NO.	TRIBUTARY DMA	CANOPY DIA.	SOIL AREA	SOIL DEPTH
1	DMA-2	25 FT	395 SF	2.5 FT
2	DMA-2	25 FT	395 SF	2.5 FT
3	DMA-3	30 FT	570 SF	2.5 FT
4	DMA-4	28 FT	500 SF	2.5 FT
5	DMA-5	22 FT	304 SF	2.5 FT

ONSITE TREATMENT BMP DATA TABLE

BMP-#	TREATING	PROP. FOOTPRINT	DESCRIPTION
BMP-1	DMA-1	600 SF	BIOFILTRATION (BF-1) W/ OUTLET STRUCTURE
-	-	-	-

APPLICABLE SITE DESIGN BMP NOTES

SITE DESIGN BMP	SOURCE CONTROL REQUIRMENT
4.3.1	MAINTAIN NATURAL DRAINAGE PATHWAYS & HYDROLOGIC FEATURES
4.3.2	CONSERVE NATURAL AREAS, SOILS, AND VEGETATION
4.3.3	MINIMIZED IMPERVIOUS AREA
4.3.4	MINIMIZE SOIL COMPACTION

No. | Date | By | Ckd. | Appr. | Revision

DMA/BMP MAP
KA ENTERPRISES MEGA MART
Deer Spring Rd / Mountain Meadows
Escondido, CA

5820 Oberlin Dr Suite 201
San Diego, CA 92121
858/404-6080
fax 858/404-6081

For: KA ENTERPRISES

ANDREW J. KANN No. 52940 REGISTERED PROFESSIONAL ENGINEER STATE OF CALIFORNIA

Scale: Horizontal 1"= 20' Vertical N/A

Designed SS
Drawn JT
Checked AJK
Approved
Date 11/21/19

OMEGA ENGINEERING CONSULTANTS
4340 VIEWRIDGE AVE. SUITE B
SAN DIEGO, CA 92123
PH:(858) 634-8620 FAX:(858)-634-8627

JOB NUMBER
SHEET 5 OF 7

P:\DWG OMEGA\0539 Mountain Meadow Gas\ACAD\CGP\0539-CGP05-DMA MAP.dwg
11/21/2019 3:07 PM

PART 3 Required Attachments for All BMPs Listed in Table 3

For ALL projects, submit the following to the County inspector (check all that are attached):

☐ Photographs: Labeled photographs illustrating proper construction of each S-BMP or SSD-BMP.

☐ Maintenance Agreements: Copies of all approved and recorded Storm Water Maintenance Agreements (SWMAs) or Maintenance Notifications (MNs) for all S-BMPs.

Note: All BMPs proposed for County ownership will remain the responsibility of the owner listed on **Page 1** until a signed Letter of Acceptance of Completion is received by the DPW Watershed Protection Program.

For Grading and Improvement projects only, ALSO submit:

☐ Construction Plans: An 11" X 17" copy of the most current applicable approved Construction Plan sheets:

- ☐ Grading Plans, AND/OR
- ☐ Improvement Plans, AND/OR
- ☐ Precise Grading Plan(s) (only for residential subdivisions with tract homes), AND/OR
- ☐ Other (Please specify) Click here to enter text.

Note: For each Construction Plan, the sheets submitted must incorporate all of the following:

- ☐ A BMP Table, AND
- ☐ A plan/cross-section of each verified as-built BMP, AND
- ☐ The location of each verified as-built BMP

☐ Landscape Plans: An 11" X 17" copy of the most current applicable Landscape Plan sheets where the BMPs are required to be vegetated, including:

- ☐ The Certification of Completion (Form 407), AND
- ☐ The Certificate of Approval from PDS Landscape Architect

Note: For each Landscape Plan, the sheets submitted must show the location of each verified as-built BMP.

Required only for Verifications for Partial Record Plans

☐ If this is a partial record plan verification, please include the following:

- ☐ A list of previously submitted Verification Forms (**Table 2, A**)
- ☐ A map of DMAs and BMPs (**Table 2, B**)

PART 4 Preparer's Certification

By signing below, I certify that the BMP(s) listed in Table 3 of this Verification Form have been constructed and all are in substantial conformance with the approved plans and applicable regulations. I understand the County reserves the right to inspect the above BMPs to verify compliance with the approved plans and Watershed Protection Ordinance (WPO). Should it be determined that the BMPs were not constructed to plan or code, corrective actions may be necessary before permits can be closed.

Note: Structural BMPs (Table 3, Part A) must be certified by a licensed professional engineer.

Please sign and, if applicable, provide your seal below.

[SEAL]

Preparer's Printed Name:

____Click here to enter text._____

Email: _Click here to enter text._____

Phone Number: _Click here to enter text._____

Preparer's Signed Name:

_____

Date: _Click here to enter text._____

COUNTY - OFFICIAL USE ONLY:

For County Inspectors

County Department: _____

Date verification received from EOW: _____

By signing below, County Inspector concurs that every noted BMP has been installed per plan.

Inspector Name: _____

Inspector's Signature: _____ Date: _____

For Building Division Only

Inspection Supervisor Name: _____

Inspector Supervisor's Signature: _____ Date: _____

PDCI & Building, along with the rest of this package, please provide to DPW WPP:

☐ A copy of the final accepted SWQMP and any accepted addendum

For Watershed Protection Program Only

Date Received: _____

WPP Reviewer: _____

WPP Reviewer concurs that the BMPs accepted in **Part 2** above may be entered into inventory.

WPP Reviewer's Signature: _____ Date: _____

11.0 Cover Sheet and General Requirements

- All Structural BMPs must have a plan and mechanism to ensure on-going maintenance. Use the table below to document the types of agreements to be submitted for the PDP and submit them under cover of this sheet.
- See BMPDM Section 7.3 for a description of maintenance categories and responsibilities. Note that since Category 3 and 4 BMPs are County-maintained, they do not require maintenance agreements.

a. Applicability of Maintenance Agreements

Check the boxes below to indicate which types of agreements are included with this attachment.

☒ Maintenance Notification (Category 1 BMPs)

- Exhibit A: Project Site Vicinity; Project Site Map; and a map for each BMP and its Drainage Management Area
- Exhibit B: BMP Maintenance Plan (see below)

☒ Stormwater Maintenance Agreement (Category 2 BMPs)

- Exhibit A: Legal Description of Property
- Exhibit B: BMP Maintenance Plan (see below)
- Exhibit C: Project Site Vicinity Map

Maintenance agreement templates and instructions are provided on the County's website:

www.sandiegocounty.gov/stormwater under the Development Resources tab.

PDP applicants contact County staff to ensure they have the most current forms.

b. Maintenance Plan Requirements

Use this checklist to confirm that each maintenance plan includes the following that as applicable.

☒ Specific **maintenance indicators and actions** for proposed structural BMP(s). These must be based on based on maintenance indicators presented in BMP Design Fact Sheets in Appendix E and enhanced to reflect actual proposed components of the structural BMP(s).

☐ **Access** to inspect and perform maintenance on the structural BMP(s). TO BE PROVIDED DURING MINISTERIAL SUBMITTAL

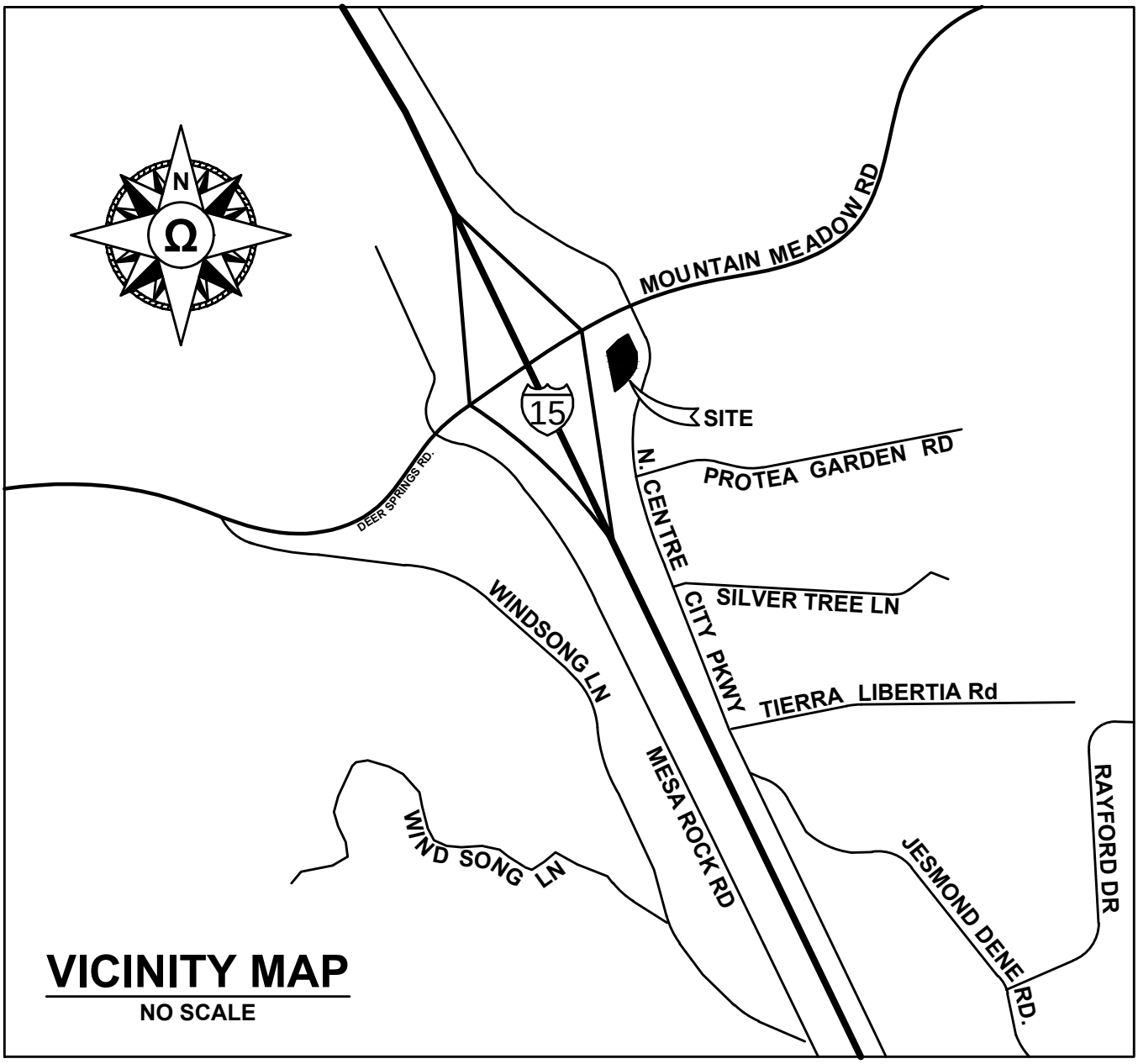
☐ Features to **facilitate inspection** (e.g., observation ports, cleanouts, silt posts, or other features that allow the inspector to view necessary components of the structural BMP and compare to maintenance thresholds).

N/A ☐ Manufacturer and part number for **proprietary parts** of structural BMP(s) when applicable.

☒ **Maintenance thresholds** specific to the structural BMP(s), with a location-specific frame of reference (e.g., level of accumulated materials that triggers removal of the materials, to be identified based on viewing marks on silt posts or measured with a survey rod with respect to a fixed benchmark within the BMP).

