ATTACHMENT D.9

STORMWATER QUALITY MANAGEMENT PLAN

CITY OF SAN MARCOS

PRIORITY DEVELOPMENT PROJECT (PDP)
STORM WATER QUALITY MANAGEMENT PLAN (SWQMP)
FOR
SOUTH SANTA FE TOWNHOMES

2972 & 2982 S SANTA FE AVENUE
SAN MARCOS, CA 92069

ASSESSOR'S PARCEL NUMBER(S):
217-161-18 & 217-161-19, PORTION OF 217-161-17-00

ENGINEER OF WORK:

_____

WILLIAM J. SUITER, RCE 68964

PREPARED FOR:

SANTA FE FLORES LP
P.O. BOX 903
RANCHO SANTA FE, CA 92067
(858) 888-2488

PDP SWQMP PREPARED BY:

PLSA
34270 PACIFIC COAST HIGHWAY, SUITE B
DANA POINT, CA 92629
(949) 661-6695

DATE OF SWQMP:

DECEMBER 2024
JUNE 2025

GRADING PLANS PREPARED BY:

PLSA
34270 PACIFIC COAST HIGHWAY, SUITE B
DANA POINT, CA 92629
(949) 661-6695

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ACRONYMS

APN	Assessor's Parcel Number
BMP	Best Management Practice
HMP	Hydromodification Management Plan
HSG	Hydrologic Soil Group
MS4	Municipal Separate Storm Sewer System
N/A	Not Applicable
NRCS	Natural Resources Conservation Service
PDP	Priority Development Project
PE	Professional Engineer
SC	Source Control
SD	Site Design
SDRWQCB	San Diego Regional Water Quality Control Board
SIC	Standard Industrial Classification
SWQMP	Storm Water Quality Management Plan

PDP SWQMP PREPARER'S CERTIFICATION PAGE

Project Name: South Santa Fe Townhomes
Permit Application Number: [Insert Permit Application Number]

PREPARER'S CERTIFICATION

I hereby declare that I am the Engineer in Responsible Charge of design of 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 City of San Marcos BMP Design Manual, which is a design manual for compliance with local City of San Marcos and regional MS4 Permit (California Regional Water Quality Control Board San Diego Region Order No. R9-2015-0100) requirements for storm water management.

I have read and understand that the City Engineer 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 the City Engineer is confined to a review and does not relieve me, as the Engineer in Responsible Charge of design of storm water BMPs for this project, of my responsibilities for project design.

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

W. Justin Suiter
Print Name

PLSA
Company

_____
Date

Engineer's Seal:

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PDP SWQMP PROJECT OWNER'S CERTIFICATION PAGE

Project Name: South Santa Fe Townhomes
Permit Application Number: [Insert Permit Application Number]

PROJECT OWNER'S CERTIFICATION

This PDP SWQMP has been prepared for Santa Fe Flores, LP by PLSA. The PDP SWQMP is intended to comply with the PDP requirements of the City of San Marcos BMP Design Manual, which is a design manual for compliance with local City of San Marcos and regional MS4 Permit (California Regional Water Quality Control Board San Diego Region Order No. R9-2015-0100) requirements for storm water management.

The undersigned, while it owns the subject property, is responsible for the implementation of the provisions of this plan. Once the undersigned transfers its interests in the property, its successor-in-interest shall bear the aforementioned responsibility to implement the best management practices (BMPs) described within this plan, including ensuring on-going operation and maintenance of structural BMPs. A signed copy of this document shall be available on the subject property into perpetuity.

_____
Project Owner's Signature

Paul Mayer_____
Print Name

Santa Fe Flores LP_____
Company

_____
Date

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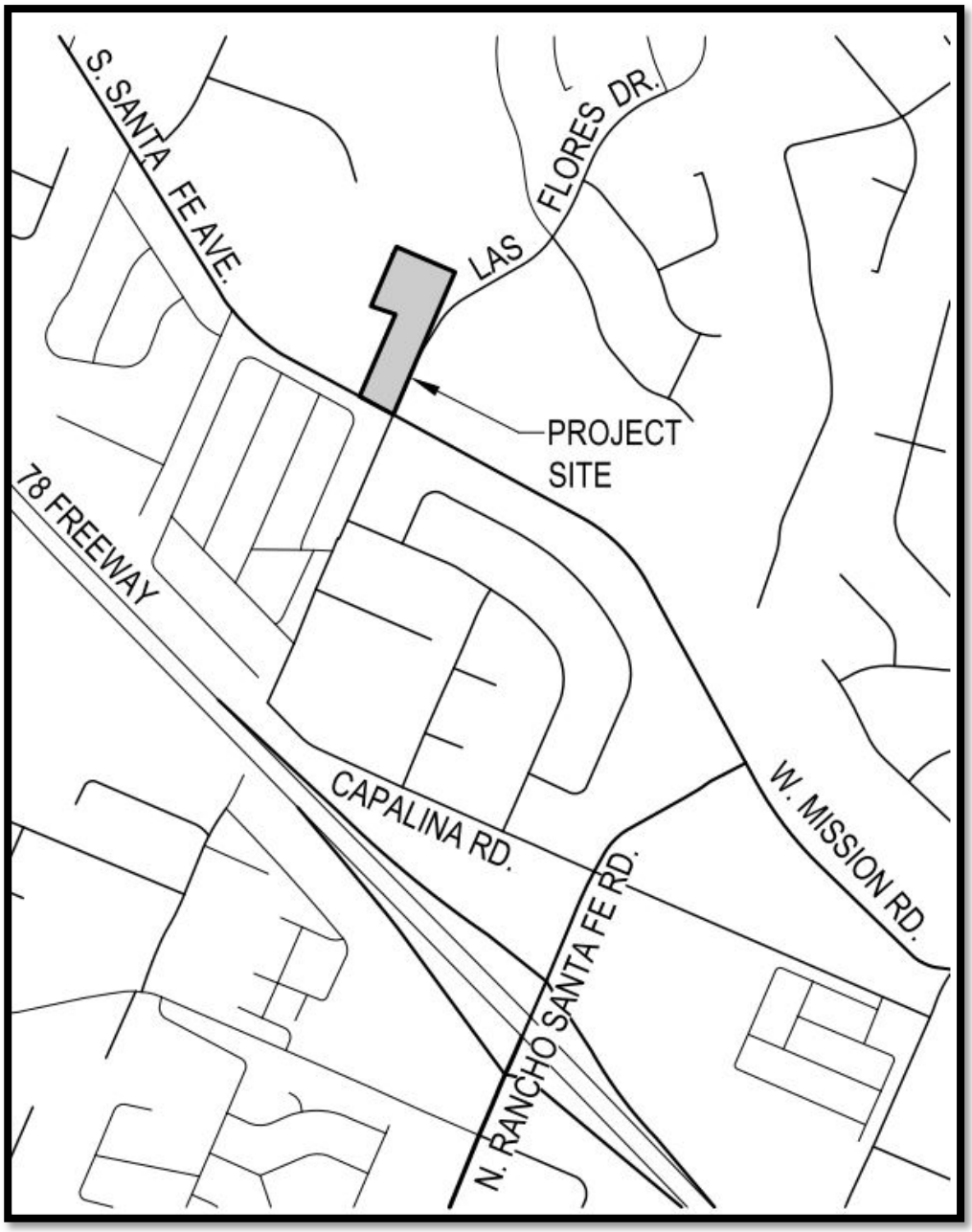
SUBMITTAL RECORD

Use this Table to keep a record of submittals of this PDP SWQMP. Each time the PDP SWQMP is re-submitted, provide the date and status of the project. In column 4 summarize the changes that have been made or indicate if response to plan check comments is included. When applicable, insert response to plan check comments behind this page.

Submittal Number	Date	Project Status	Summary of Changes
1	December 2024	☑Preliminary Design / Planning/ CEQA ☐ Final Design	Initial Submittal
2	June 2025	☑Preliminary Design / Planning/ CEQA Final Design	
3		☐ Preliminary Design / Planning/ CEQA ☐ Final Design	
4		☐ Preliminary Design / Planning/ CEQA ☐ Final Design	

PROJECT VICINITY MAP

Project Name: South Santa Fe Townhomes
Permit Application Number: [Insert Permit Application Number]



FORM I-1 APPLICABILITY OF STORM WATER BMP REQUIREMENTS

Applicability of Storm Water Best Management Practices (BMP) Requirements **(Storm Water Intake Form for all Development Permit Applications)** **For detailed information please visit:** **http://www.san-marcos.net/departments/development-services/stormwater/development-planning**	**Form I-1** [March 15, 2016]

Project Identification	
Project Name: South Santa Fe Townhomes	
Description: Proposed 46-unit multifamily development with parking lots, access drive, outdoor garden area, miscellaneous hardscape and landscaping.	
Permit Application Number (if applicable):	Date: 12/10/2024
Project Address: 2972/2982 South Santa Fe Avenue	

Determination of Requirements

This form is required as part of the City's application process. The purpose of this form is to identify potential land development planning storm water requirements that apply to development projects.

Development projects are defined as construction, rehabilitation, redevelopment, or reconstruction of any public or private projects. In addition, the identification of a development project, as it relates to storm water regulations, would truly apply to development and redevelopment activities that have the potential to contact storm water and contribute a source of pollutants, or reduce the natural absorption and infiltration abilities of the land.

To access the BMP Design Manual, Storm Water Quality Management Plan (SWQMP) templates, and other pertinent information related to this program please refer to:
http://www.san-marcos.net/departments/development-services/stormwater/development-planning

Please answer each of the following steps below, starting with Step 1 and progressing through each step until reaching "Stop".