☐ Recommended **equipment** to perform maintenance. TO BE PROVIDED DURING MINISTERIAL SUBMITTAL

☐ When applicable, necessary special **training or certification** requirements for inspection and maintenance personnel such as confined space entry or hazardous waste management.



VICINITY MAP

NO SCALE

E.7 SD-A Tree Wells

Tree Wells (Source: County of San Diego LID Manual – EOA, Inc.)

MS4 Permit Category

Site Design
Retention

Manual Category

Site Design
Infiltration

Applicable Performance Standard

Site Design
Pollutant Control
Flow Control

Primary Benefits

Volume Reduction

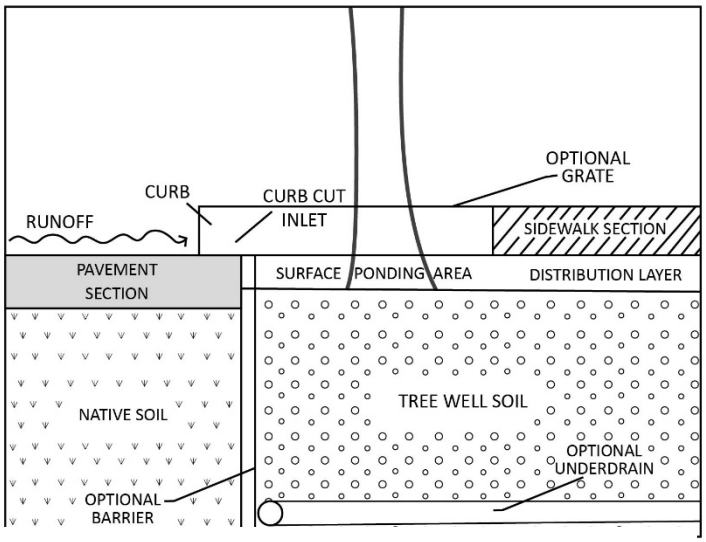
Description

Trees planted to intercept rainfall and runoff as described in this fact sheet may be used as storm water management measures to provide runoff reduction of the DCV per Appendix B.1.4. Additional benefits associated with tree wells, include energy conservation, air quality improvement, and aesthetic enhancement. In addition to the requirements provided in this fact sheet, tree wells located in the County Right-of-Way shall follow requirements in Appendix K of this manual. Deviations from the outlined criteria may be approved at the discretion of County staff. Typical storm water management benefits associated with trees include:

- **Interception of rainfall** – tree surfaces (roots, foliage, bark, and branches) intercept, evaporate, store, or convey precipitation to the soil before it reaches surrounding impervious surfaces
- **Reduced erosion** – trees protect denuded area by intercepting or reducing the velocity of rain drops as they fall through the tree canopy
- **Increased infiltration** – soil conditions created by roots and fallen leaves promote infiltration
- **Treatment of storm water** – trees provide treatment through uptake of nutrients and other storm water pollutants (phytoremediation) and support of other biological processes that break down pollutants

Typical tree well system components include:

- Trees of the appropriate species for site conditions and constraints. Refer to the Plant List in this fact sheet.
- Available soil media reservoir volume based on mature tree size, soil type, water availability, surrounding land uses, and project goals
- Optional suspended pavement design to provide structural support for adjacent pavement without requiring compaction of underlying layers



Schematic of Tree Well

- Optional root barrier devices as needed; a root barrier is a device installed in the ground, between a tree and the sidewalk, intended to guide roots down and away from the sidewalk in order to prevent sidewalk lifting from tree roots.
- Optional tree grates; to be considered to maximize available space for pedestrian circulation and to protect tree roots from compaction related to pedestrian circulation; tree grates are typically made up of porous material that will allow the runoff to soak through.
- Optional shallow surface depression for ponding of excess runoff
- Optional planter box drain

Design Adaptations for Project Goals

Site design BMP to provide incidental treatment. Tree wells primarily function as site design BMPs for incidental treatment.

Pollutant Control BMP to provide treatment. Project proponents are allowed to design trees to reduce the volume of stormwater runoff that requires treatment, (the Design Capture Volume [DCV]), or completely fulfill the pollutant control BMP requirements by retaining the entire DCV. Benefits from tree wells are accounted for by using the volume reduction values in Table B.1-3 presented in Appendix B. This credit can apply to other trees that are used for landscaping purposes that meet the same criteria. Project proponents are required to provide calculations supporting the amount of credit claimed from implementing trees within the project footprint.

Flow Control BMP to meet hydromodification requirements. Project proponents are also allowed to design tree wells as a flow control BMP. Benefits from tree wells are accounted for by using the

DCV multipliers listed below. Project proponents are required to provide calculations showing that the entire DCV including the DCV multiplier is retained.

Design Criteria and Considerations

Tree Wells, whether designed as Site Design BMPs, as Stormwater Pollutant Control BMP, or as a Flow Control BMP must meet the following design criteria and considerations, and if placed in the right-of-way must be consistent with the County of San Diego Green Streets Design Criteria and Green Streets Standard Drawings in Appendix K. Deviations from the below criteria may be approved at the discretion of the County staff if it is determined to be appropriate:

	Siting and Design	*Intent/Rationale*
☐	**Tree species** is appropriately chosen for the development (private or public). For public rights-of-ways, local planning guidelines and zoning provisions for the permissible species and placement of trees are consulted. A list of trees appropriate for site design that can be used by all county municipalities are provided in this fact sheet.	Proper tree placement and species selection minimizes problems such as pavement damage by surface roots and poor growth.
☐	**Tree well placement:** ensure area is graded; and the well is located so that full amount of DCV reduction drains to the well.	Minimizes short-circuiting of run off and assures DCV reductions are retained onsite.

Siting and Design	*Intent/Rationale*
☐ **Location of trees planted along public streets** follows guidance on green infrastructure (Appendix K). Vehicle and pedestrian line of sight and clear recovery zones are considered in tree selection and placement. Unless exemption is granted by County staff the following minimum tree separation distance is followed Improvement / Minimum distance to tree well: Traffic Signal, Stop sign — 20 feet Underground Utility lines (except sewer) — 5 feet Sewer Lines — 10 feet Above ground utility structures (Transformers, Hydrants, Utility poles, etc.) — 10 feet Driveways — 10 feet Intersections (intersecting curb lines of two streets) — 25 feet	Roadway safety for both vehicular and pedestrian traffic is a key consideration for placement along public streets.
☐ **Underground utilities and overhead wires** are considered in the design and avoided or circumvented. Underground utilities are routed around or through the planter in suspended pavement applications. All underground utilities are protected from water and root penetration.	Tree growth can damage utilities and overhead wires resulting in service interruptions. Protecting utilities routed through the planter prevents damage and service interruptions. Refer to Section 6.6 of the Green Streets Design Criteria in Appendix K for guidelines regarding utility placement and potential conflict with BMP facilities.
☐ Suspended pavement was used for confined Tree Well soil volume. Suspended pavement design was developed where appropriate to minimize soil compaction and improve infiltration and filtration capabilities.	Suspended pavement designs as shown in Page 7 of the Green Streets Guidelines in Appendix K provide structural support without compaction of the underlying layers, thereby promoting tree growth.

Siting and Design		*Intent/Rationale*
	Suspended pavement was constructed with an approved structural cell.	Recommended structural cells include poured in place concrete columns, Silva Cells manufactured by Deeproot Green Infrastructures and Stratacell and Stratavault systems manufactured by Citygreen Systems.
☐	A minimum soil volume of 2 cubic feet per square foot of mature tree canopy projection area is provided for each tree. Canopy projection area is the ground area beneath the mature tree, measured at the drip line. Soil volume must be within 1.5 times the mature tree canopy radius. Soil depth shall be a minimum of 30 inches deep, preferably 36 inches deep. When placing tree well next to curb use Structural Soil as outlined in the section below titled "Confined Tree Well Soil Volume" and use Specifications in Appendix K Use Amended Soil per Fact Sheet SD-F in all other cases.	The minimum soil volume ensures that there is adequate storage volume to allow for unrestricted evapotranspiration and infiltration.
☐	To claim credit for existing trees, the root structure of existing tree shall be protected and additional soil volumes provided to meet the above requirements. A berm or well must be constructed around the perimeter of the soil volume to be credited and an inlet structure must be of the appropriate size to allow runoff to enter the well. Considerations should be made to prevent root and water intrusion damage to surrounding infrastructure.	The minimum soil volume ensures that there is adequate storage volume to allow for unrestricted storage, evapotranspiration, and infiltration.
☐	DCV from the tributary area draining to the tree is equal to or greater than the tree credit volume	The minimum tributary area ensures that the tree receives enough runoff to fully utilize the infiltration and evapotranspiration potential provided. In cases where the minimum tributary area is not provided, the tree credit volume

Siting and Design		*Intent/Rationale*
		must be reduced proportionately to the actual tributary area.
☐	Inlet opening to the tree that is at least 18 inches wide. A minimum 2 inch drop in grade from the inlet to the finish grade of the tree. Grated inlets are allowed for pedestrian circulation. Grates need to be ADA compliant and have sufficient slip resistance.	Design requirement to ensure that the runoff from the tributary area does not bypass the BMP. Different inlet openings and drops in grade may be allowed at the discretion of County staff if calculations are shown that the diversion flow rate (Appendix B.) from the tributary area can be conveyed to the tree. In cases where the inlet capacity is limiting the amount of runoff draining to the tree, the tree credit volume must be reduced proportionately.

Conceptual Design and Sizing Approach for Site Design

Determine the areas where tree wells can be used in the site design to achieve incidental treatment. Tree wells reduce runoff volumes from the site. Refer to Appendix B.2. Document the proposed tree locations in the SWQMP.

Conceptual Design and Sizing Approach for Pollutant Control

When trees are proposed as a storm water pollutant control BMP, the project proponent must submit detailed calculations for the DCV treated by trees. Document the proposed tree locations on the BMP Plan & DMA Map, and provide sizing calculations in the SWQMP Attachment following the steps in Appendix B.

Conceptual Design and Sizing Approach for Flow Control

When trees are proposed as a flow control BMP, the project proponent must submit detailed calculations for the Required Retention Volume (RRV) treated by trees. Document the proposed tree locations on the BMP Plan & DMA Map, and provide sizing calculations in the SWQMP Attachment. Tree Wells that are designed to meet flow control requirements are designated as SSD BMPs.

1. **Determine how much volume you need**. The Required Retention Volume (RRV) is the volume of rainfall that must be retained by the tree wells in the DMA to meet flow control requirements. It is calculated by multiplying the DCV by a DCV multiplier.

a. Determine the DCV. See Appendix B.

b. Determine the DCV Multiplier. The DCV Multiplier is based on two factors: (1) The tree well soil depth and, (2) The Hydrologic Soil Group. Once you know both values, determine the DCV Multiplier using this table:

c. Calculate the Required Retention Volume (DCV x DCV Multiplier). Calculate the RRV by multiplying the DCV by the DCV Multiplier. This is the volume of runoff that must be offset by the Tree Well Credit Volume. Repeat this process for each DMA.

Minimum Tree Well Soil Depth (inches)	Hydrologic Soil Group				
	A	B	C	D (Default)	
30"	1.60	2.20	2.50	2.90	DCV Multiplier
36"	1.80	2.47	2.83	3.17	
42"	2.00	2.73	3.17	3.43	
48"	2.20	3.00	3.50	3.70	

DCV Multiplier Table

Tree Well Soil Depth is the vertical distance from the top to the bottom of the soil layer in the tree well. **Hydrologic Soil Group** describes the native soil surrounding the tree well. Soil type affects how well water can infiltrate into the area surrounding the tree well. Group A soils provide the most infiltration and Group D the least. If your soil type is unknown, you can assume Group D. But this will result in larger DCV Multipliers, and in turn increase the size or number of tree wells needed.

Alternative Proposals: You can also propose RRV values or use methods and assumptions different than those described here. Proposals must be based on SWMM modeling or other methods acceptable to the County.

2. **Determine how much volume you have**. The Tree Well Credit Volume is the volume of runoff retention in cubic feet per tree (ft^3/tree) to be provided by each tree well (or group) in the DMA. Together retain a volume that is equal to or greater than the RRV for the DMA.

   The volume credited for each tree well is based on the mature canopy diameter of the tree species selected. Any species listed below can be used in a tree well so long as it meets all other applicable restrictions and requirements for the project area. Native and drought tolerant species are required where feasible.

	Botanical Name	Common Name	Mature Height (ft)	Mature Canopy Diameter (ft)	Credit Volume per Tree (ft3)
1	*Ceanothus 'Ray Hartman"*	California Mountain Lillac	30	**10**	**40**
2	*Pittosporum Phillyraeoides*	Willow Pittosporum	25	**15**	**100**
3	*Salix Lasiolepsis*	Arroyo Willow	25		
4	*Arbutus Unedo*	Strawberry Tree	30	**20**	**180**
5	*Prunus Ilicifolia*	Hollyleaf Cherry	30		
6	*Prunus Lynoii*	Catalina Cherry	40		
7	*Cercis Occidentalis*	Western Redbud	25	**25**	**290**
8	*Heteromeles Arbutifolia*	Toyon, Christmas Berry	25		
9	*Alnus Rhombifolia*	White Elder	75	**30**	**420**
10	*Arbutus 'Marina'*	Hybrid Strawberry Tree	35		
11	*Chilopsis Linearis*	Desert Willow	30		
12	*Lyonothamnus Floribundus*	Catalina Ironwood	50		
13	*Magnolia Grandiflora*	Southern Magnolia	40		
14	*Pinus Torreyana*	Torrey Pines	80		
15	*Platanus Racemosa*	California sycamore	60		
16	*Quercus Agrifolia*	Coast Live Oak	70		
17	*Quercus Engelmannii*	Engelmann Oak	50		
18	*Quercus Suber*	Cork Oak	40		
19	*Sambucus Mexicana*	Blue Elderberry	30		

Tree Palette Table

Below are sources for Tree Palette Mature Height and Mature Canopy Diameter:

A. Water Efficient Landscape Design Manual, County of San Diego, 2016
B. Sustainable Landscapes Guidelines, San Diego County Water Authority, 2015
C. Low Impact Development Handbook, County of San Diego, 2014
D. Low Impact Development Design Manual, City of San Diego, 2011
E. Street Tree Selection Guide, City of San Diego, 2013
F. Environmentally Friendly Garden Plant List, City of San Diego, 2004
G. BMP Design Manual, County of San Diego, 2016
H. California Native Plant Society. 2017

Alternative Species. Tree species other than those listed are allowable, but must be approved by the County. If you know the mature canopy diameter of the species you want to propose, use the values in the table to determine its credit volume. Note that even if you select a species with a canopy diameter greater than **30 feet**, the maximum credit any tree can generate is **420 ft^3**.

3. **Determine if you have enough volume**. Compare your total Tree Well Credit Volume from Step 2 to the RRV you calculated in Step 1. Once your Credit Volume is equal to or greater than your RRV, this requirement is satisfied. If your Credit Volume is initially too low, adjust your design either to (1) increase it with more or bigger trees, or (2) decrease the RRV through DCV reductions.

Tree wells will normally be placed at the **discharge point** of the DMA, either individually or in groups. If some of them will retain runoff from different areas in the DMA, RRV and DCV calculations must be specific to each subarea.

If an **underdrain** is proposed for the Tree Well, the sizing factors shown in the DCV Multiplier Table cannot be used, and instead continuous simulation modeling should be performed. This would allow to obtain credit for soil volume underneath the underdrain.

Tree Planting Design in New or Reconstructed Streetscapes

1. Maximized open soil area for tree planting is the most cost effective method of achieving the required soil volume.

2. Tree wells within sidewalks shall have a minimum open area of four feet wide by six feet long. Larger areas may be required to accommodate large root balls.

3. Tree well soil characteristics shall meet the requirements of SD-F Amended Soil.

Structural Requirements for Confined Tree Well Soil Volume

In order to provide adequate soil volume for tree wells, soils may be placed confined beneath adjacent paved surfaces. Acceptable soil systems capable of carrying D-50 loading include structural soils, structural slabs, and structural cells:

1. Structural soil systems include CU-StructuralSoil™, Stalite Structural Soil, or equivalent.

2. Suspended pavements that allow uncompacted growing soil beneath the sidewalk include; structural slabs that span between structural supports, structural cells, and other commercially available structural systems. See Page 7 of the Green Streets Guidelines in Appendix K for illustrations. Manufacturer details and certification must be provided for commercial systems. Structural calculations and details must be provided for structural slab installations. Structural cells are commercially-available structural systems placed subsurface that support the sidewalk and are filled with amended soil (SD-F). Manufacturer details and certification must be provided for commercial systems.

Stormwater Retention and Treatment Volume

Tree wells with expanded soil volume will serve as a method of capturing and retaining the required volume of stormwater in accordance with County requirements in Appendix B of this manual. These facilities can be designed to meet the County requirements when surface ponding volume is provided, whether designed as an enclosed plant bed with covered soil volume, or a continuous open area (either mulched or with turf) with soil volume under the adjacent sidewalk.

Maintenance Overview

Normal Expected Maintenance. Tree health shall be maintained as part of normal landscape maintenance. Additionally, ensure that storm water runoff can be conveyed into the tree well as designed. That is, the opening that allows storm water runoff to flow into the tree well (e.g., a curb opening, tree grate, or surface depression) shall not be blocked, filled, re-graded, or otherwise changed in a manner that prevents storm water from draining into the tree well. A summary table of standard inspection and maintenance indicators is provided within this Fact Sheet.

Non-Standard Maintenance or BMP Failure. Trees wells are site design BMPs that normally do not require maintenance actions beyond routine landscape maintenance. The normal expected maintenance described above ensures the BMP functionality. If changes have been made to the tree well entrance / opening such that runoff is prevented from draining into the tree well (e.g., a curb inlet opening is blocked by debris or a grate is clogged causing runoff to flow around instead of into the tree well, or a surface depression has been filled so runoff flows away from the tree well), the BMP is not performing as intended to protect downstream waterways from pollution and/or erosion. Corrective maintenance will be required to restore drainage into the tree well as designed.

Surface ponding of runoff directed into tree wells is expected to infiltrate/evapotranspirate within 24-96 hours following a storm event. Surface ponding longer than approximately 24 hours following a storm event may be detrimental to vegetation health, and surface ponding longer than approximately 96 hours following a storm event poses a risk of vector (mosquito) breeding. Poor drainage can result from clogging or compaction of the soils surrounding the tree. Loosen or replace the soils to restore drainage.

Other Special Considerations. Site design BMPs, such as tree wells, installed within a new development or redevelopment project are components of an overall storm water management strategy for the project. The presence of site design BMPs within a project is usually a factor in the determination of the amount of runoff to be managed with structural BMPs (i.e., the amount of runoff expected to reach downstream retention or biofiltration basins that process storm water runoff from the project as a whole). When site design BMPs are not maintained or are removed, this can lead to clogging or failure of downstream structural BMPs due to greater delivery of runoff and pollutants than intended for the structural BMP. Therefore, the County Engineer may require confirmation of maintenance of site design BMPs as part of their structural BMP maintenance documentation requirements. Site design BMPs that have been installed as part of the project should not be removed, nor should they be bypassed by re-routing roof drains or re-grading surfaces within the project. If changes are necessary, consult the County Engineer to determine requirements.

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Threshold/Indicator	Maintenance Action	Inspection and Maintenance Frequency
Entrance / opening to the tree well is blocked such that storm water will not drain into the tree well (e.g., a curb inlet opening is blocked by debris or a grate is clogged causing runoff to flow around instead of into the tree well; or a surface depression is filled such that runoff drains away from the tree well)	Make repairs as appropriate to restore drainage into the tree well.	• Inspect monthly. • Maintain when needed.

SD-1
Tree Wells

BMP MAINTENANCE FACT SHEET
FOR
SITE DESIGN BMP SD-1 TREE WELLS

Tree wells as site design BMPs are trees planted in configurations that allow storm water runoff to be directed into the soil immediately surrounding the tree. The tree may be contained within a planter box or structural cells. The surrounding area will be graded to direct runoff to the tree well. There may be features such as tree grates, suspended pavement design, or shallow surface depressions designed to allow runoff into the tree well. Typical tree well components include:

- Trees of the appropriate species for site conditions and constraints
- Available growing space based on tree species, soil type, water availability, surrounding land uses, and project goals
- Entrance/opening that allows storm water runoff to flow into the tree well (e.g., a curb opening, tree grate, or surface depression)
- Optional suspended pavement design to provide structural support for adjacent pavement without requiring compaction of underlying layers
- Optional root barrier devices as needed; a root barrier is a device installed in the ground, between a tree and the sidewalk, intended to guide roots down and away from the sidewalk in order to prevent sidewalk lifting from tree roots
- Optional tree grates; to be considered to maximize available space for pedestrian circulation and to protect tree roots from compaction related to pedestrian circulation; tree grates are typically made up of porous material that will allow the runoff to soak through
- Optional shallow surface depression for ponding of excess runoff
- Optional planter box drain

Normal Expected Maintenance

Tree health shall be maintained as part of normal landscape maintenance. Additionally, ensure that storm water runoff can be conveyed into the tree well as designed. That is, the opening that allows storm water runoff to flow into the tree well (e.g., a curb opening, tree grate, or surface depression) shall not be blocked, filled, re-graded, or otherwise changed in a manner that prevents storm water from draining into the tree well. A summary table of standard inspection and maintenance indicators is provided within this Fact Sheet.

Non-Standard Maintenance or BMP Failure

Tree wells are site design BMPs that normally do not require maintenance actions beyond routine landscape maintenance. The normal expected maintenance described above ensures the BMP functionality. If changes have been made to the tree well entrance / opening such that runoff is prevented from draining into the tree well (e.g., a curb inlet opening is blocked by debris or a grate is clogged causing runoff to flow around instead of into the tree well, or a surface depression has been filled so runoff flows away from the tree well), the BMP is not performing as intended to protect downstream waterways from pollution and/or erosion. Corrective maintenance will be required to restore drainage into the tree well as designed.

Surface ponding of runoff directed into tree wells is expected to infiltrate/evapotranspirate within 24-96 hours following a storm event. Surface ponding longer than approximately 24 hours following a storm event may be detrimental to vegetation health, and surface ponding longer than approximately 96 hours following a storm event poses a risk of vector (mosquito) breeding. Poor drainage can result from clogging or compaction of the soils surrounding the tree. Loosen or replace the soils to restore drainage.