Step	Answer	Progression
Step 1: Based on the above, Is the project a "development project" (See definition above)? See Section 1.3 of the BMP Design Manual for further guidance if necessary.	☑ Yes	Go to Step 2.
	☐ No	Permanent BMP requirements do not apply. No SWQMP will be required. Provide brief discussion below. **STOP.**
Discussion / justification if the project is not a "development project" (e.g., the project includes *only* interior remodels within an existing building):		
Step 2: Is the project a Standard Project, Priority Development Project (PDP), or exception to PDP definitions? **To answer this item, complete Form I-2, Project Type Determination. See Section 1.4 of the BMP Design Manual *in its entirety* for guidance.** **In addition to Section 1.4, please refer to the City's SWQMP Submittal Requirements form.**	☐ Standard Project	Only Standard Project requirements apply, including Standard Project SWQMP. **STOP.**
	☑ PDP	Standard and PDP requirements apply, including PDP SWQMP. **Go to Step 3 on the following page.**
	☐ Exception to PDP definitions	Standard Project requirements apply, and any additional requirements specific to the type of project. Provide discussion and list any additional requirements below. Prepare Standard Project SWQMP. **STOP.**

Discussion / justification, and additional requirements for exceptions to PDP definitions, if applicable:		
Form I-1 Page 2, Form Date: March 15, 2016		
Step 3 (PDPs only). Please answer the list of questions in this section to determine if hydromodification requirements reply to the proposed PDP. Does the project:		
Step 3a. Discharge storm water runoff directly to the Pacific Ocean?	☐ Yes	**STOP**. Hydromodification requirements do not apply.
	☑ No	Continue to Step 3b.
Step 3b. Discharge storm water runoff directly to an enclosed embayment, not within protected areas?	☐ Yes	**STOP**. Hydromodification requirements do not apply.
	☑ No	Continue to Step 3c.
Step 3c. Discharge storm water runoff directly to a water storage reservoir or lake, below spillway or normal operating level?	☐ Yes	**STOP**. Hydromodification requirements do not apply.
	☑ No	Continue to Step 3d.
Step 3d. Discharge storm water runoff directly to an area identified in WMAA?	☐ Yes	**STOP**. Hydromodification requirements do not apply.
	☑ No	Hydromodification requirements apply to the project. Go to Step 4.
Discussion / justification if hydromodification control requirements do not apply:		
Step 4 (PDPs subject to hydromodification control requirements only). Does protection of critical coarse sediment yield areas apply based on review of WMAA Potential Critical Coarse Sediment Yield Area Map? See Section 6.2 of the BMP Design Manual for guidance.	☐ Yes	Management measures required for protection of critical coarse sediment yield areas (Chapter 6.2). Stop.
	☑ No	Management measures not required for protection of critical coarse sediment yield areas. Provide brief discussion below. Stop.

FORM I-2 PROJECT TYPE DETERMINATION CHECKLIST

Project Type Determination Checklist			Form I-2 [March 15, 2016]
Project Information			
Project Name/Description: South Santa Fe Townhomes			
Permit Application Number (if applicable):			Date: 12/10/2024
Project Address: 2972/2982 South Santa Fe Avenue			
Project Type Determination: Standard Project or Priority Development Project (PDP)			
The project is (select one): ☑ New Development Redevelopment			
The total proposed newly created or replaced impervious area is: 75,064 ft^2 (1.72) acres			
Is the project in any of the following categories, (a) through (f)?			
Yes ☑	No	(a)	New development projects that create 10,000 square feet or more of impervious surfaces (collectively over the entire project site). This includes commercial, industrial, residential, mixed-use, and public development projects on public or private land.
Yes	No ☑	(b)	Redevelopment projects that create and/or replace 5,000 square feet or more of impervious surface (collectively over the entire project site on an existing site of 10,000 square feet or more of impervious surfaces). This includes commercial, industrial, residential, mixed-use, and public development projects on public or private land.
Yes	No ☑	(c)	New and redevelopment projects that create and/or replace 5,000 square feet or more of impervious surface (collectively over the entire project site), and support one or more of the following uses: (i) Restaurants. This category is defined as a facility that sells prepared foods and drinks for consumption, including stationary lunch counters and refreshment stands selling prepared foods and drinks for immediate consumption (Standard Industrial Classification (SIC) code 5812). (ii) Hillside development projects. This category includes development on any natural slope that is twenty-five percent or greater. (iii) Parking lots. This category is defined as a land area or facility for the temporary parking or storage of motor vehicles used personally, for business, or for commerce. (iv) Streets, roads, highways, freeways, and driveways. This category is defined as any paved impervious surface used for the transportation of automobiles, trucks, motorcycles, and other vehicles.

Form I-2 Page 2, Form Date: March 15, 2016			
Yes	No ☑	(d)	New or redevelopment projects that create and/or replace 2,500 square feet or more of impervious surface (collectively over the entire project site), and discharging directly to an Environmentally Sensitive Area (ESA). "Discharging directly to" includes flow that is conveyed overland a distance of 200 feet or less from the project to the ESA, or conveyed in a pipe or open channel any distance as an isolated flow from the project to the ESA (i.e. not commingled with flows from adjacent lands). *Note: ESAs are areas that include but are not limited to all Clean Water Act Section 303(d) impaired water bodies; areas designated as Areas of Special Biological Significance by the State Water Board and San Diego Water Board; State Water Quality Protected Areas; water bodies designated with the RARE beneficial use by the State Water Board and San Diego Water Board; and any other equivalent environmentally sensitive areas which have been identified by the Copermittees. See BMP Design Manual Section 1.4.2 for additional guidance.*
Yes	No ☑	(e)	New development projects, or redevelopment projects that create and/or replace 5,000 square feet or more of impervious surface, that support one or more of the following uses: (i) Automotive repair shops. This category is defined as a facility that is categorized in any one of the following SIC codes: 5013, 5014, 5541, 7532-7534, or 7536-7539. (ii) Retail gasoline outlets (RGOs). This category includes RGOs that meet the following criteria: (a) 5,000 square feet or more or (b) a projected Average Daily Traffic (ADT) of 100 or more vehicles per day.
Yes	No ☑	(f)	New or redevelopment projects that result in the disturbance of one or more acres of land and are expected to generate pollutants post construction. *Note: See BMP Design Manual Section 1.4.2 for additional guidance.*

Does the project meet the definition of one or more of the Priority Development Project categories (a) through (f) listed above?

No – the project is <u>not</u> a Priority Development Project (Standard Project).

☑ Yes – the project is a Priority Development Project (PDP).

The following is for redevelopment PDPs only:

The area of existing (pre-project) impervious area at the project site is: _____ ft^2 (A)
The total proposed newly created or replaced impervious area is _____ ft^2 (B)
Percent impervious surface created or replaced (B/A)*100: _____%
The percent impervious surface created or replaced is (select one based on the above calculation):

less than or equal to fifty percent (50%) – only new impervious areas are considered PDP

OR

greater than fifty percent (50%) – the entire project site is a PDP

FORM I-3B SITE INFORMATION CHECKLIST FOR PDPS

Site Information Checklist For PDPs	Form I-3B (PDPs) [March 15, 2016]
Project Summary Information	
Project Name	South Santa Fe Townhomes
Project Address	2972 & 2982 South Santa Fe Avenue San Marcos, CA 92069
Assessor's Parcel Number(s) (APN(s))	217-161-18 & 217-161-19, Portion of 217-161-17-00
Permit Application Number	
Project Hydrologic Unit	Select One: ☐ Santa Margarita 902 ☐ San Luis Rey 903 ☑ Carlsbad 904 ☐ San Dieguito 905 ☐ Penasquitos 906 ☐ San Diego 907 ☐ Pueblo San Diego 908 ☐ Sweetwater 909 ☐ Otay 910 ☐ Tijuana 911
Project Watershed (Complete Hydrologic Unit, Area, and Subarea Name with Numeric Identifier)	Agua Hedionda (904.2)
Parcel Area (total area of Assessor's Parcel(s) associated with the project)	2.60 Acres (113,143 Square Feet)
Area to be Disturbed by the Project (Project Area)	2.62 Acres (114,115 Square Feet)
Project Proposed Impervious Area (subset of Project Area)	1.72 Acres (75,064 Square Feet)
Project Proposed Pervious Area (subset of Project Area)	0.77 Acres (39,051 Square Feet)
Note: Proposed Impervious Area + Proposed Pervious Area = Area to be Disturbed by the Project. This may be more than the Parcel Area.	

Form I-3B Page 2 of 10, Form Date: March 15, 2016
Description of Existing Site Condition
Current Status of the Site (select all that apply): ☐ Existing development ☐ Previously graded but not built out ☐ Demolition completed without new construction ☐ Agricultural or other non-impervious use ☑ Vacant, undeveloped/natural Description / Additional Information: Project site partially graded and storm drain improvements installed during construction of Las Flores abutment along the east side of the project site.
Existing Land Cover Includes (select all that apply): ☑ Vegetative Cover ☑ Non-Vegetated Pervious Areas ☑ Impervious Areas Description / Additional Information:
Underlying Soil belongs to Hydrologic Soil Group (select all that apply): ☐ NRCS Type A ☐ NRCS Type B ☑ NRCS Type C ☑ NRCS Type D
Approximate Depth to Groundwater (GW): ☐ GW Depth < 5 feet ☐ 5 feet < GW Depth < 10 feet ☐ 10 feet < GW Depth < 20 feet ☑ GW Depth > 20 feet
Existing Natural Hydrologic Features (select all that apply): ☐ Watercourses ☐ Seeps ☐ Springs ☐ Wetlands ☑ None Description / Additional Information:

Description of Existing Site Drainage Patterns

How is storm water runoff conveyed from the site? At a minimum, this description should answer:
(1) whether existing drainage conveyance is natural or urban;
(2) Is runoff from offsite conveyed through the site? if yes, quantify all offsite drainage areas, design flows, and locations where offsite flows enter the project site, and summarize how such flows are conveyed through the site;
(3)Provide details regarding existing project site drainage conveyance network, including any existing storm drains, concrete channels, swales, detention facilities, storm water treatment facilities, natural or constructed channels; and
(4) Identify all discharge locations from the existing project site along with a summary of conveyance system size and capacity for each of the discharge locations. Provide summary of the pre-project drainage areas and design flows to each of the existing runoff discharge locations.

Describe existing site drainage patterns (Refer to the "Preliminary Hydrology Study for South Santa Fe Townhomes" prepared by Pasco Laret Suiter & Associates dated December 2024.):

The site is surrounded by residential homes to the north, east and south, and industrial offices to the west. The site is primarily undeveloped with a shared access driveway at the property's southerly boundary. The driveway also provides access to the adjacent commercial property's parking lot and commercial building. The southern portion of the site is relatively flat while the central portion slopes up to an elevated pad at the north end of the site. Las Flores Drive along the property's eastern boundary has approximately a 15-20% grade upward to the north to allow vehicle access over the railroad tracks north of the property. Elevations across the site range from a high of approximately 546 feet in the northeast corner of the property to a low of approximately 494.50 feet at the southwest corner of the property. The existing site is divided into four drainage basins:

The first drainage basin consists of the northerly half graded pad where runoff flows overland and into an existing storm drain inlet structure in the center of the pad. Captured runoff exits the site through an existing 18" RCP at the easterly boundary and into the public storm drain system within Las Flores Drive.

The second drainage basin is a similar, but much smaller, sump condition into a storm drain inlet structure exists just southerly of the north half sump condition mentioned above. Captured runoff also exits the site through a separate 18" RCP at the easterly boundary and into the public storm drain system within Las Flores Drive where it confluences with the north half pad runoff. Pipe flows continue to travel southerly down Las Flores Drive before combining with flows from a 54" RCP and 24" RCP. Combined pipe flows are then diverted to the west along South Santa Fe Avenue through a 60" RCP.

The third drainage basin consists of the southern half of the site where runoff generated from the adjacent liquor store property and the project site combines to surface flow southerly. Surface runoff exits the drainage basin through the existing shared access driveway on South Santa Fe Avenue then into the public street's curb and gutter and flows northerly approximately 100' before being captured by an existing curb inlet structure. Captured runoff is diverted across South Santa Fe Avenue through an 18" RCP storm drain pipe and into a 60" RCP that continues flowing westerly.

The fourth drainage basin is located along the west edge of Drainage Basin E1 north half pad, a small area of existing graded slopes that surface flows to the west and onto the adjacent property.

Form I-3B Page 4 of 10, Form Date: March 15, 2016
Description of Proposed Site Development
Project Description / Proposed Land Use and/or Activities: A Multi-Family Site Development Plan and Tentative Subdivision Map (TSP) for Condominium Purposes to allow 46 dwelling units on a 2.60 acre site.
List/describe proposed impervious features of the project (e.g., buildings, roadways, parking lots, courtyards, athletic courts, other impervious features): The project proposes to develop the existing vacant property and construct a new multi-family residential development with approximately 46 dwelling units, at-grade parking lots, access drives, hardscape and landscape, and associated improvements including proprietary biofiltration storm water devices that meet the requirements for pollutant control and an underground storm water storage facilities to comply with hydromodification management flow control and to mitigate the 100-year storm event peak discharge rate.
List/describe proposed pervious features of the project (e.g., landscape areas): Proposed pervious features include landscape areas.
Does the project include grading and changes to site topography? ☑ Yes ☐ No Description / Additional Information: The project site will be graded to create pads suitable for the construction of structures, improvements and associated underground utilities.

Description of Proposed Site Drainage Patterns

Does the project include changes to site drainage (e.g., installation of new storm water conveyance systems)?

☑ Yes

☐ No

If yes, provide details regarding the proposed project site drainage conveyance network, including storm drains, concrete channels, swales, detention facilities, storm water treatment facilities, natural or constructed channels, and the method for conveying offsite flows through or around the proposed project site. Identify all discharge locations from the proposed project site along with a summary of the conveyance system size and capacity for each of the discharge locations. Provide a summary of pre- and post-project drainage areas and design flows to each of the runoff discharge locations. Reference the drainage study for detailed calculations.

Describe proposed site drainage patterns (refer to "Preliminary Hydrology Study for South Santa Fe Townhomes prepared by Pasco Laret Suiter & Associates dated December 2024.):

The proposed site is divided into six (6) drainage basins:

Drainage Basin P1 consists of the proposed site's upper level buildings, buildings 3 and 4, and a portion of existing hillside area from an adjacent lot that drains into the project site at the northeast corner of the property. Runoff from areas P1.0 and P1.1 will be captured by a series of area drains around the buildings and a ribbon gutter within the building drive aisles then drain to a proprietary biofiltration system. Treated flows and peak flows then enter the private storm drain pipe system again and flow to an underground storm water storage facility for detention. Area P1.2 is a self-mitigating area along the north property line of the project where a ditch captures perimeter surface runoff then pipe flows to the underground detention facility to confluence with P1.0 and P1.1. A weir bypass structure downstream of the detention system will control flow rates to meet hydromodification and peak 100-year storm flow rates before confluencing with Area P1.3. Area P1.3 generates surface runoff that drains into the project site from the adjacent hillside lot at the north east corner of the site. A new concrete ditch is proposed along the project's northeasterly boundary to capture off-site run-on from the hillside that will bypass treatment and detention. Detained and bypass flows will then confluence before exiting the project site through an existing 18" RCP storm drain pipe that flows out into the public storm drain system in Las Flores Drive.

Drainage Basin P2 consists of the proposed site's 2 lower level buildings (building 1 and 2), south amenity areas, and portion of the on-site access road. Areas P2.0 and P2.1 generate surface runoff that sheet flows southerly down the access road via curb and gutter into a curb inlet then flows via underground pipe to a proprietary biofiltration system within the southeast amenity area for the project. Treated flows and peak flows from the biofiltration system will then exit and pipe flow to an underground storm water storage facility for detention. Area P2.3 is a self-mitigating area that bypasses treatment but pipe flows to the detention system to confluence with areas P2.0 and P2.1. Subareas P2.4 and P2.5 generate runoff from a portion of the lower access road that sheet flows southerly via curb and gutter into a biofiltration system with a curb inlet, but will bypass detention. Treated and peak flows from the biofiltration system will then exit and pipe flow to confluence with the detention tank's outlet pipe flows. All flow from P2 will confluence with detained flows from P3 and P4 before exiting the project site through a new 18" RCP storm drain pipe and connect to the existing 60" RCP storm drain pipe in South Santa Fe Avenue.

Drainage Basin P3 consists of the proposed site's upper parking areas and building 5. Surface runoff will be captured in a ribbon gutter and routed to a curb inlet which leads to a proprietary biofiltration system. Treated flows and peak flows will enter the private storm drain pipe system then divert pipe flows to an underground storm water storage facility. Flows exiting the detention system will pipe flow down the access road to confluence with detained flows from P4 and P2 before exiting the project site through a new 18" RCP storm drain pipe and connect to the existing 60" RCP storm drain pipe in South Santa Fe Avenue.

Drainage Basin P4 consists of proposed buildings 6 and 7, and the 2:1 slopes between the two buildings. Runoff will be captured in area drains around both buildings that will then pipe flow a proprietary biofiltration system. Treated flows and peak flows will enter the private storm drain pipe system then divert pipe flows to an underground storm water storage facility within the amenity area north of Building 2. Flows exiting the detention system will pipe flow into the access road to confluence with P3 then pipe flow down the access road to confluence with P2 before exiting the project site through a new 18" RCP storm drain pipe and connect to the existing 60" RCP storm drain pipe in South Santa Fe Avenue.

Drainage Basin P5 consists of the adjacent property's existing commercial building, existing parking area and existing undeveloped hillside to the west of the project site. A new concrete ditch is proposed along the project site's westerly boundary along the new access road and a new ribbon gutter along the existing parking area to capture the P5 runoff without comingling with on-site project runoff. Surface flows from P5 then flow southerly via ribbon gutter and onto South Santa Fe Avenue curb and gutter via new curb outlet.

Drainage Basin P6 consists of downslopes on the northwestern side of the project site. Storm water runoff will surface flow onto the adjacent property. This area is infeasible to capture and is considered self-mitigating.

Identify whether any of the following features, activities, and/or pollutant source areas will be present (select all that apply):

☑ On-site storm drain inlets
☑ Interior floor drains and elevator shaft sump pumps
☐ Interior parking garages
☐ Need for future indoor & structural pest control
☑ Landscape/Outdoor Pesticide Use
☐ Pools, spas, ponds, decorative fountains, and other water features
☐ Food service
☑ Refuse areas
☐ Industrial processes
☐ Outdoor storage of equipment or materials
☐ Vehicle and Equipment Cleaning
☐ Vehicle/Equipment Repair and Maintenance
☐ Fuel Dispensing Areas
☐ Loading Docks
☐ Fire Sprinkler Test Water
☐ Miscellaneous Drain or Wash Water
☑ Plazas, sidewalks, and parking lots

Description / Additional Information:

Form I-3B Page 7 of 10, Form Date: March 15, 2016

Identification and Narrative of Receiving Water and Pollutants of Concern

Describe flow path of storm water from the project site discharge location(s), through urban storm conveyance systems as applicable, to receiving creeks, rivers, and lagoons as applicable, and ultimate discharge to the Pacific Ocean (or bay, lagoon, lake or reservoir, as applicable):
Storm water runoff that leaves the project site enters the existing 60" RCP in South Santa Fe Avenue then diverts flow westerly approximately 600' down South Santa Fe Avenue then heads southerly approximately 400' down Community drive before entering an unlined vegetated channel/stream. Runoff continues to travel westerly downstream through the Agua Hedionda Hydrologic Area eventually outlets into the Agua Hedionda Lagoon and the Pacific Ocean.

List any 303(d) impaired water bodies within the path of storm water from the project site to the Pacific Ocean (or bay, lagoon, lake or reservoir, as applicable), identify the pollutant(s)/stressor(s) causing impairment, and identify any TMDLs and/or Highest Priority Pollutants from the WQIP for the impaired water bodies:

303(d) Impaired Water Body	Pollutant(s)/Stressor(s)	TMDLs / WQIP Highest Priority Pollutant
Agua Hedionda Creek	Benthic Community Effects, Bifenthrin, Chlorpyrifos, Cypermethrin, Cyfluthrin, Cyhalothrin, Lambda, Deltamehrin, Indicator Bacteria, Manganese, Pyrethroids, Malathion, Nitrogen, Phosphorus, Selenium, Total Dissolved Solids, Toxicity, Turbidity	Benthic Community Effects, Bifenthrin, Chlorpyrifos, Cypermethrin, Cyfluthrin, Cyhalothrin, Lambda, Deltamehrin, Indicator Bacteria, Manganese, Pyrethroids, Malathion, Nitrogen, Phosphorus, Selenium, Total Dissolved Solids, Toxicity, Turbidity
Agua Hedionda Lagoon	Toxicity	Toxicity

Identification of Project Site Pollutants*

***Identification of project site pollutants is only required if flow-thru treatment BMPs are implemented onsite in lieu of retention or biofiltration BMPs (note the project must also participate in an alternative compliance program unless prior lawful approval to meet earlier PDP requirements is demonstrated)**

Identify pollutants expected from the project site based on all proposed use(s) of the site (see BMP Design Manual Appendix B.6):

Pollutant	Not Applicable to the Project Site	Expected from the Project Site	Also a Receiving Water Pollutant of Concern
Sediment		X	X
Nutrients		X	X
Heavy Metals			
Organic Compounds			
Trash & Debris		X	X
Oxygen Demanding Substances		X	
Oil & Grease		X	
Bacteria & Viruses		Potential	X
Pesticides		X	

Hydromodification Management Requirements

Do hydromodification management requirements apply (see Section 1.6 of the BMP Design Manual)?

☑ Yes, hydromodification management flow control structural BMPs required.

☐ No, the project will discharge runoff directly to existing underground storm drains discharging directly to water storage reservoirs, lakes, enclosed embayments, or the Pacific Ocean.