Other Special Considerations

Site design BMPs, such as tree wells, installed within a new development or redevelopment project are components of an overall storm water management strategy for the project. The presence of site design BMPs within a project is usually a factor in the determination of the amount of runoff to be managed with structural BMPs (i.e., the amount of runoff expected to reach downstream retention or biofiltration basins that process storm water runoff from the project as a whole). When site design BMPs are not maintained or are removed, this can lead to clogging or failure of downstream structural BMPs due to greater delivery of runoff and pollutants than intended for the structural BMP. Therefore, the [City Engineer] may require confirmation of maintenance of site design BMPs as part of their structural BMP maintenance documentation requirements. Site design BMPs that have been installed as part of the project should not be removed, nor should they be bypassed by re-routing roof drains or re-grading surfaces within the project. If changes are necessary, consult the [City Engineer] to determine requirements.

Summary of Standard Inspection and Maintenance

The property owner is responsible to ensure inspection, operation and maintenance of permanent BMPs on their property unless responsibility has been formally transferred to an agency, community facilities district, homeowners association, property owners association, or other special district.

Maintenance frequencies listed in this table are average/typical frequencies. Actual maintenance needs are site-specific, and maintenance may be required more frequently. Maintenance must be performed whenever needed, based on maintenance indicators presented in this table. The BMP owner is responsible for conducting regular inspections to see when maintenance is needed based on the maintenance indicators. During the first year of operation of a structural BMP, inspection is recommended at least once prior to August 31 and then monthly from September through May. Inspection during a storm event is also recommended. After the initial period of frequent inspections, the minimum inspection and maintenance frequency can be determined based on the results of the first year inspections.

Threshold/Indicator	Maintenance Action	Inspection and Maintenance Frequency
Tree health	Routine actions as necessary to maintain tree health.	• Inspect monthly. • Maintain when needed.
Dead or diseased tree	Remove dead or diseased tree. Replace per original plans.	• Inspect monthly. • Maintain when needed.
Standing water in tree well for longer than 24 hours following a storm event Surface ponding longer than approximately 24 hours following a storm event may be detrimental to tree health	Loosen or replace soils surrounding the tree to restore drainage.	• Inspect monthly and after every 0.5-inch or larger storm event. If standing water is observed, increase inspection frequency to after every 0.1-inch or larger storm event. • Maintain when needed.
Presence of mosquitos/larvae For images of egg rafts, larva, pupa, and adult mosquitos, see http://www.mosquito.org/biology	Disperse any standing water from the tree well to nearby landscaping. Loosen or replace soils surrounding the tree to restore drainage (and prevent standing water).	• Inspect monthly and after every 0.5-inch or larger storm event. If mosquitos are observed, increase inspection frequency to after every 0.1-inch or larger storm event. • Maintain when needed

SD-1
Tree Wells

SUMMARY OF STANDARD INSPECTION AND MAINTENANCE FOR SD-1 TREE WELLS		
The property owner is responsible to ensure inspection, operation and maintenance of permanent BMPs on their property unless responsibility has been formally transferred to an agency, community facilities district, homeowners association, property owners association, or other special district. Maintenance frequencies listed in this table are average/typical frequencies. Actual maintenance needs are site-specific, and maintenance may be required more frequently. Maintenance must be performed whenever needed, based on maintenance indicators presented in this table. The BMP owner is responsible for conducting regular inspections to see when maintenance is needed based on the maintenance indicators. During the first year of operation of a structural BMP, inspection is recommended at least once prior to August 31 and then monthly from September through May. Inspection during a storm event is also recommended. After the initial period of frequent inspections, the minimum inspection and maintenance frequency can be determined based on the results of the first year inspections.		
Threshold/Indicator	**Maintenance Action**	**Typical Maintenance Frequency**
Tree health	Routine actions as necessary to maintain tree health.	• Inspect monthly. • Maintenance when needed.
Dead or diseased tree	Remove dead or diseased tree. Replace per original plans.	• Inspect monthly. • Maintenance when needed.
Standing water in tree well for longer than 24 hours following a storm event Surface ponding longer than approximately 24 hours following a storm event may be detrimental to tree health	Loosen or replace soils surrounding the tree to restore drainage.	• Inspect monthly and after every 0.5-inch or larger storm event. If standing water is observed, increase inspection frequency to after every 0.1-inch or larger storm event. • Maintenance when needed.
Presence of mosquitos/larvae For images of egg rafts, larva, pupa, and adult mosquitos, see http://www.mosquito.org/biology	Disperse any standing water from the tree well to nearby landscaping. Loosen or replace soils surrounding the tree to restore drainage (and prevent standing water).	• Inspect monthly and after every 0.5-inch or larger storm event. If mosquitos are observed, increase inspection frequency to after every 0.1-inch or larger storm event. • Maintenance when needed
Entrance / opening to the tree well is blocked such that storm water will not drain into the tree well (e.g., a curb inlet opening is blocked by debris or a grate is clogged causing runoff to flow around instead of into the tree well; or a surface depression is filled such that runoff drains away from the tree well)	Make repairs as appropriate to restore drainage into the tree well.	• Inspect monthly. • Maintenance when needed.

References

American Mosquito Control Association.
http://www.mosquito.org/
County of San Diego. 2014. Low Impact Development Handbook.
http://www.sandiegocounty.gov/content/sdc/dpw/watersheds/susmp/lid.html
San Diego County Copermittees. 2016. Model BMP Design Manual, Appendix E, Fact Sheet SD-1.
http://www.projectcleanwater.org/index.php?option=com_content&view=article&id=250&Itemid=220

SD-1
Tree Wells

Date:	Inspector:	BMP ID No.:
Permit No.:	APN(s):	
Property / Development Name:	Responsible Party Name and Phone Number:	
Property Address of BMP:	Responsible Party Address:	

INSPECTION AND MAINTENANCE CHECKLIST FOR SD-1 TREE WELLS PAGE 1 of 2			
Threshold/Indicator	**Maintenance Recommendation**	**Date**	**Description of Maintenance Conducted**
Dead or diseased tree Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Remove dead or diseased tree ☐ Replace per original plans ☐ Other / Comments:		
Standing water in tree well for longer than 24 hours following a storm event Surface ponding longer than approximately 24 hours following a storm event may be detrimental to tree health Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Loosen or replace soils surrounding the tree to restore drainage ☐ Other / Comments:		

SD-1
Tree Wells

Date:	Inspector:	BMP ID No.:
Permit No.:	APN(s):	

INSPECTION AND MAINTENANCE CHECKLIST FOR SD-1 TREE WELLS PAGE 2 of 2			
Threshold/Indicator	**Maintenance Recommendation**	**Date**	**Description of Maintenance Conducted**
Presence of mosquitos/larvae For images of egg rafts, larva, pupa, and adult mosquitos, see http://www.mosquito.org/biology Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Disperse any standing water from the tree well to nearby landscaping ☐ Loosen or replace soils surrounding the tree to restore drainage (and prevent standing water) ☐ Other / Comments:		
Entrance / opening to the tree well is blocked such that storm water will not drain into the tree well (e.g., a curb inlet opening is blocked by debris or a grate is clogged causing runoff to flow around instead of into the tree well; or a surface depression is filled such that runoff drains away from the tree well) Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Make repairs as appropriate to restore drainage into the tree well ☐ Other / Comments:		

E.19 BF-1 Biofiltration

Location: 43rd Street and Logan Avenue, San Diego, California

MS4 Permit Category
Biofiltration

Manual Category
Biofiltration

Applicable Performance Standard
Pollutant Control
Flow Control

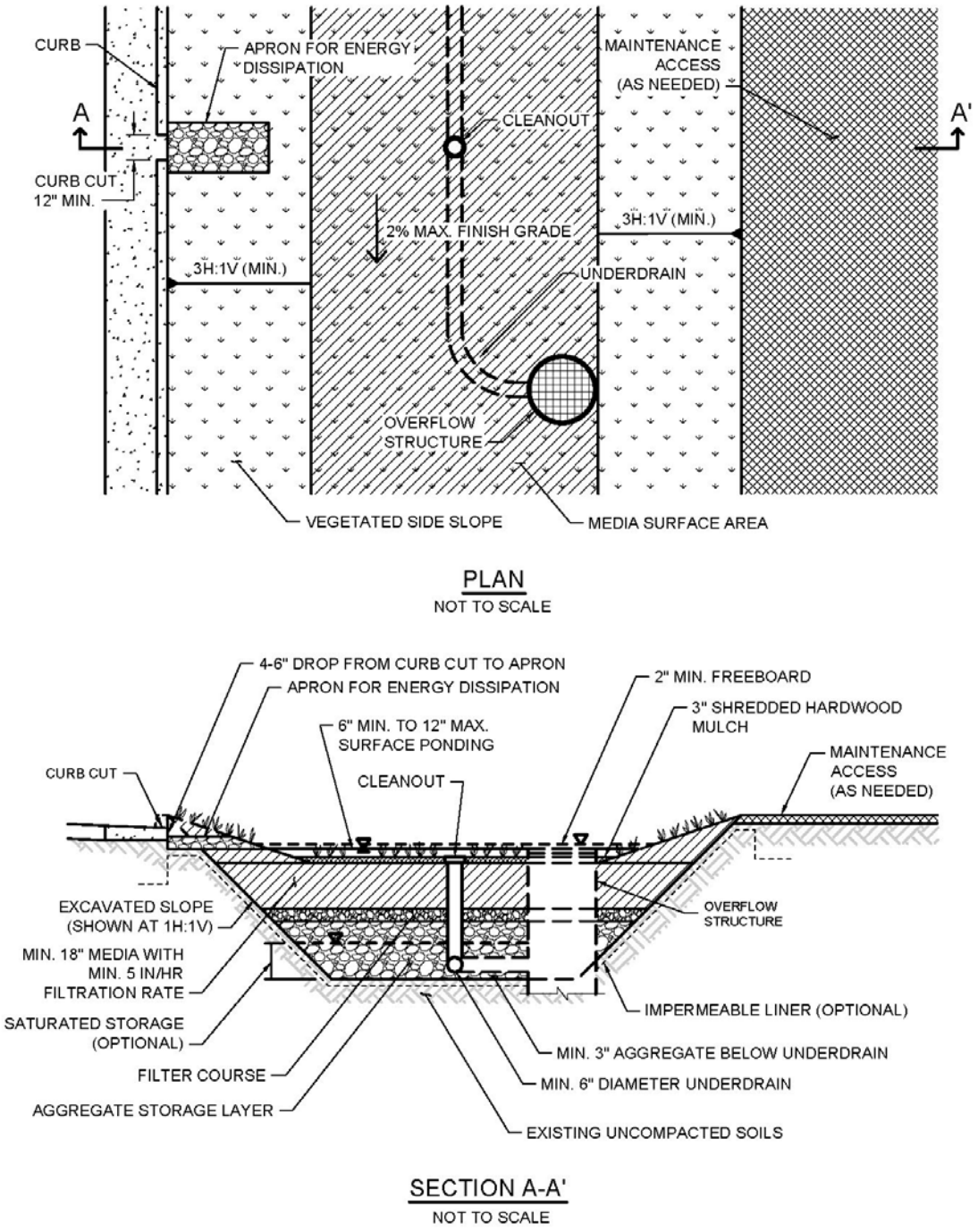
Primary Benefits
Treatment
Volume Reduction (Incidental)
Peak Flow Attenuation (Optional)

Description

Biofiltration (Bioretention with underdrain) facilities are vegetated surface water systems that filter water through vegetation, and soil or engineered media prior to discharge via underdrain or overflow to the downstream conveyance system. Bioretention with underdrain facilities are commonly incorporated into the site within parking lot landscaping, along roadsides, and in open spaces. Because these types of facilities have limited or no infiltration, they are typically designed to provide enough hydraulic head to move flows through the underdrain connection to the storm drain system. Treatment is achieved through filtration, sedimentation, sorption, biochemical processes and plant uptake.