☐ No, the project will discharge runoff directly to conveyance channels whose bed and bank are concrete-lined all the way from the point of discharge to water storage reservoirs, lakes, enclosed embayments, or the Pacific Ocean.

☐ No, the project will discharge runoff directly to an area identified as appropriate for an exemption by the WMAA for the watershed in which the project resides.

Description / Additional Information (to be provided if a 'No' answer has been selected above):

Critical Coarse Sediment Yield Areas*

***This Section only required if hydromodification management requirements apply**

Based on the maps provided within the WMAA, do potential critical coarse sediment yield areas exist within the project drainage boundaries?

☐ Yes

☑ No, No critical coarse sediment yield areas to be protected based on WMAA maps

If yes, have any of the optional analyses presented in Section 6.2 of the BMP Design Manual been performed?

☐ 6.2.1 Verification of Geomorphic Landscape Units (GLUs) Onsite

☐ 6.2.2 Downstream Systems Sensitivity to Coarse Sediment

☐ 6.2.3 Optional Additional Analysis of Potential Critical Coarse Sediment Yield Areas Onsite

☑ No optional analyses performed, the project will avoid critical coarse sediment yield areas identified based on WMAA maps

If optional analyses were performed, what is the final result?

☑ No critical coarse sediment yield areas to be protected based on verification of GLUs onsite

☐ Critical coarse sediment yield areas exist but additional analysis has determined that protection is not required. Documentation attached in Attachment 2.b of the SWQMP.

☐ Critical coarse sediment yield areas exist and require protection. The project will implement management measures described in Sections 6.2.4 and 6.2.5 as applicable, and the areas are identified on the SWQMP Exhibit.

Discussion / Additional Information:

Form I-3B Page 9 of 10, Form Date: March 15, 2016
Flow Control for Post-Project Runoff*   ***This Section only required if hydromodification management requirements apply**
List and describe point(s) of compliance (POCs) for flow control for hydromodification management (see Section 6.3.1). For each POC, provide a POC identification name or number correlating to the project's HMP Exhibit and a receiving channel identification name or number correlating to the project's HMP Exhibit. There is one (1) POCs for the project, POC-1. POC-1 is located southwest of the project site where the existing curb inlet 18" lateral confluences with the 60" main in South Santa Fe Avenue (See Attachment 1a and 2a).
Has a geomorphic assessment been performed for the receiving channel(s)? ☑ No, the low flow threshold is 0.1Q2 (default low flow threshold) ☐ Yes, the result is the low flow threshold is 0.1Q2 ☐ Yes, the result is the low flow threshold is 0.3Q2 ☐ Yes, the result is the low flow threshold is 0.5Q2 If a geomorphic assessment has been performed, provide title, date, and preparer: Discussion / Additional Information: (optional)

Form I-3B Page 10 of 10, Form Date: March 15, 2016
Other Site Requirements and Constraints
When applicable, list other site requirements or constraints that will influence storm water management design, such as zoning requirements including setbacks and open space, or local codes governing minimum street width, sidewalk construction, allowable pavement types, and drainage requirements. N/A
Optional Additional Information or Continuation of Previous Sections As Needed
This space provided for additional information or continuation of information from previous sections as needed.

FORM I-4 SOURCE CONTROL BMP CHECKLIST FOR ALL DEVELOPMENT PROJECTS

Source Control BMP Checklist for All Development Projects (Standard Projects and Priority Development Projects)	Form I-4 [March 15, 2016]

Project Identification

Project Name: South Santa Fe Townhomes

Permit Application Number

Source Control BMPs

All development projects must implement source control BMPs SC-1 through SC-6 where applicable and feasible. See Chapter 4 and Appendix E of the Model BMP Design Manual for information to implement source control BMPs shown in this checklist.

Answer each category below pursuant to the following.

- "Yes" means the project will implement the source control BMP as described in Chapter 4 and/or Appendix E of the Model BMP Design Manual. Discussion / justification is not required.
- "No" means the BMP is applicable to the project but it is not feasible to implement. Discussion / justification must be provided.
- "N/A" means the BMP is not applicable at the project site because the project does not include the feature that is addressed by the BMP (e.g., the project has no outdoor materials storage areas). Discussion / justification may be provided.

Source Control Requirement	Applied?		
SC-1 Prevention of Illicit Discharges into the MS4	☑ Yes	☐ No	☐ N/A
Discussion / justification if SC-1 not implemented:			
SC-2 Storm Drain Stenciling or Signage	☑ Yes	☐ No	☐ N/A
Discussion / justification if SC-2 not implemented:			
SC-3 Protect Outdoor Materials Storage Areas from Rainfall, Run-On, Runoff, and Wind Dispersal	☐ Yes	☐ No	☑ N/A
Discussion / justification if SC-3 not implemented:			
SC-4 Protect Materials Stored in Outdoor Work Areas from Rainfall, Run-On, Runoff, and Wind Dispersal	☐ Yes	☐ No	☑ N/A
Discussion / justification if SC-4 not implemented:			

Form I-4 Page 2 of 2, Form Date: March 15, 2016			
Source Control Requirement	**Applied?**		
SC-5 Protect Trash Storage Areas from Rainfall, Run-On, Runoff, and Wind Dispersal	☑ Yes	☐ No	☐ N/A
Discussion / justification if SC-5 not implemented:			
SC-6 Additional BMPs Based on Potential Sources of Runoff Pollutants (must answer for each source listed below)			
☐ On-site storm drain inlets	☑ Yes	☐ No	☐ N/A
☐ Interior floor drains and elevator shaft sump pumps	☑ Yes	☐ No	☐ N/A
☐ Interior parking garages	☐ Yes	☐ No	☑ N/A
☐ Need for future indoor & structural pest control	☐ Yes	☐ No	☑ N/A
☐ Landscape/Outdoor Pesticide Use	☑ Yes	☐ No	☐ N/A
☐ Pools, spas, ponds, decorative fountains, and other water features	☐ Yes	☐ No	☑ N/A
☐ Food service	☐ Yes	☐ No	☑ N/A
☐ Refuse areas	☑ Yes	☐ No	☐ N/A
☐ Industrial processes	☐ Yes	☐ No	☑ N/A
☐ Outdoor storage of equipment or materials	☐ Yes	☐ No	☑ N/A
☐ Vehicle and Equipment Cleaning	☐ Yes	☐ No	☑ N/A
☐ Vehicle/Equipment Repair and Maintenance	☐ Yes	☐ No	☑ N/A
☐ Fuel Dispensing Areas	☐ Yes	☐ No	☑ N/A
☐ Loading Docks	☐ Yes	☐ No	☑ N/A
☐ Fire Sprinkler Test Water	☑ Yes	☐ No	☐ N/A
☐ Miscellaneous Drain or Wash Water	☑ Yes	☐ No	☐ N/A
☐ Plazas, sidewalks, and parking lots	☑Yes	☐ No	☐ N/A
Discussion / justification if SC-6 not implemented. Clearly identify which sources of runoff pollutants are discussed. Justification must be provided for <u>all</u> "No" answers shown above.			

FORM I-5 SITE DESIGN BMP CHECKLIST FOR ALL DEVELOPMENT PROJECTS

Site Design BMP Checklist for All Development Projects (Standard Projects and Priority Development Projects)	Form I-5 [March 15, 2016]

Project Identification

Project Name: South Santa Fe Townhomes

Permit Application Number

Site Design BMPs

All development projects must implement site design BMPs SD-1 through SD-8 where applicable and feasible. See Chapter 4 and Appendix E of the Model BMP Design Manual for information to implement site design BMPs shown in this checklist.

Answer each category below pursuant to the following.

- "Yes" means the project will implement the site design BMP as described in Chapter 4 and/or Appendix E of the Model BMP Design Manual. Discussion / justification is not required.
- "No" means the BMP is applicable to the project but it is not feasible to implement. Discussion / justification must be provided.
- "N/A" means the BMP is not applicable at the project site because the project does not include the feature that is addressed by the BMP (e.g., the project site has no existing natural areas to conserve). Discussion / justification may be provided.

Site Design Requirement	Applied?		
SD-1 Maintain Natural Drainage Pathways and Hydrologic Features	☐ Yes	☐ No	☑ N/A
Discussion / justification if SD-1 not implemented:			
SD-2 Conserve Natural Areas, Soils, and Vegetation	☐ Yes	☑ No	☐ N/A
Discussion / justification if SD-2 not implemented:			
SD-3 Minimize Impervious Area	☑ Yes	☐ No	☐ N/A
Discussion / justification if SD-3 not implemented:			
SD-4 Minimize Soil Compaction	☑ Yes	☐ No	☐ N/A
Discussion / justification if SD-4 not implemented:			
SD-5 Impervious Area Dispersion	☑ Yes	☐ No	☐ N/A
Discussion / justification if SD-5 not implemented:			

Form I-5 Page 2 of 2, Form Date: March 15, 2016			
Site Design Requirement	**Applied?**		
SD-6 Runoff Collection	☑ Yes	☐ No	☐ N/A
Discussion / justification if SD-6 not implemented:			
SD-7 Landscaping with Native or Drought Tolerant Species	☑ Yes	☐ No	☐ N/A
Discussion / justification if SD-7 not implemented:			
SD-8 Harvesting and Using Precipitation	☐ Yes	☑ No	☐ N/A
Discussion / justification if SD-8 not implemented: Harvest and use is not feasible for this project.			

FORM I-6 SUMMARY OF PDP STRUCTURAL BMPS

Summary of PDP Structural BMPs	Form I-6 (PDPs) [March 15, 2016]
Project Identification	
Project Name: South Santa Fe Townhomes	
Permit Application Number	
PDP Structural BMPs	
All PDPs must implement structural BMPs for storm water pollutant control (see Chapter 5 of the BMP Design Manual). Selection of PDP structural BMPs for storm water pollutant control must be based on the selection process described in Chapter 5. PDPs subject to hydromodification management requirements must also implement structural BMPs for flow control for hydromodification management (see Chapter 6 of the BMP Design Manual). Both storm water pollutant control and flow control for hydromodification management can be achieved within the same structural BMP(s). PDP structural BMPs must be verified by the local jurisdiction at the completion of construction. This may include requiring the project owner or project owner's representative and engineer of record to certify construction of the structural BMPs (see Section 1.12 of the BMP Design Manual). PDP structural BMPs must be maintained into perpetuity, and the local jurisdiction must confirm the maintenance (see Section 7 of the BMP Design Manual). Use this form to provide narrative description of the general strategy for structural BMP implementation at the project site in the box below. Then complete the PDP structural BMP summary information sheet (page 3 of this form) for each structural BMP within the project (copy the BMP summary information page as many times as needed to provide summary information for each individual structural BMP).	
Describe the general strategy for structural BMP implementation at the site. This information must describe how the steps for selecting and designing storm water pollutant control BMPs presented in Section 5.1 of the BMP Design Manual were followed, and the results (type of BMPs selected). For projects requiring hydromodification flow control BMPs, indicate whether pollutant control and flow control BMPs are integrated or separate. **DMAs 1-5/ BMPs 1A-5A** Step 1A: The DMA is not self-mitigating, de minimis, or self-retaining. Step 1B: There are no site design BMPs proposed for the project for which the runoff factor can be adjusted. Step 2: Harvest and use is not feasible. Refer to Attachment 1c. Step 3: Pursuant to the geotechnical report and Worksheet C.4-1, infiltration is not feasible. Step 4: Proprietary Biofiltration BMPs (BF-3) have been selected and sized per the design criteria to meet pollutant control requirements and an underground storm water storage facility has been selected and sized per the design criteria to meet hydromodification management flow control requirements and to mitigate the project site's 100-year peak flows **DMAs 6-11** According to section 5.2.1 of the BMP Design Manual for the City of San Marcos, these DMAs qualify as de-minimis or self-mitigating since the vegetation in the landscaped area is native and/or non-native/ non-invasive drought tolerant species that do not require regular application of fertilizers and pesticides, soils are undisturbed native topsoil, or disturbed soils that have been amended and aerated, impervious	

area within the self-mitigated area is only hydraulically connected to a brow ditch and not any other impervious areas, and the self-mitigating areas are hydraulically separated from DMAs that contain permanent pollutant control BMPs.

Structural BMP Summary Information
(Copy this page as needed to provide information for each individual proposed structural BMP)

Structural BMP ID No. 1A	DMA Nos: 1
Construction Plan Sheet No.	

Type of structural BMP:
- ☐ Retention by harvest and use (HU-1)
- ☐ Retention by infiltration basin (INF-1)
- ☐ Retention by bioretention (INF-2)
- ☐ Retention by permeable pavement (INF-3)
- ☐ Partial retention by biofiltration with partial retention (PR-1)
- ☐ Biofiltration (BF-1)
- ☐ Biofiltration with Nutrient Sensitive Media Design (BF-2)
- ☑ Proprietary Biofiltration (BF-3) meeting all requirements of Appendix F
- ☐ Flow-thru treatment control with prior lawful approval to meet earlier PDP requirements (provide BMP type/description in discussion section below)
- ☐ Flow-thru treatment control included as pre-treatment/forebay for an onsite retention or biofiltration BMP (provide BMP type/description and indicate which onsite retention or biofiltration BMP it serves in discussion section below)
- ☐ Flow-thru treatment control with alternative compliance (provide BMP type/description in discussion section below)
- ☐ Detention pond or vault for hydromodification management
- ☐ Other (describe in discussion section below)

Purpose:
- ☑ Pollutant control only
- ☐ Hydromodification control only
- ☐ Combined pollutant control and hydromodification control
- ☐ Pre-treatment/forebay for another structural BMP
- ☐ Other (describe in discussion section below)

Who will certify construction of this BMP? Provide name and contact information for the party responsible to sign BMP verification forms if required by the [City Engineer] (See Section 1.12 of the BMP Design Manual)	William J. Suiter, RCE 68964 Pasco Laret Suiter & Associates 34270 Pacific Coast Hwy, Suite B Dana Point, CA 92629
Who will be the final owner of this BMP?	Santa Fe Flores LP
Who will maintain this BMP into perpetuity?	Santa Fe Flores LP
What is the funding mechanism for maintenance?	Santa Fe Flores LP

Form I-6 Page 3 of 10 Form Date: March 15, 2016	
Structural BMP Summary Information **(Copy this page as needed to provide information for each individual proposed structural BMP)**	
Structural BMP ID No. 2A	DMA Nos: 2
Construction Plan Sheet No.	
Type of structural BMP: ☐ Retention by harvest and use (HU-1) ☐ Retention by infiltration basin (INF-1) ☐ Retention by bioretention (INF-2) ☐ Retention by permeable pavement (INF-3) ☐ Partial retention by biofiltration with partial retention (PR-1) ☐ Biofiltration (BF-1) ☐ Biofiltration with Nutrient Sensitive Media Design (BF-2) ☑ Proprietary Biofiltration (BF-3) meeting all requirements of Appendix F ☐ Flow-thru treatment control with prior lawful approval to meet earlier PDP requirements (provide BMP type/description in discussion section below) ☐ Flow-thru treatment control included as pre-treatment/forebay for an onsite retention or biofiltration BMP (provide BMP type/description and indicate which onsite retention or biofiltration BMP it serves in discussion section below) ☐ Flow-thru treatment control with alternative compliance (provide BMP type/description in discussion section below) ☐ Detention pond or vault for hydromodification management ☐ Other (describe in discussion section below)	
Purpose: ☑ Pollutant control only ☐ Hydromodification control only ☐ Combined pollutant control and hydromodification control ☐ Pre-treatment/forebay for another structural BMP ☐ Other (describe in discussion section below)	
Who will certify construction of this BMP? Provide name and contact information for the party responsible to sign BMP verification forms if required by the [City Engineer] (See Section 1.12 of the BMP Design Manual)	William J. Suiter, RCE 68964 Pasco Laret Suiter & Associates 34270 Pacific Coast Hwy, Suite B Dana Point, CA 92629
Who will be the final owner of this BMP?	Santa Fe Flores LP
Who will maintain this BMP into perpetuity?	Santa Fe Flores LP
What is the funding mechanism for maintenance?	Santa Fe Flores LP

Form I-6 Page 4 of 10 Form Date: March 15, 2016	
Structural BMP Summary Information **(Copy this page as needed to provide information for each individual proposed structural BMP)**	
Structural BMP ID No. 3A	DMA Nos: 3
Construction Plan Sheet No.	
Type of structural BMP: ☐ Retention by harvest and use (HU-1) ☐ Retention by infiltration basin (INF-1) ☐ Retention by bioretention (INF-2) ☐ Retention by permeable pavement (INF-3) ☐ Partial retention by biofiltration with partial retention (PR-1) ☐ Biofiltration (BF-1) ☐ Biofiltration with Nutrient Sensitive Media Design (BF-2) ☑ Proprietary Biofiltration (BF-3) meeting all requirements of Appendix F ☐ Flow-thru treatment control with prior lawful approval to meet earlier PDP requirements (provide BMP type/description in discussion section below) ☐ Flow-thru treatment control included as pre-treatment/forebay for an onsite retention or biofiltration BMP (provide BMP type/description and indicate which onsite retention or biofiltration BMP it serves in discussion section below) ☐ Flow-thru treatment control with alternative compliance (provide BMP type/description in discussion section below) ☐ Detention pond or vault for hydromodification management ☐ Other (describe in discussion section below)	
Purpose: ☑ Pollutant control only ☐ Hydromodification control only ☐ Combined pollutant control and hydromodification control ☐ Pre-treatment/forebay for another structural BMP ☐ Other (describe in discussion section below)	
Who will certify construction of this BMP? Provide name and contact information for the party responsible to sign BMP verification forms if required by the [City Engineer] (See Section 1.12 of the BMP Design Manual)	William J. Suiter, RCE 68964 Pasco Laret Suiter & Associates 34270 Pacific Coast Hwy, Suite B Dana Point, CA 92629
Who will be the final owner of this BMP?	Santa Fe Flores LP
Who will maintain this BMP into perpetuity?	Santa Fe Flores LP
What is the funding mechanism for maintenance?	Santa Fe Flores LP

Structural BMP Summary Information
(Copy this page as needed to provide information for each individual proposed structural BMP)

Structural BMP ID No. 4A	DMA Nos: 4
Construction Plan Sheet No.	

Type of structural BMP:
- ☐ Retention by harvest and use (HU-1)
- ☐ Retention by infiltration basin (INF-1)
- ☐ Retention by bioretention (INF-2)
- ☐ Retention by permeable pavement (INF-3)
- ☐ Partial retention by biofiltration with partial retention (PR-1)
- ☐ Biofiltration (BF-1)
- ☐ Biofiltration with Nutrient Sensitive Media Design (BF-2)
- ☑ Proprietary Biofiltration (BF-3) meeting all requirements of Appendix F
- ☐ Flow-thru treatment control with prior lawful approval to meet earlier PDP requirements (provide BMP type/description in discussion section below)
- ☐ Flow-thru treatment control included as pre-treatment/forebay for an onsite retention or biofiltration BMP (provide BMP type/description and indicate which onsite retention or biofiltration BMP it serves in discussion section below)
- ☐ Flow-thru treatment control with alternative compliance (provide BMP type/description in discussion section below)
- ☐ Detention pond or vault for hydromodification management
- ☐ Other (describe in discussion section below)

Purpose:
- ☑ Pollutant control only
- ☐ Hydromodification control only
- ☐ Combined pollutant control and hydromodification control
- ☐ Pre-treatment/forebay for another structural BMP
- ☐ Other (describe in discussion section below)

Who will certify construction of this BMP? Provide name and contact information for the party responsible to sign BMP verification forms if required by the [City Engineer] (See Section 1.12 of the BMP Design Manual)	William J. Suiter, RCE 68964 Pasco Laret Suiter & Associates 34270 Pacific Coast Hwy, Suite B Dana Point, CA 92629
Who will be the final owner of this BMP?	Santa Fe Flores LP
Who will maintain this BMP into perpetuity?	Santa Fe Flores LP
What is the funding mechanism for maintenance?	Santa Fe Flores LP

Structural BMP Summary Information
(Copy this page as needed to provide information for each individual proposed structural BMP)

Structural BMP ID No. 5A	DMA Nos: 5
Construction Plan Sheet No.	