Typical biofiltration components include:

- Inflow distribution mechanisms (e.g, perimeter flow spreader or filter strips)
- Energy dissipation mechanism for concentrated inflows (e.g., splash blocks or riprap)
- Shallow surface ponding for captured flows
- Side slope and basin bottom vegetation selected based on expected climate and ponding depth
- Non-floating mulch layer
- Media layer (planting mix or engineered media) capable of supporting vegetation growth
- Filter course layer consisting of aggregate to prevent the migration of fines into uncompacted native soils or the aggregate storage layer
- Aggregate storage layer with underdrain(s)
- Impermeable liner or uncompacted native soils at the bottom of the facility
- Overflow structure



Typical plan and Section view of a Biofiltration BMP

Design Adaptations for Project Goals

Biofiltration Treatment BMP for storm water pollutant control. The system is lined or un-lined to provide incidental infiltration, and an underdrain is provided at the bottom to carry away filtered

runoff. This configuration is considered to provide biofiltration treatment via flow through the media layer. Storage provided above the underdrain within surface ponding, media, and aggregate storage is considered included in the biofiltration treatment volume. Saturated storage within the aggregate storage layer can be added to this design by raising the underdrain above the bottom of the aggregate storage layer or via an internal weir structure designed to maintain a specific water level elevation.

Integrated storm water flow control and pollutant control configuration. The system can be designed to provide flow rate and duration control by primarily providing increased surface ponding and/or having a deeper aggregate storage layer above the underdrain. This will allow for significant detention storage, which can be controlled via inclusion of an outlet structure at the downstream end of the underdrain.

Recommended Siting Criteria

	Siting Criteria	*Intent/Rationale*
☐	Placement observes geotechnical recommendations regarding potential hazards (e.g., slope stability, landslides, liquefaction zones) and setbacks (e.g., slopes, foundations, utilities).	Must not negatively impact existing site geotechnical concerns.
☐	An impermeable liner or other hydraulic restriction layer is included if site constraints indicate that infiltration or lateral flows should not be allowed.	Lining prevents storm water from impacting groundwater and/or sensitive environmental or geotechnical features. Incidental infiltration, when allowable, can aid in pollutant removal and groundwater recharge.
☐	Contributing tributary area must be ≤ 5 acres (≤ 1 acre preferred).	Bigger BMPs require additional design features for proper performance. Contributing tributary area greater than 5 acres may be allowed at the discretion of County staff if the following conditions are met: 1) incorporate design features (e.g. flow spreaders) to minimize short circuiting of flows in the BMP and 2) incorporate additional design features requested by County staff for proper performance of the regional BMP.
☐	Finish grade of the facility is ≤ 2%.	Flatter surfaces reduce erosion and channelization within the facility.

Design Criteria and Considerations

Biofiltration must meet the following design criteria. Deviations from the below criteria may be approved at the discretion of County staff if it is determined to be appropriate:

Siting and Design		*Intent/Rationale*
Surface Ponding		
☐	Surface ponding is limited to a 24-hour drawdown time.	Surface ponding limited to 24 hour for plant health. Surface ponding drawdown time greater than 24-hours but less than 96 hours may be allowed at the discretion of County staff if certified by a landscape architect or agronomist.
☐	Surface ponding depth is ≥ 6 and ≤ 12 inches.	Surface ponding capacity lowers subsurface storage requirements. Deep surface ponding raises safety concerns. Surface ponding depth greater than 12 inches (for additional pollutant control or surface outlet structures or flow-control orifices) may be allowed at the discretion of County staff if the following conditions are met: 1) surface ponding depth drawdown time is less than 24 hours; and 2) safety issues and fencing requirements are considered (typically ponding greater than 18" will require a fence and/or flatter side slopes) and 3) potential for elevated clogging risk is considered.
☐	A minimum of 2 inches of freeboard is provided.	Freeboard provides room for head over overflow structures and minimizes risk of uncontrolled surface discharge.
☐	Side slopes are stabilized with vegetation and are = 3H:1V or shallower.	Gentler side slopes are safer, less prone to erosion, able to establish vegetation more quickly and easier to maintain.
Vegetation		

Siting and Design		*Intent/Rationale*
☐	Plantings are suitable for the climate and expected ponding depth. A plant list to aid in selection can be found in Appendix F.	Plants suited to the climate and ponding depth are more likely to survive.
☐	An irrigation system with a connection to water supply should be provided as needed.	Seasonal irrigation might be needed to keep plants healthy.
Mulch (Mandatory)		
☐	3 inches of well-aged, shredded hardwood mulch.	Mulch will suppress weeds and maintain moisture for plant growth.
Media Layer		
☐	Media maintains a minimum filtration rate of 5 in/hr over lifetime of facility. An initial filtration rate of 8 to 12 in/hr is recommended to allow for clogging over time; the initial filtration rate should not exceed 12 inches per hour.	A filtration rate of at least 5 inches per hour allows soil to drain between events. The initial rate should be higher than long term target rate to account for clogging over time. However an excessively high initial rate can have a negative impact on treatment performance, therefore an upper limit is needed.
☐	Media is a minimum 18 inches deep, meeting either of these two media specifications: Appendix F.2 Biofiltration Soil Media (BSM) **or** County of San Diego Low Impact Development Handbook: Appendix G -Bioretention Soil Specification (June 2014, unless superseded by more recent edition). Alternatively, for proprietary designs and custom media mixes not meeting the media specifications, the media meets the pollutant treatment performance criteria in Section F.1.1.	A deep media layer provides additional filtration and supports plants with deeper roots. Standard specifications must be followed. For non-standard or proprietary designs, compliance with F.1.1 ensures that adequate treatment performance will be provided.

Siting and Design		*Intent/Rationale*
☐	Media surface area is 3% of contributing area times adjusted runoff factor or greater. Unless demonstrated that the BMP surface area can be smaller than 3%.	Greater surface area to tributary area ratios: a) maximizes volume retention as required by the MS4 Permit and b) decrease loading rates per square foot and therefore increase longevity. Adjusted runoff factor is to account for site design BMPs implemented upstream of the BMP (such as rain barrels, impervious area dispersion, etc.). Refer to Appendix B guidance. If media surface area is under 3% of contributing area, refer to Sediment Loading calculations in Appendix B.
☐	Where receiving waters are impaired or have a TMDL for nutrients, the system is designed with nutrient sensitive media design (see fact sheet BF-2).	Potential for pollutant export is partly a function of media composition; media design must minimize potential for export of nutrients, particularly where receiving waters are impaired for nutrients.
Filter Course Layer		
☐	A filter course is used to prevent migration of fines through layers of the facility. Filter fabric is not used.	Migration of media can cause clogging of the aggregate storage layer void spaces or subgrade. Filter fabric is more likely to clog.
☐	Filter course is washed and free of fines.	Washing aggregate will help eliminate fines that could clog the facility and impede infiltration.
☐	Filter course calculations assessing suitability for particle migration prevention have been completed.	Gradation relationship between layers can evaluate factors (e.g., bridging, permeability, and uniformity) to determine if particle sizing is appropriate or if an intermediate layer is needed.
Aggregate Storage Layer		

Siting and Design		*Intent/Rationale*
☐	Class 2 Permeable per Caltrans specification 68-1.025 is recommended for the storage layer. Washed, open-graded crushed rock may be used, however a 4-6 inch washed pea gravel filter course layer at the top of the crushed rock is required.	Washing aggregate will help eliminate fines that could clog the aggregate storage layer void spaces or subgrade.
☐	The depth of aggregate provided (12-inch typical) and storage layer configuration is adequate for providing conveyance for underdrain flows to the outlet structure.	Proper storage layer configuration and underdrain placement will minimize facility drawdown time.
Inflow, Underdrain, and Outflow Structures		
☐	Inflow, underdrains and outflow structures are accessible for inspection and maintenance.	Maintenance will prevent clogging and ensure proper operation of the flow control structures.
☐	Inflow velocities are limited to 3 ft/s or less or use energy dissipation methods. (e.g., riprap, level spreader) for concentrated inflows.	High inflow velocities can cause erosion, scour and/or channeling.
☐	Curb cut inlets are at least 12 inches wide, have a 4-6 inch reveal (drop) and an apron and energy dissipation as needed.	Inlets must not restrict flow and apron prevents blockage from vegetation as it grows in. Energy dissipation prevents erosion.
☐	Underdrain outlet elevation should be a minimum of 3 inches above the bottom elevation of the aggregate storage layer.	A minimal separation from subgrade or the liner lessens the risk of fines entering the underdrain and can improve hydraulic performance by allowing perforations to remain unblocked.
☐	Minimum underdrain diameter is 6 inches.	Smaller diameter underdrains are prone to clogging.
Inflow, Underdrain, and Outflow Structures		
☐	Underdrains are made of slotted, PVC pipe conforming to ASTM D 3034 or equivalent or corrugated, HDPE pipe conforming to AASHTO 252M or equivalent.	Slotted underdrains provide greater intake capacity, clog resistant drainage, and reduced entrance velocity into the pipe, thereby reducing the chances of solids migration.

Siting and Design		*Intent/Rationale*
☐	An underdrain cleanout with a minimum 6-inch diameter and lockable cap is placed every 250 to 300 feet as required based on underdrain length.	Properly spaced cleanouts will facilitate underdrain maintenance.
☐	Overflow is safely conveyed to a downstream storm drain system or discharge point Size overflow structure to pass 100-year peak flow for on-line infiltration basins and water quality peak flow for off-line basins.	Planning for overflow lessens the risk of property damage due to flooding.

Conceptual Design and Sizing Approach for Storm Water Pollutant Control Only

To design biofiltration for storm water pollutant control only (no flow control required), the following steps should be taken:

1. Verify that siting and design criteria have been met, including placement requirements, contributing tributary area, maximum side and finish grade slopes, and the recommended media surface area tributary ratio.
2. Calculate the DCV per Appendix B based on expected site design runoff for tributary areas.
3. Use the sizing worksheet presented in Appendix B.5 to size biofiltration BMPs.

Conceptual Design and Sizing Approach when Storm Water Flow Control is Applicable

Control of flow rates and/or durations will typically require significant surface ponding and/or aggregate storage volumes, and therefore the following steps should be taken prior to determination of storm water pollutant control design. Pre-development and allowable post-project flow rates and durations should be determined as discussed in Chapter 6 of the manual.

1. Verify that siting and design criteria have been met, including placement requirements, contributing tributary area, maximum side and finish grade slopes, and the recommended media surface area tributary ratio.
2. Iteratively determine the facility footprint area, surface ponding and/or aggregate storage layer depth required to provide detention storage to reduce flow rates and durations to allowable limits. Flow rates and durations can be controlled from detention storage by altering outlet structure orifice size(s) and/or water control levels. Multi-level orifices can be used within an outlet structure to control the full range of flows.
3. If bioretention with underdrain cannot fully provide the flow rate and duration control required by this manual, an upstream or downstream structure with significant storage volume

such as an underground vault can be used to provide remaining controls.

4. After bioretention with underdrain has been designed to meet flow control requirements, calculations must be completed to verify if storm water pollutant control requirements to treat the DCV have been met.

Maintenance Overview

Normal Expected Maintenance. Biofiltration requires routine maintenance to: remove accumulated materials such as sediment, trash or debris; maintain vegetation health; maintain infiltration capacity of the media layer; replenish mulch; and maintain integrity of side slopes, inlets, energy dissipators, and outlets. A summary table of standard inspection and maintenance indicators is provided within this Fact Sheet.

Non-Standard Maintenance or BMP Failure. If any of the following scenarios are observed, the BMP is not performing as intended to protect downstream waterways from pollution and/or erosion. Corrective maintenance, increased inspection and maintenance, BMP replacement, or a different BMP type will be required.

- The BMP is not drained between storm events. Surface ponding longer than approximately 24 hours following a storm event may be detrimental to vegetation health, and surface ponding longer than approximately 96 hours following a storm event poses a risk of vector (mosquito) breeding. Poor drainage can result from clogging of the media layer, filter course, aggregate storage layer, underdrain, or outlet structure. The specific cause of the drainage issue must be determined and corrected.

- Sediment, trash, or debris accumulation greater than 25% of the surface ponding volume within one month. This means the load from the tributary drainage area is too high, reducing BMP function or clogging the BMP. This would require pretreatment measures within the tributary area draining to the BMP to intercept the materials. Pretreatment components, especially for sediment, will extend the life of components that are more expensive to replace such as media, filter course, and aggregate layers.

- Erosion due to concentrated storm water runoff flow that is not readily corrected by adding erosion control blankets, adding stone at flow entry points, or minor re-grading to restore proper drainage according to the original plan. If the issue is not corrected by restoring the BMP to the original plan and grade, the County reviewer shall be contacted prior to any additional repairs or reconstruction.

Other Special Considerations. Biofiltration is a vegetated structural BMP. Vegetated structural BMPs that are constructed in the vicinity of, or connected to, an existing jurisdictional water or wetland could inadvertently result in creation of expanded waters or wetlands. As such, vegetated structural BMPs have the potential to come under the jurisdiction of the United States Army Corps of Engineers, SDRWQCB, California Department of Fish and Wildlife, or the United States Fish and

Wildlife Service. This could result in the need for specific resource agency permits and costly mitigation to perform maintenance of the structural BMP. Along with proper placement of a structural BMP, routine maintenance is key to preventing this scenario.

Sediment Loading. Consider the effects of BMP design and tributary area land uses on the clogging potential of the BMP. Complete the sediment loading analysis included in Appendix F.

Summary of Standard Inspection and Maintenance

The property owner is responsible to ensure inspection, operation and maintenance of permanent BMPs on their property unless responsibility has been formally transferred to an agency, community facilities district, homeowners association, property owners association, or other special district.

Maintenance frequencies listed in this table are average/typical frequencies. Actual maintenance needs are site-specific, and maintenance may be required more frequently. Maintenance must be performed whenever needed, based on maintenance indicators presented in this table. The BMP owner is responsible for conducting regular inspections to see when maintenance is needed based on the maintenance indicators. During the first year of operation of a structural BMP, inspection is recommended at least once prior to August 31 and then monthly from September through May. Inspection during a storm event is also recommended. After the initial period of frequent inspections, the minimum inspection and maintenance frequency can be determined based on the results of the first year inspections.

Threshold/Indicator	Maintenance Action	Inspection and Maintenance Frequency
Accumulation of sediment, litter, or debris	Remove and properly dispose of accumulated materials, without damage to the vegetation or compaction of the media layer.	• Inspect monthly. If the BMP is 25% full* or more in one month, increase inspection frequency to monthly plus after every 0.1-inch or larger storm event. • Remove any accumulated materials found at each inspection.
Obstructed inlet or outlet structure	Clear blockage.	• Inspect monthly and after every 0.5-inch or larger storm event. • Remove any accumulated materials found at each inspection.
Damage to structural components such as weirs, inlet or outlet structures	Repair or replace as applicable	• Inspect annually. • Maintain when needed.

Threshold/Indicator	Maintenance Action	Inspection and Maintenance Frequency
Poor vegetation establishment	Re-seed, re-plant, or re-establish vegetation per original plans.	• Inspect monthly. • Maintain when needed.
Dead or diseased vegetation	Remove dead or diseased vegetation, re-seed, re-plant, or re-establish vegetation per original plans.	• Inspect monthly. • Maintain when needed.
Overgrown vegetation	Mow or trim as appropriate.	• Inspect monthly. • Maintain when needed.
2/3 of mulch has decomposed, or mulch has been removed	Remove decomposed fraction and top off with fresh mulch to a total depth of 3 inches.	• Inspect monthly. • Replenish mulch annually, or more frequently when needed based on inspection.
Erosion due to concentrated irrigation flow	Repair/re-seed/re-plant eroded areas and adjust the irrigation system.	• Inspect monthly. • Maintain when needed.

Threshold/Indicator	Maintenance Action	Inspection and Maintenance Frequency
Erosion due to concentrated storm water runoff flow	Repair/re-seed/re-plant eroded areas, and make appropriate corrective measures such as adding erosion control blankets, adding stone at flow entry points, or minor re-grading to restore proper drainage according to the original plan. If the issue is not corrected by restoring the BMP to the original plan and grade, the County reviewer shall be contacted prior to any additional repairs or reconstruction.	• Inspect after every 0.5-inch or larger storm event. If erosion due to storm water flow has been observed, increase inspection frequency to after every 0.1-inch or larger storm event. • Maintain when needed. If the issue is not corrected by restoring the BMP to the original plan and grade, the County reviewer shall be contacted prior to any additional repairs or reconstruction.
Standing water in BMP for longer than 24 hours following a storm event Surface ponding longer than approximately 24 hours following a storm event may be detrimental to vegetation health	Make appropriate corrective measures such as adjusting irrigation system, removing obstructions of debris or invasive vegetation, clearing underdrains, or repairing/replacing clogged or compacted soils.	• Inspect monthly and after every 0.5-inch or larger storm event. If standing water is observed, increase inspection frequency to after every 0.1-inch or larger storm event. • Maintain when needed.

Threshold/Indicator	Maintenance Action	Inspection and Maintenance Frequency
Presence of mosquitos/larvae For images of egg rafts, larva, pupa, and adult mosquitos, see http://www.mosquito.org/biology	If mosquitos/larvae are observed: first, immediately remove any standing water by dispersing to nearby landscaping; second, make corrective measures as applicable to restore BMP drainage to prevent standing water. If mosquitos persist following corrective measures to remove standing water, or if the BMP design does not meet the 96-hour drawdown criteria due to release rates controlled by an orifice installed on the underdrain, the County reviewer shall be contacted to determine a solution. A different BMP type, or a Vector Management Plan prepared with concurrence from the County of San Diego Department of Environmental Health, may be required.	• Inspect monthly and after every 0.5-inch or larger storm event. If mosquitos are observed, increase inspection frequency to after every 0.1-inch or larger storm event. • Maintain when needed.
Underdrain clogged	Clear blockage.	Inspect if standing water is observed for longer than 24-96 hours following a storm event. Maintain when needed.

"25% full" is defined as ¼ of the depth from the design bottom elevation to the crest of the outflow structure (e.g., if the height to the outflow opening is 12 inches from the bottom elevation, then the materials must be removed when there is 3 inches of accumulation – this should be marked on the outflow structure).

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Biofiltration

BMP MAINTENANCE FACT SHEET
FOR
STRUCTURAL BMP BF-1 BIOFILTRATION

Biofiltration facilities are vegetated surface water systems that filter water through vegetation, and soil or engineered media prior to discharge via underdrain or overflow to the downstream conveyance system. Biofiltration facilities have limited or no infiltration. They are typically designed to provide enough hydraulic head to move flows through the underdrain connection to the storm drain system. Typical biofiltration components include:

- Inflow distribution mechanisms (e.g., perimeter flow spreader or filter strips)
- Energy dissipation mechanism for concentrated inflows (e.g., splash blocks or riprap)
- Shallow surface ponding for captured flows
- Side slope and basin bottom vegetation selected based on climate and ponding depth
- Non-floating mulch layer
- Media layer (planting mix or engineered media) capable of supporting vegetation growth
- Filter course layer consisting of aggregate to prevent the migration of fines into uncompacted native soils or the aggregate storage layer
- Aggregate storage layer with underdrain(s)
- Impermeable liner or uncompacted native soils at the bottom of the facility
- Overflow structure

Normal Expected Maintenance

Biofiltration requires routine maintenance to: remove accumulated materials such as sediment, trash or debris; maintain vegetation health; maintain infiltration capacity of the media layer; replenish mulch; and maintain integrity of side slopes, inlets, energy dissipators, and outlets. A summary table of standard inspection and maintenance indicators is provided within this Fact Sheet.

Non-Standard Maintenance or BMP Failure

If any of the following scenarios are observed, the BMP is not performing as intended to protect downstream waterways from pollution and/or erosion. Corrective maintenance, increased inspection and maintenance, BMP replacement, or a different BMP type will be required.

- The BMP is not drained between storm events. Surface ponding longer than approximately 24 hours following a storm event may be detrimental to vegetation health, and surface ponding longer than approximately 96 hours following a storm event poses a risk of vector (mosquito) breeding. Poor drainage can result from clogging of the media layer, filter course, aggregate storage layer, underdrain, or outlet structure. The specific cause of the drainage issue must be determined and corrected.
- Sediment, trash, or debris accumulation greater than 25% of the surface ponding volume within one month. This means the load from the tributary drainage area is too high, reducing BMP function or clogging the BMP. This would require pretreatment measures within the tributary area draining to the BMP to intercept the materials. Pretreatment components, especially for sediment, will extend the life of components that are more expensive to replace such as media, filter course, and aggregate layers.
- Erosion due to concentrated storm water runoff flow that is not readily corrected by adding erosion control blankets, adding stone at flow entry points, or minor re-grading to restore proper drainage according to the original plan. If the issue is not corrected by restoring the BMP to the original plan and grade, the [City Engineer] shall be contacted prior to any additional repairs or reconstruction.

Other Special Considerations

Biofiltration is a vegetated structural BMP. Vegetated structural BMPs that are constructed in the vicinity of, or connected to, an existing jurisdictional water or wetland could inadvertently result in creation of expanded waters or wetlands. As such, vegetated structural BMPs have the potential to come under the jurisdiction of the United States Army Corps of Engineers, SDRWQCB, California Department of Fish and Wildlife, or the United States Fish and Wildlife Service. This could result in the need for specific resource agency permits and costly mitigation to perform maintenance of the structural BMP. Along with proper placement of a structural BMP, **routine maintenance is key to preventing this scenario**.