Type of structural BMP:
- ☐ Retention by harvest and use (HU-1)
- ☐ Retention by infiltration basin (INF-1)
- ☐ Retention by bioretention (INF-2)
- ☐ Retention by permeable pavement (INF-3)
- ☐ Partial retention by biofiltration with partial retention (PR-1)
- ☐ Biofiltration (BF-1)
- ☐ Biofiltration with Nutrient Sensitive Media Design (BF-2)
- ☑ Proprietary Biofiltration (BF-3) meeting all requirements of Appendix F
- ☐ Flow-thru treatment control with prior lawful approval to meet earlier PDP requirements (provide BMP type/description in discussion section below)
- ☐ Flow-thru treatment control included as pre-treatment/forebay for an onsite retention or biofiltration BMP (provide BMP type/description and indicate which onsite retention or biofiltration BMP it serves in discussion section below)
- ☐ Flow-thru treatment control with alternative compliance (provide BMP type/description in discussion section below)
- ☐ Detention pond or vault for hydromodification management
- ☐ Other (describe in discussion section below)

Purpose:
- ☑ Pollutant control only
- ☐ Hydromodification control only
- ☐ Combined pollutant control and hydromodification control
- ☐ Pre-treatment/forebay for another structural BMP
- ☐ Other (describe in discussion section below)

Who will certify construction of this BMP? Provide name and contact information for the party responsible to sign BMP verification forms if required by the [City Engineer] (See Section 1.12 of the BMP Design Manual)	William J. Suiter, RCE 68964 Pasco Laret Suiter & Associates 34270 Pacific Coast Hwy, Suite B Dana Point, CA 92629
Who will be the final owner of this BMP?	Santa Fe Flores LP
Who will maintain this BMP into perpetuity?	Santa Fe Flores LP
What is the funding mechanism for maintenance?	Santa Fe Flores LP

Structural BMP Summary Information
(Copy this page as needed to provide information for each individual proposed structural BMP)

Structural BMP ID No. 1B	DMA Nos: 1, 7
Construction Plan Sheet No.	

Type of structural BMP:
- ☐ Retention by harvest and use (HU-1)
- ☐ Retention by infiltration basin (INF-1)
- ☐ Retention by bioretention (INF-2)
- ☐ Retention by permeable pavement (INF-3)
- ☐ Partial retention by biofiltration with partial retention (PR-1)
- ☐ Biofiltration (BF-1)
- ☐ Biofiltration with Nutrient Sensitive Media Design (BF-2)
- ☐ Proprietary Biofiltration (BF-3) meeting all requirements of Appendix F
- ☐ Flow-thru treatment control with prior lawful approval to meet earlier PDP requirements (provide BMP type/description in discussion section below)
- ☐ Flow-thru treatment control included as pre-treatment/forebay for an onsite retention or biofiltration BMP (provide BMP type/description and indicate which onsite retention or biofiltration BMP it serves in discussion section below)
- ☐ Flow-thru treatment control with alternative compliance (provide BMP type/description in discussion section below)
- ☑ Detention pond or vault for hydromodification management
- ☐ Other (describe in discussion section below)

Purpose:
- ☐ Pollutant control only
- ☑ Hydromodification control only
- ☐ Combined pollutant control and hydromodification control
- ☐ Pre-treatment/forebay for another structural BMP
- ☐ Other (describe in discussion section below)

Who will certify construction of this BMP? Provide name and contact information for the party responsible to sign BMP verification forms if required by the [City Engineer] (See Section 1.12 of the BMP Design Manual)	William J. Suiter, RCE 68964 Pasco Laret Suiter & Associates 34270 Pacific Coast Hwy, Suite B Dana Point, CA 92629
Who will be the final owner of this BMP?	Santa Fe Flores LP
Who will maintain this BMP into perpetuity?	Santa Fe Flores LP
What is the funding mechanism for maintenance?	Santa Fe Flores LP

Structural BMP Summary Information
(Copy this page as needed to provide information for each individual proposed structural BMP)

Structural BMP ID No. 2B	DMA Nos: 2, 8
Construction Plan Sheet No.	

Type of structural BMP:
- ☐ Retention by harvest and use (HU-1)
- ☐ Retention by infiltration basin (INF-1)
- ☐ Retention by bioretention (INF-2)
- ☐ Retention by permeable pavement (INF-3)
- ☐ Partial retention by biofiltration with partial retention (PR-1)
- ☐ Biofiltration (BF-1)
- ☐ Biofiltration with Nutrient Sensitive Media Design (BF-2)
- ☐ Proprietary Biofiltration (BF-3) meeting all requirements of Appendix F
- ☐ Flow-thru treatment control with prior lawful approval to meet earlier PDP requirements (provide BMP type/description in discussion section below)
- ☐ Flow-thru treatment control included as pre-treatment/forebay for an onsite retention or biofiltration BMP (provide BMP type/description and indicate which onsite retention or biofiltration BMP it serves in discussion section below)
- ☐ Flow-thru treatment control with alternative compliance (provide BMP type/description in discussion section below)
- ☑ Detention pond or vault for hydromodification management
- ☐ Other (describe in discussion section below)

Purpose:
- ☐ Pollutant control only
- ☑ Hydromodification control only
- ☐ Combined pollutant control and hydromodification control
- ☐ Pre-treatment/forebay for another structural BMP
- ☐ Other (describe in discussion section below)

Who will certify construction of this BMP? Provide name and contact information for the party responsible to sign BMP verification forms if required by the [City Engineer] (See Section 1.12 of the BMP Design Manual)	William J. Suiter, RCE 68964 Pasco Laret Suiter & Associates 34270 Pacific Coast Hwy, Suite B Dana Point, CA 92629
Who will be the final owner of this BMP?	Santa Fe Flores LP
Who will maintain this BMP into perpetuity?	Santa Fe Flores LP
What is the funding mechanism for maintenance?	Santa Fe Flores LP

Structural BMP Summary Information
(Copy this page as needed to provide information for each individual proposed structural BMP)

Structural BMP ID No. 3B	DMA Nos: 3
Construction Plan Sheet No.	

Type of structural BMP:
- ☐ Retention by harvest and use (HU-1)
- ☐ Retention by infiltration basin (INF-1)
- ☐ Retention by bioretention (INF-2)
- ☐ Retention by permeable pavement (INF-3)
- ☐ Partial retention by biofiltration with partial retention (PR-1)
- ☐ Biofiltration (BF-1)
- ☐ Biofiltration with Nutrient Sensitive Media Design (BF-2)
- ☐ Proprietary Biofiltration (BF-3) meeting all requirements of Appendix F
- ☐ Flow-thru treatment control with prior lawful approval to meet earlier PDP requirements (provide BMP type/description in discussion section below)
- ☐ Flow-thru treatment control included as pre-treatment/forebay for an onsite retention or biofiltration BMP (provide BMP type/description and indicate which onsite retention or biofiltration BMP it serves in discussion section below)
- ☐ Flow-thru treatment control with alternative compliance (provide BMP type/description in discussion section below)
- ☑ Detention pond or vault for hydromodification management
- ☐ Other (describe in discussion section below)

Purpose:
- ☐ Pollutant control only
- ☑ Hydromodification control only
- ☐ Combined pollutant control and hydromodification control
- ☐ Pre-treatment/forebay for another structural BMP
- ☐ Other (describe in discussion section below)

Who will certify construction of this BMP? Provide name and contact information for the party responsible to sign BMP verification forms if required by the [City Engineer] (See Section 1.12 of the BMP Design Manual)	William J. Suiter, RCE 68964 Pasco Laret Suiter & Associates 34270 Pacific Coast Hwy, Suite B Dana Point, CA 92629
Who will be the final owner of this BMP?	Santa Fe Flores LP
Who will maintain this BMP into perpetuity?	Santa Fe Flores LP
What is the funding mechanism for maintenance?	Santa Fe Flores LP

Structural BMP Summary Information
(Copy this page as needed to provide information for each individual proposed structural BMP)

Structural BMP ID No. 4B	DMA Nos: 4
Construction Plan Sheet No.	

Type of structural BMP:
- ☐ Retention by harvest and use (HU-1)
- ☐ Retention by infiltration basin (INF-1)
- ☐ Retention by bioretention (INF-2)
- ☐ Retention by permeable pavement (INF-3)
- ☐ Partial retention by biofiltration with partial retention (PR-1)
- ☐ Biofiltration (BF-1)
- ☐ Biofiltration with Nutrient Sensitive Media Design (BF-2)
- ☐ Proprietary Biofiltration (BF-3) meeting all requirements of Appendix F
- ☐ Flow-thru treatment control with prior lawful approval to meet earlier PDP requirements (provide BMP type/description in discussion section below)
- ☐ Flow-thru treatment control included as pre-treatment/forebay for an onsite retention or biofiltration BMP (provide BMP type/description and indicate which onsite retention or biofiltration BMP it serves in discussion section below)
- ☐ Flow-thru treatment control with alternative compliance (provide BMP type/description in discussion section below)
- ☑ Detention pond or vault for hydromodification management
- ☐ Other (describe in discussion section below)

Purpose:
- ☐ Pollutant control only
- ☑ Hydromodification control only
- ☐ Combined pollutant control and hydromodification control
- ☐ Pre-treatment/forebay for another structural BMP
- ☐ Other (describe in discussion section below)

Who will certify construction of this BMP? Provide name and contact information for the party responsible to sign BMP verification forms if required by the [City Engineer] (See Section 1.12 of the BMP Design Manual)	William J. Suiter, RCE 68964 Pasco Laret Suiter & Associates 34270 Pacific Coast Hwy, Suite B Dana Point, CA 92629
Who will be the final owner of this BMP?	Santa Fe Flores LP
Who will maintain this BMP into perpetuity?	Santa Fe Flores LP
What is the funding mechanism for maintenance?	Santa Fe Flores LP

ATTACHMENT 1 BACKUP FOR PDP POLLUTANT CONTROL BMPS

This is the cover sheet for Attachment 1.

Indicate which Items are Included behind this cover sheet:

Attachment Sequence	Contents	Checklist
Attachment 1a	DMA Exhibit (Required) See DMA Exhibit Checklist on the back of this Attachment cover sheet.	☑ Included
Attachment 1b	Tabular Summary of DMAs Showing DMA ID matching DMA Exhibit, DMA Area, and DMA Type (Required)* *Provide table in this Attachment OR on DMA Exhibit in Attachment 1a	☑ Included on DMA Exhibit in Attachment 1a ☐ Included as Attachment 1b, separate from DMA Exhibit
Attachment 1c	Form I-7, Harvest and Use Feasibility Screening Checklist (Required unless the entire project will use infiltration BMPs) Refer to Appendix B.3-1 of the BMP Design Manual to complete Form I-7.	☑ Included ☐ Not included because the entire project will use infiltration BMPs
Attachment 1d	Form I-8, Categorization of Infiltration Feasibility Condition (Required unless the project will use harvest and use BMPs) Refer to Appendices C and D of the BMP Design Manual to complete Form I-8.	☑ Included ☐ Not included because the entire project will use harvest and use BMPs
Attachment 1e	Pollutant Control BMP Design Worksheets / Calculations (Required) Refer to Appendices B and E of the BMP Design Manual for structural pollutant control BMP design guidelines	☑ Included

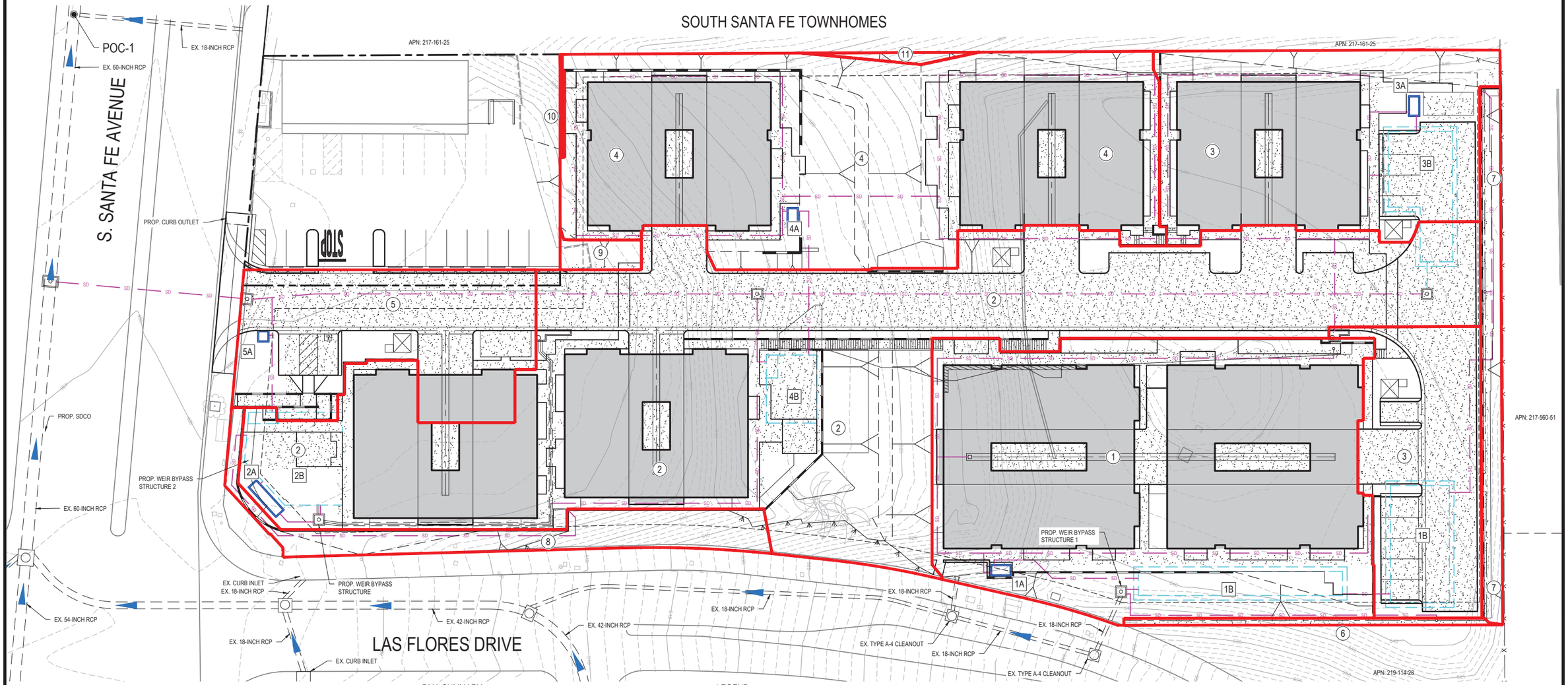
Use this checklist to ensure the required information has been included on the DMA Exhibit:

The DMA Exhibit must identify:

- ☐ Underlying hydrologic soil group
- ☐ Approximate depth to groundwater
- ☐ Existing natural hydrologic features (watercourses, seeps, springs, wetlands)
- ☐ Critical coarse sediment yield areas to be protected
- ☐ Existing topography and impervious areas
- ☐ Existing and proposed site drainage network and connections to drainage offsite
- ☐ Proposed demolition
- ☐ Proposed grading
- ☐ Proposed impervious features
- ☐ Proposed design features and surface treatments used to minimize imperviousness
- ☐ Drainage management area (DMA) boundaries, DMA ID numbers, and DMA areas (square footage or acreage), and DMA type (i.e., drains to BMP, self-retaining, or self-mitigating)
- ☐ Potential pollutant source areas and corresponding required source controls (see Chapter 4, Appendix E.1, and Form I-3B)
- ☐ Structural BMPs (identify location, type of BMP, and size/detail)

DMA EXHIBIT

SOUTH SANTA FE TOWNHOMES



DMA SUMMARY

DRAINAGE MANAGEMENT AREA (DMA)	TOTAL AREA (SF/AC)	TOTAL IMPV. AREA (SF/AC)	TOTAL PERV. AREA (SF/AC)	DMA TYPE	BMP TYPE	BMP #	BMP SIZE PROVIDED
①	22,359/ 0.51	15,866/ 0.36	6,493/ 0.15	DRAINS TO BMP	PROPRIETARY BIOFILTRATION	1A	4'x8'
				DRAINS TO BMP	DETENTION VAULT	1B	2,200 SF 5.12' HIGH
②	38,299/ 0.88	27,334/ 0.63	10,965/ 0.25	DRAINS TO BMP	PROPRIETARY BIOFILTRATION	2A	4'x17'
				DRAINS TO BMP	DETENTION VAULT	2B	1,400 SF 5.67' HIGH
③	17,591/ 0.40	12,861/ 0.29	4,730/ 0.11	DRAINS TO BMP	PROPRIETARY BIOFILTRATION	3A	4'x8'
				DRAINS TO BMP	DETENTION VAULT	3B	1,264 SF 7' HIGH
④	21,969/ 0.50	11,824/ 0.27	10,145/ 0.23	DRAINS TO BMP	PROPRIETARY BIOFILTRATION	4A	4'x8'
				DRAINS TO BMP	DETENTION VAULT	4B	600 SF 5.67' HIGH
⑤	7,436/ 0.17	5,943/ 0.14	1,493/ 0.03	DRAINS TO BMP	PROPRIETARY BIOFILTRATION	5A	4'x4'
⑥	479/ 0.01	396/ 0.009	83/ 0.001	DE MINIMIS	-	-	
⑦	2,103/ 0.05	742/ 0.02	1,361/ 0.03	SELF MITIGATING	DETENTION VAULT	1B	
⑧	3,163/ 0.07	0/ 0.00	3,163/ 0.07	SELF MITIGATING	DETENTION VAULT	2B	
⑨	467/ 0.01	98/ 0.002	369/ 0.008	SELF MITIGATING	-	-	
⑩	45/ 0.001	0/ 0.00	45/ 0.001	SELF MITIGATING	-	-	
⑪	204/ 0.005	0/ 0.00	204/ 0.005	SELF MITIGATING	-	-	

LEGEND

- RIGHT OF WAY
- PROJECT BOUNDARY
- STREET CENTER LINE
- BASIN BOUNDARY
- EXISTING CONTOURS
- SD — PROPOSED STORM DRAIN
- PROPOSED UNDERGROUND DETENTION SYSTEM
- PROPOSED PROPRIETARY BIOFILTRATION SYSTEM
- UNDERGROUND EXISTING PIPE DRAINAGE PATH
- LIMITS OF PROPOSED BUILDING
- LIMITS OF PROPOSED PAVEMENT
- (X) DMA AREA #
- [X] DMA AREA #

0 20' 40' 60'

GRAPHIC SCALE: 1" = 20'

DMA EXHIBIT
SOUTH SANTA FE TOWNHOMES
CITY OF SAN MARCOS

PLSA
PLSAENGINEERING.COM

J:\ACTIVE JOBS\3527 MAYER-SOUTH SANTA FE AVE\CIVIL\REPORTS\SWQMP\TOWNHOME SITE PLAN\Attachments\Attachment 1- Backup for BMPs\Att 1a - DMA Exhibit

ATTACHMENT 1c

3527 South Santa Fe Townhomes
4/4/2025

Appendix B: Stormwater Pollutant Control Hydrologic Calculations and Sizing Methods

Worksheet B.2-1. DCV

DMA-1

Design Capture Volume		Worksheet B-2.1		
1	85th percentile 24-hr storm depth from Figure B.1-1	d=	0.75	inches
2	Area tributary to BMP (s)	A=	0.51	acres
3	Area weighted runoff factor (estimate using Appendix B.1.1 and B.2.1) * See calculation below	C=	0.67	unitless
4	Street trees volume reduction	TCV=	0	cubic-feet
5	Rain barrels volume reduction (1 cubic foot=7.48 gallons)	RCV=	0	cubic-feet
6	Calculate DCV = (3630 x C x d x A) – TCV - RCV	DCV=	933	cubic-feet

	Area (sq ft)	Runoff Factor	A x RF	Weighted RF
Impervious	15,866	0.9	14,279	
Pervious	6,493	0.1	649	
Total	22,359		14,929	0.67

DMA-2

Design Capture Volume		Worksheet B-2.1		
1	85th percentile 24-hr storm depth from Figure B.1-1	d=	0.75	inches
2	Area tributary to BMP (s)	A=	0.88	acres
3	Area weighted runoff factor (estimate using Appendix B.1.1 and B.2.1) * See calculation below	C=	0.67	unitless
4	Street trees volume reduction	TCV=	0	cubic-feet
5	Rain barrels volume reduction (1 cubic foot=7.48 gallons)	RCV=	0	cubic-feet
6	Calculate DCV = (3630 x C x d x A) – TCV - RCV	DCV=	1606	cubic-feet

	Area (sq ft)	Runoff Factor	A x RF	Weighted RF
Impervious	27,334	0.9	24,601	
Pervious	10,965	0.1	1,097	
Total	38,299		25,697	0.67

DMA-3

Design Capture Volume		Worksheet B-2.1		
1	85th percentile 24-hr storm depth from Figure B.1-1	d=	0.75	inches
2	Area tributary to BMP (s)	A=	0.40	acres
3	Area weighted runoff factor (estimate using Appendix B.1.1 and B.2.1) * See calculation below	C=	0.68	unitless
4	Street trees volume reduction	TCV=	0	cubic-feet
5	Rain barrels volume reduction (1 cubic foot=7.48 gallons)	RCV=	0	cubic-feet
6	Calculate DCV = (3630 x C x d x A) – TCV - RCV	DCV=	753	cubic-feet

	Area (sq ft)	Runoff Factor	A x RF	Weighted RF
Impervious	12,861	0.9	11,575	
Pervious	4,730	0.1	473	
Total	17,591		12,048	0.68