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Biofiltration

SUMMARY OF STANDARD INSPECTION AND MAINTENANCE FOR BF-1 BIOFILTRATION		
The property owner is responsible to ensure inspection, operation and maintenance of permanent BMPs on their property unless responsibility has been formally transferred to an agency, community facilities district, homeowners association, property owners association, or other special district. Maintenance frequencies listed in this table are average/typical frequencies. Actual maintenance needs are site-specific, and maintenance may be required more frequently. Maintenance must be performed whenever needed, based on maintenance indicators presented in this table. The BMP owner is responsible for conducting regular inspections to see when maintenance is needed based on the maintenance indicators. During the first year of operation of a structural BMP, inspection is recommended at least once prior to August 31 and then monthly from September through May. Inspection during a storm event is also recommended. After the initial period of frequent inspections, the minimum inspection and maintenance frequency can be determined based on the results of the first year inspections.		
Threshold/Indicator	**Maintenance Action**	**Typical Maintenance Frequency**
Accumulation of sediment, litter, or debris	Remove and properly dispose of accumulated materials, without damage to the vegetation or compaction of the media layer.	• Inspect monthly. If the BMP is 25% full* or more in one month, increase inspection frequency to monthly plus after every 0.1-inch or larger storm event. • Remove any accumulated materials found at each inspection.
Obstructed inlet or outlet structure	Clear blockage.	• Inspect monthly and after every 0.5-inch or larger storm event. • Remove any accumulated materials found at each inspection.
Damage to structural components such as weirs, inlet or outlet structures	Repair or replace as applicable	• Inspect annually. • Maintenance when needed.
Poor vegetation establishment	Re-seed, re-plant, or re-establish vegetation per original plans.	• Inspect monthly. • Maintenance when needed.
Dead or diseased vegetation	Remove dead or diseased vegetation, re-seed, re-plant, or re-establish vegetation per original plans.	• Inspect monthly. • Maintenance when needed.
Overgrown vegetation	Mow or trim as appropriate.	• Inspect monthly. • Maintenance when needed.
2/3 of mulch has decomposed, or mulch has been removed	Remove decomposed fraction and top off with fresh mulch to a total depth of 3 inches.	• Inspect monthly. • Replenish mulch annually, or more frequently when needed based on inspection.

*"25% full" is defined as ¼ of the depth from the design bottom elevation to the crest of the outflow structure (e.g., if the height to the outflow opening is 12 inches from the bottom elevation, then the materials must be removed when there is 3 inches of accumulation – this should be marked on the outflow structure).

SUMMARY OF STANDARD INSPECTION AND MAINTENANCE FOR BF-1 BIOFILTRATION (Continued from previous page)		
Threshold/Indicator	**Maintenance Action**	**Typical Maintenance Frequency**
Erosion due to concentrated irrigation flow	Repair/re-seed/re-plant eroded areas and adjust the irrigation system.	• Inspect monthly. • Maintenance when needed.
Erosion due to concentrated storm water runoff flow	Repair/re-seed/re-plant eroded areas, and make appropriate corrective measures such as adding erosion control blankets, adding stone at flow entry points, or minor re-grading to restore proper drainage according to the original plan. If the issue is not corrected by restoring the BMP to the original plan and grade, the [City Engineer] shall be contacted prior to any additional repairs or reconstruction.	• Inspect after every 0.5-inch or larger storm event. If erosion due to storm water flow has been observed, increase inspection frequency to after every 0.1-inch or larger storm event. • Maintenance when needed. If the issue is not corrected by restoring the BMP to the original plan and grade, the [City Engineer] shall be contacted prior to any additional repairs or reconstruction.
Standing water in BMP for longer than 24 hours following a storm event Surface ponding longer than approximately 24 hours following a storm event may be detrimental to vegetation health	Make appropriate corrective measures such as adjusting irrigation system, removing obstructions of debris or invasive vegetation, clearing underdrains, or repairing/replacing clogged or compacted soils.	• Inspect monthly and after every 0.5-inch or larger storm event. If standing water is observed, increase inspection frequency to after every 0.1-inch or larger storm event. • Maintenance when needed.
Presence of mosquitos/larvae For images of egg rafts, larva, pupa, and adult mosquitos, see http://www.mosquito.org/biology	If mosquitos/larvae are observed: first, immediately remove any standing water by dispersing to nearby landscaping; second, make corrective measures as applicable to restore BMP drainage to prevent standing water. If mosquitos persist following corrective measures to remove standing water, or if the BMP design does not meet the 96-hour drawdown criteria due to release rates controlled by an orifice installed on the underdrain, the [City Engineer] shall be contacted to determine a solution. A different BMP type, or a Vector Management Plan prepared with concurrence from the County of San Diego Department of Environmental Health, may be required.	• Inspect monthly and after every 0.5-inch or larger storm event. If mosquitos are observed, increase inspection frequency to after every 0.1-inch or larger storm event. • Maintenance when needed.
Underdrain clogged	Clear blockage.	• Inspect if standing water is observed for longer than 24-96 hours following a storm event. • Maintenance when needed.

References

American Mosquito Control Association.
http://www.mosquito.org/
California Storm Water Quality Association (CASQA). 2003. Municipal BMP Handbook.
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http://www.projectcleanwater.org/index.php?option=com_content&view=article&id=250&Itemid=220

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BF-1
Biofiltration

Date:	Inspector:	BMP ID No.:
Permit No.:	APN(s):	
Property / Development Name:	Responsible Party Name and Phone Number:	
Property Address of BMP:	Responsible Party Address:	

INSPECTION AND MAINTENANCE CHECKLIST FOR BF-1 BIOFILTRATION PAGE 1 of 5			
Threshold/Indicator	**Maintenance Recommendation**	**Date**	**Description of Maintenance Conducted**
Accumulation of sediment, litter, or debris Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Remove and properly dispose of accumulated materials, without damage to the vegetation ☐ If sediment, litter, or debris accumulation exceeds 25% of the surface ponding volume within one month (25% full*), add a forebay or other pre-treatment measures within the tributary area draining to the BMP to intercept the materials. ☐ Other / Comments:		
Poor vegetation establishment Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Re-seed, re-plant, or re-establish vegetation per original plans ☐ Other / Comments:		

*"25% full" is defined as ¼ of the depth from the design bottom elevation to the crest of the outflow structure (e.g., if the height to the outflow opening is 12 inches from the bottom elevation, then the materials must be removed when there is 3 inches of accumulation – this should be marked on the outflow structure).

Date:	Inspector:	BMP ID No.:
Permit No.:	APN(s):	

INSPECTION AND MAINTENANCE CHECKLIST FOR BF-1 BIOFILTRATION PAGE 2 of 5			
Threshold/Indicator	**Maintenance Recommendation**	**Date**	**Description of Maintenance Conducted**
Dead or diseased vegetation Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Remove dead or diseased vegetation, re-seed, re-plant, or re-establish vegetation per original plans ☐ Other / Comments:		
Overgrown vegetation Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Mow or trim as appropriate ☐ Other / Comments:		
2/3 of mulch has decomposed, or mulch has been removed Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Remove decomposed fraction and top off with fresh mulch to a total depth of 3 inches ☐ Other / Comments:		

Date:	Inspector:	BMP ID No.:
Permit No.:	APN(s):	

INSPECTION AND MAINTENANCE CHECKLIST FOR BF-1 BIOFILTRATION PAGE 3 of 5			
Threshold/Indicator	**Maintenance Recommendation**	**Date**	**Description of Maintenance Conducted**
Erosion due to concentrated irrigation flow Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Repair/re-seed/re-plant eroded areas and adjust the irrigation system ☐ Other / Comments:		
Erosion due to concentrated storm water runoff flow Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Repair/re-seed/re-plant eroded areas, and make appropriate corrective measures such as adding erosion control blankets, adding stone at flow entry points, or minor re-grading to restore proper drainage according to the original plan ☐ If the issue is not corrected by restoring the BMP to the original plan and grade, the [City Engineer] shall be contacted prior to any additional repairs or reconstruction ☐ Other / Comments:		

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Biofiltration

Date:	Inspector:	BMP ID No.:
Permit No.:	APN(s):	

INSPECTION AND MAINTENANCE CHECKLIST FOR BF-1 BIOFILTRATION PAGE 4 of 5			
Threshold/Indicator	**Maintenance Recommendation**	**Date**	**Description of Maintenance Conducted**
Obstructed inlet or outlet structure Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Clear blockage ☐ Other / Comments:		
Underdrain clogged (inspect underdrain if standing water is observed for longer than 24-96 hours following a storm event) Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Clear blockage ☐ Other / Comments:		
Damage to structural components such as weirs, inlet or outlet structures Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Repair or replace as applicable ☐ Other / Comments:		

BF-1
Biofiltration

Date:	Inspector:	BMP ID No.:
Permit No.:	APN(s):	

INSPECTION AND MAINTENANCE CHECKLIST FOR BF-1 BIOFILTRATION PAGE 5 of 5			
Threshold/Indicator	**Maintenance Recommendation**	**Date**	**Description of Maintenance Conducted**
Standing water in BMP for longer than 24-96 hours following a storm event* Surface ponding longer than approximately 24 hours following a storm event may be detrimental to vegetation health Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Make appropriate corrective measures such as adjusting irrigation system, removing obstructions of debris or invasive vegetation, clearing underdrains, or repairing/replacing clogged or compacted soils ☐ Other / Comments:		
Presence of mosquitos/larvae For images of egg rafts, larva, pupa, and adult mosquitos, see http://www.mosquito.org/biology Maintenance Needed? ☐ YES ☐ NO ☐ N/A	☐ Apply corrective measures to remove standing water in BMP when standing water occurs for longer than 24-96 hours following a storm event.** ☐ Other / Comments:		

*Surface ponding longer than approximately 24 hours following a storm event may be detrimental to vegetation health, and surface ponding longer than approximately 96 hours following a storm event poses a risk of vector (mosquito) breeding. Poor drainage can result from clogging of the media layer, filter course, aggregate storage layer, underdrain, or outlet structure. The specific cause of the drainage issue must be determined and corrected.

**If mosquitos persist following corrective measures to remove standing water, or if the BMP design does not meet the 96-hour drawdown criteria due to release rates controlled by an orifice installed on the underdrain, the [City Engineer] shall be contacted to determine a solution. A different BMP type, or a Vector Management Plan prepared with concurrence from the County of San Diego Department of Environmental Health, may be required.

If These Sources Will Be on the Project Site …	… Then Your SWQMP must consider These Source Control BMPs		
1 **Potential Sources of Runoff Pollutants**	**2** **Permanent Controls—Show on Drawings**	**3** **Permanent Controls—List in Table and Narrative**	**4** **Operational BMPs—Include in Table and Narrative**
☒ **L.** Fuel Dispensing Areas ☐ Not Applicable	☒ Fueling areas[2] must have impermeable floors (i.e., portland cement concrete or equivalent smooth impervious surface) that are (1) graded at the minimum slope necessary to prevent ponding; and (2) separated from the rest of the site by a grade break that prevents run-on of storm water to the MEP. ☒ Fueling areas must be covered by a canopy that extends a minimum of ten feet in each direction from each pump. [Alternative: The fueling area must be covered and the cover's minimum dimensions must be equal to or greater than the area within the grade break or fuel dispensing area1.] The canopy [or cover] must not drain onto the fueling area.		☒ The property owner must dry sweep the fueling area routinely. ☒ See the Business Guide Sheet, "Automotive Service—Service Stations" in the CASQA Storm Water Quality Handbooks at https://www.casqa.org/resources/bmp-handbooks

[2] The fueling area must be defined as the area extending a minimum of 6.5 feet from the corner of each fuel dispenser or the length at which the hose and nozzle assembly may be operated plus a minimum of one foot, whichever is greater.

BG-22 Automotive Service – Service Stations

Photo Credit: Geoff Brosseau

Description

This category includes facilities that provide vehicle fueling services, including self-serve facilities as well as those that provide a car washing facility. Information specific to auto dismantling, body repair, and maintenance is provided in other guide sheets.

Pollutant Sources

The following are sources of pollutants:

- Fueling,
- Spills,
- Surface cleaning, and
- Air/Water supply.
- Dumpster and trash can areas

Pollutants can include:

- Heavy metals (copper, lead, nickel, and zinc),
- Hydrocarbons (oil and grease, PAHs),
- Toxic chemicals (benzene, toluene, xylene, MTBE),
- Detergents
- Food waste and trash

Approach

Minimize exposure of rain and runoff to fueling areas by using cover and containment. In and around these areas, use good housekeeping to minimize the generation of pollutants. Make stormwater pollution prevention BMPs a part of standard operating procedures and the employee training program. Provide employee education materials in the first language of employees, as necessary.

Coverage

These best management practices cover the following activities or areas:

- Fuel dispensing
- Underground storage tanks
- Air/Water supply
- Outdoor waste receptacles
- Car washing facilities

CASQA
CALIFORNIA STORMWATER QUALITY ASSOCIATION®

BG-22 Automotive Service – Service Stations

Retail gasoline outlets will typically have these activities/areas onsite. Outdoor activities/areas are potentially exposed to stormwater runoff, and pollutants can also be transported to the storm drain system via leaks or spills. The best management practices described in this guide are intended to be implemented, monitored, and maintained on a year round basis. Training of employees in good housekeeping measures and spill and leak prevention is critical in preventing discharge of pollutants in stormwater.

Source Control BMPs

The best management practices are listed by activity or area. Existing Facilities

Fuel Dispensing Areas	☐ Maintain fuel dispensing areas using dry cleanup methods such as sweeping for removal of litter and debris, or use of rags and absorbents for leaks and spills. Fueling areas should never be washed down unless the wash water is collected and disposed of properly. ☐ Fit fuel dispensing nozzles with "hold-open latches" (automatic shutoffs) except where prohibited by local fire departments. ☐ Post signs at the fuel dispenser or fuel island warning vehicle owners/operators against "topping off" of vehicle fuel tanks ☐ Train employees in implementing proper leak and spill prevention and cleanup practices. Major spills require specialized materials and emergency support personnel.
Under-ground Storage Tanks	☐ Fit underground storage tanks with spill containment and overfill prevention systems meeting the requirements of Section 2635(b) of Title 23 of the California Code of Regulations.
	☐ Train employees in implementing proper leak and spill prevention and cleanup practices. Major spills require specialized materials and emergency support personnel.
Facility – General	☐ "Spot clean" leaks and drips routinely. Leaks are not cleaned up until the absorbent is picked up and disposed of properly. ☐ Maintain and keep current, as required by other regulations, a spill response plan and ensure that employees are trained on the elements of the plan. ☐ Manage materials and waste to reduce adverse impacts on stormwater quality. ☐ Train all employees upon hiring and annually thereafter on proper methods for handling and disposing of waste. Make sure that all employees understand stormwater discharge prohibitions, wastewater discharge requirements, and these best management practices. Use a training log or similar method to document training. ☐ Label/stencil drain inlets within the facility boundary to remind employees and customers whether they flow to an oil/water separator, directly to the sewer, or to a storm drain. Labels are not necessary for plumbing fixtures directly connected to the sanitary sewer. ☐ Routinely inspect and clean if necessary, storm drain inlets and catch basins within the facility boundary before the beginning of the rainy season (e.g. October 1) each year.

Outdoor Waste Receptacle Area	□ Spot clean leaks and drips routinely to prevent runoff of spillage. □ Minimize the possibility of stormwater pollution from outside waste receptacles by implementing at least one of the following: ✓ Use only watertight waste receptacle(s) and keep the lid(s) closed, or ✓ Grade and pave the waste receptacle area to prevent run-on of stormwater, or ✓ Install a roof over the waste receptacle area, or ✓ Install a low containment berm around the waste receptacle area, or ✓ Use and maintain drip pans under waste receptacles
Air/ Water Supply Area	□ Minimize the possibility of stormwater pollution from air/water supply areas by implementing at least one of the following: ✓ Spot clean leaks and drips routinely to prevent runoff of spillage, or ✓ Grade and pave the air/water supply area to prevent run-on of stormwater, or ✓ Install a roof over the air/water supply area, or ✓ Install a low containment berm around the air/water supply area.
Car Washing Facility	□ Install a wash water treatment system; do not discharge wash water directly to the storm drain. □ Minimize the possibility of stormwater pollution from car washing facilities by implementing the following: ✓ Grade and pave the car wash area to prevent run-on of stormwater, ✓ Install a roof over the car wash area, ✓ Slope the car wash area toward the wash water treatment system, not the storm drain, and ✓ Train employees in implementing proper leak and spill prevention and cleanup practices.

Treatment Control BMPs

If treatment controls are installed at the facility, see Section 4 of this Handbook for information on inspecting and maintaining the BMPs.

For information on designing treatment controls, see Section 5 of the New Development and Redevelopment Planning Handbook.

More Information

Booklets, Checklists, Fact Sheets, and Pamphlets

Alameda County Clean Water Program, 2012, Tips for a Cleaner Bay: How Your Vehicle Service Facility Can Prevent Stormwater Pollution. Available on-line at: http://www.cleanwaterprogram.org/uploads/IIDC%20Vehicle%202012.pdf.

California Department of Toxic Control Substances, undated website, *California Green Station Program, Vehicle Service and Repair (VSR).* Includes fact sheets, training modules, and other resources. Available on-line at https://dtsc.ca.gov/PollutionPrevention/VSR.cfm.

RECORDING REQUESTED BY:

WHEN RECORDED MAIL TO:

(property owner)

SPACE ABOVE THIS LINE FOR RECORDER'S USE

MAINTENANCE NOTIFICATION AGREEMENT FOR CATEGORY 1 STORMWATER STRUCTURAL BMPs

☐ **This Maintenance Notification Agreement rescinds and replaces Doc#_____**

THIS AGREEMENT is made on the _____ day of _____, 20_____.

_____, the Owner(s) of the hereinafter described real property:

Address _____ Post Office Box _____ Zip Code _____.

Assessor Parcel No.(s) _____

List each Structural Best Management Practice for the property as follows: Name and/or Type, Permit #, Sheet #.

_____

_____ *Attach BMP sheets and details as Exhibit A.*

Owner(s) of the above property acknowledge the existence of the storm water Structural Best Management Practice (BMP) on the said property. Perpetual maintenance of the Structural BMP(s) is the requirement of the State NPDES Permit, Order No. R9-2015- 0001, Section E.3.e.(1)(c) and the County of San Diego Watershed Protection Ordinance (WPO) Ordinance No. 10385 Section 67.812 through Section 67.814, and County BMP Design Manual Chapters 7 & 8. In consideration of the requirement to construct and maintain Structural BMP(s), as conditioned by Discretionary Permit, Grading Permit, and/or Building Permit (as may be applicable), I/we hereby covenant and agree that:

1. I/We are the owner(s) of the existing (or to be constructed concurrently) premises located on the above described property.
2. I/We shall take the responsibility for the perpetual maintenance of the Structural BMP(s) as listed above in accordance with the maintenance plan(s) attached in *Exhibit B* and in compliance with County's self-inspection reporting and verification for as long as I/we have ownership of said property(ies).
3. I/We shall cooperate with and allow the County staff to come onto said property(ies) and perform inspection duties as prescribed by local and state regulators.
4. I/We shall inform future buyer(s) or successors of said property(ies) of the existence and perpetual maintenance requirement responsibilities for Structural BMP(s) as listed above and to ensure that such responsibility shall transfer to the future owner(s).
5. I/We will abide by all the requirements and standards of Section 67.812 through Section 67.814 of the WPO (or renumbering thereof) as it exists on the date of this Agreement, and which hereby is incorporated herein by reference.

This Agreement shall run with the land. If the subject property is conveyed to any other person, firm, or corporation, the instrument that conveys title or any interest in or to said property, or any portion thereof, shall contain a provision transferring maintenance responsibility for Structural BMP(s) to the successive owner according to the terms of this Agreement. Any violation of this Agreement is grounds for the County to impose penalties upon the property owner as prescribed in County Code of Regulatory Ordinances, Title 1, Division 8, Chapter 1 Administrative Citations §§18.101-18.116.

_____ _____

Owner Signature(s)

_____ _____

Print Owner Name(s) and Title

Prior to notarizing the Maintenance Notification Agreement please attach the following Exhibits using 8.5x11 sheets:

- Exhibit A: Create and attach an "Exhibit A" which shows the Project Site Vicinity; the Project Site Map; and a map for each BMP and its Drainage Management Area. Samples of each of these map types are shown in Figure I.11-1 through Figure I.11-4.

- Exhibit B: Attach the maintenance plan for each BMP type as "Exhibit B".

  EXHIBIT B: TO BE PROVIDED AT MINISTERIAL SUBMITTAL

REQUEST AND INSTRUCTIONS FOR PREPARATION OF STORM WATER FACILITIES MAINTENANCE AGREEMENT

Provide the following information, to enable PDS to prepare the "STORMWATER FACILITIES MAINTENANCE AGREEMENT, WITH EASEMENT AND COVENANTS":

#	Done	Information to be inserted

[1] ☐ County staff document custodian to receive document after recording will be:

_____ _____
Name of Custodian Mail Stop

[2] ☐ Provide applicable Project **Reference Number(s)**:

Tentative Map:	TM/ PDS20XX-LDPIIP- _____
Tentative Parcel Map:	TPM _____
Grading Plan / Grading Permit:	L/PDS20XX-LDGMJ-_____
Major Use Permit:	MUP_____
Site Plan:	STP/PDS20XX-3500-_____

[3] ☐ Provide EXACT **name of Owner** [This must be word-for-word, letter-for-letter identical to vesting title information]:

_____
Name of Owner

[4] ☐ Indicate the status of the Owner:

☐ a natural person; or

☐ a business entity.

If the Owner is a business entity, then please indicate what type ("a California Corporation", "a [other state] Corporation", "a California General Partnership", "a California Limited Partnership" or "a California Limited Liability Company"):

_____
Type of Owner's Business Entity

[5] ☐ Create and attach an “Exhibit A”, which is an accurate Legal Description of the property involved in the entire project

[6] ☐ Provide brief Description of Type of Project [E.g. "a 100-unit residential subdivision"]:

_____

Project Description

[7] ☐ Provide official name, number and date of plan or drawing which shows the BMPs in detail [“Improvement Plans”, "Site Plan", "Grading Plans" etc.]:

_____ _____ _____

Type of Plan Plan Number Plan Date

[8] ☐ Create and attach an “Exhibit B”, using the format of Attachment 2 (“BMP MAINTENANCE PROGRAM”) as an example.

[9] ☐ Create and attach an “Exhibit C”, which shows the Project Site Vicinity; the Project Site Map; and a map for each BMP and it’s Drainage Management Area. Samples of each of these map types are shown in Figure I.11-1 through Figure I.11-4.

[10] ☐ Provide Name and Address of the person who the Owner designates as his/her/its Agent for administration of the Agreement and receipt of notices:

Name: _____

Address: _____

[11] Advise us whether or not the project is a **Common Interest Development**:

☐ No ☐ Yes

[12] ☐ Provide the Name(s) and title(s) of **persons who will sign** agreement for the Owner:

_____

Name

_____

Title

If the Owner (see #3 above) is a natural person, County Counsel will assume that person will sign the agreement, and will so provide in the signature block. If the Owner is a business entity, please indicate the names and titles of all persons who will sign on behalf of the business entity.

A sample signature block for a corporation would look like:

"Clean Water, Inc., a California Corporation

By: _____ _____
John Q. Adams, President Date

By: _____ _____
Adam Q. Johns, Secretary Date"