DMA-4

Design Capture Volume		**Worksheet B-2.1**		
1	85th percentile 24-hr storm depth from Figure B.1-1	d=	0.75	inches
2	Area tributary to BMP (s)	A=	0.50	acres
3	Area weighted runoff factor (estimate using Appendix B.1.1 and B.2.1) * See calculation below	C=	0.53	unitless
4	Street trees volume reduction	TCV=	0	cubic-feet
5	Rain barrels volume reduction (1 cubic foot=7.48 gallons)	RCV=	0	cubic-feet
6	Calculate DCV = (3630 x C x d x A) – TCV - RCV	DCV=	729	cubic-feet

	Area (sq ft)	Runoff Factor	A x RF	Weighted RF
Impervious	11,824	0.9	10,642	
Pervious	10,145	0.1	1,015	
Total	21,969		11,656	0.53

DMA-5

Design Capture Volume		**Worksheet B-2.1**		
1	85th percentile 24-hr storm depth from Figure B.1-1	d=	0.75	inches
2	Area tributary to BMP (s)	A=	0.17	acres
3	Area weighted runoff factor (estimate using Appendix B.1.1 and B.2.1) * See calculation below	C=	0.74	unitless
4	Street trees volume reduction	TCV=	0	cubic-feet
5	Rain barrels volume reduction (1 cubic foot=7.48 gallons)	RCV=	0	cubic-feet
6	Calculate DCV = (3630 x C x d x A) – TCV - RCV	DCV=	344	cubic-feet

	Area (sq ft)	Runoff Factor	A x RF	Weighted RF
Impervious	5,943	0.9	5,349	
Pervious	1,493	0.1	149	
Total	7,436		5,498	0.74

Harvest and Use Feasibility Screening	**Worksksheet B.3-1**

1. Is there a demand for harvested water (check all that apply) at the project site that is reliably present during the wet season?

∨ Toilet and urinal flushing
√ Landscape irrigation
Other:_____

2. If there is a demand; estimate the anticipated average wet season demand over a period of 36 hours. Guidance for planning level demand calculations for toilet/urinal flushing and landscape irrigation is provided in Section B.3.2.

Toilet/Urinal Flushing
(9.3 gal/person-day) x (0.13368 cuft/gal) x (1.5 days) = 1.86 cuft/person-36hr
Assume (3 people per unit x 46 units) x (1.86 cuft/person-36 hr) = 256.68 cuft/36hr

Landscape Irrigation
(0.90 ac irrigated) x (390 gal/ac-36hr) x (0.13368 cuft/gal) = 46.92 cuft/36hr
Total = 257 cuft + 47 cuft = 304 cuft

3. Calculate the DCV using worksheet B-2.1.

DCV = 4,365 cuft

3a. Is the 36-hour demand greater than or equal to the DCV?	3b. Is the 36-hour demand greater than 0.25DCV but less than the full DCV?	3c. Is the 36-hour demand less than 0.25DCV?
Yes / ∨ No	Yes / ∨ No	∨ Yes
Harvest and use appears to be feasible. Conduct more detailed evaluation and sizing calculations to confirm that DCV can be used at an adequate rate to meet drawdown criteria.	Harvest and use may be feasible. Conduct more detailed evaluation and sizing calculations to determine feasibility. Harvest and use may only be able to be used for a portion of the site, or (optionally) the storage may need to be upsized to meet long term capture targets while draining in longer than 36 hours.	∨ Harvest and use is considered to be infeasible.

ATTACHMENT 1d

October 18, 2021 CTE Job No. 10-16426G

Mr. Paul Mayer
P.O. Box 903
Rancho Santa Fe, California
Phone: (858) 888-2488 Via Email: pm@pemcor.net

Subject: Site Percolation Testing and Infiltration Feasibility Evaluation
Proposed S. Santa Fe Multi-Family Housing Development
2927 S. Santa Fe Avenue
San Marcos, California

References: At End of Document – Appendix A

Mr. Mayer:

In accordance with your request and our proposal No. G-5522 dated August 30, 2021, CTE, Inc. has performed percolation testing at the site and provides an evaluation of the infiltration characteristics and feasibility for the proposed project located at the subject site. This report presents the accumulated field and laboratory data collected and provides preliminary conclusions and recommendations regarding the site's suitability for design and development of stormwater infiltration BMP devices.

Our evaluation of the site's infiltration characteristics and feasibility was performed in general accordance with the guidelines set forth in the *City of San Marcos BMP design Manual (Updated February 2016).*

Based on our geotechnical analysis of the accumulated data and information, and in consideration of the potential for geotechnical hazards associated with onsite infiltration, CTE has determined that infiltration in any amount at the site is not feasible and should not be allowed. Any/all basins for storage of stormwater runoff should be lined with an impermeable liner and piped offsite via a suitable discharge outlet.

1.0 SITE DESCRIPTION & PERCOLATION TESTING

1.1 Site Description

The subject site is located at 2927 S. Santa Fe Avenue. The proposed development is bounded by S. Santa Fe Avenue to the southwest, N. Las Flores Drive to the east, and commercial structures to the north and west.

The subject site generally descends to the southwest with approximate elevations ranging from a high of 540 feet above mean sea level (msl) at the northeast end of the site, to a low of 495 feet above msl at the southern end of the site. The site currently consists of three undeveloped terraced building pads that are separated by an approximately 10-foot-tall 2:1 (horizontal distance: vertical distance) slope.

1.2 Field Exploration

Due to the sloping nature of the site, and in consideration of the proposed multi-story structures that are planned to be terraced into the sloping site, CTE determined that the southern-lower area of the site is the only potential suitable/feasible area for development of infiltration BMP devices. As such, our percolation testing was only performed in this area.

Two percolation test borings were excavated on September 30, 2021 using a Diedrich D50 truck-mounted drill rig equipped with eight-inch diameter hollow-stem augers to depths of five feet below the existing ground surface. The test holes were excavated such that the percolation testing was performed at or near the anticipated bottom elevation of proposed infiltration basin/s.

Groundwater was not encountered in either of the percolation test excavations. In addition, groundwater was not encountered in any of the previous subsurface explorations (extending to a maximum depth of approximately 51.5 feet below existing ground surface) performed by Ghostrider, Inc., as referenced in their Limited Geotechnical Investigation Report, dated July 1st, 2020.

1.3 Site-Specific Geologic and Soil Information

Reference to the published regional geologic map, *Geologic Map of the Oceanside 30'x60' Quadrangle, Kennedy & Tan, 2007*, indicates that the site is underlain by Tertiary-age Santiago Formation (May Symbol: Tsa). However, during our subsurface field explorations within the southern-lower portion of the site, young alluvial deposits were encountered at the surface and extended to the maximum explored depth of 5 feet bgs. As observed in the exploratory excavations, the encountered alluvial materials consist of stiff to very stiff, dark brown, moist, Sandy Clay (CL) with some gravel. Detailed logs of the percolation test borings are provided in the attached Appendix C.

1.4 Percolation Test Methods

Percolation testing was performed on October 1st, 2021, subsequent to a twenty-hour presoak period, and in general accordance with applicable regional standards outlined in the *Riverside County – Low Impact Development BMP Design Handbook (09/2011)*. The percolation rate test results are presented in the following section in Table 2.2 and are included in Appendix B.

2.0 CALCULATED INFILTRATION RATE

As per the regionally accepted methods outlined in the *Riverside County – Low Impact Development BMP Design Handbook (09/2011),* percolation test rates are to be converted to infiltration rates using the Porchet Method. The intent of calculating the converted infiltration rate is to take into account bias inherent in percolation test borehole sidewall infiltration that would not occur at a basin bottom where such sidewalls may not present.

The infiltration rate (I_t) is derived by the equation:

$$I_t = \frac{\Delta H\, \pi r^2\, 60}{\Delta t(\pi r^2 + 2\pi r H_{avg})} = \frac{\Delta H\, 60\, r}{\Delta t(r + 2H_{avg})}$$

Where:

I_t = tested infiltration rate, inches/hour
ΔH = change in head over the time interval, inches
Δt = time interval, minutes
r = effective radius of test hole
H_{avg} = average head over the time interval, inches

Given the measured percolation rates, the calculated infiltration rates are presented with and without a Factor of Safety applied in Table 2.2 below. A completed C.4-1 Worksheet is included in Appendix D. The civil engineer of record should determine an appropriate factor of safety to be applied via completion of Worksheet D.5-1 provided in Appendix D of the *City of San Marcos BMP design Manual (Updated February 2016).* However, CTE does not recommend using a factor of safety of less than 2.0.

TABLE 2.0
RESULTS OF PERCOLATION TESTING WITH FACTOR OF SAFETY APPLIED

Test Location	Test Depth (inches)	Procedure	Geologic Unit	Percolation Rate (inches per hour)	Infiltration Rate (inches per hour)	Infiltration Rate with FOS of 2 Applied (inches per hour)
P-1	60	Non-Sandy	Qya	1.250	0.052	0.026
P-2	60	Non-Sandy	Qya	1.250	0.052	0.026

NOTES Water level was measured from a fixed point at the top of the hole.
Weather was sunny during percolation testing.
Qya = Quaternary Young Alluvial Deposits
The test holes were eight inches in diameter.

3.0 CONCLUSIONS

The percolation testing and converted infiltration rates indicate that partial infiltration at the site appears feasible, however, based on the sloping nature of the site, the planned development, the presence of high to very high expansion potential soils, the fine-grained nature of the encountered soils, and the potential for lateral migration of infiltration water into relatively close proximity public right-of-way and utility trenches, it is CTE opinion that the site is not considered suitable for infiltration in any amount. Any/all basins for storage of stormwater runoff should be lined with an impermeable liner and piped offsite via a suitable discharge outlet.

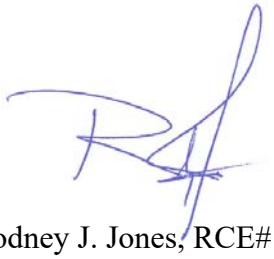
4.0 LIMITATIONS

CTE's conclusions and recommendations are based on an analysis of the observed conditions in the explored locations,the data collected and our evaluation of potential geotechnical hazards related to onsite infiltration.

The opportunity to be of service on this project is appreciated. If you have any questions regarding this report, please do not hesitate to contact the undersigned.

Respectfully submitted,

CONSTRUCTION TESTING & ENGINEERING, INC.



Rodney J. Jones, RCE# 84232
Senior Engineer

Attachments:

Figure 1 Percolation Test Location Map

Appendix A References
Appendix B Percolation Test Data and Infiltration Rate Conversion Calculations
Appendix C Percolation Test Boring Logs
Appendix D Laboratory Test Results
Appendix E Worksheet C.4-1

40' 0 20' 40'

LEGEND

P-2 APPROXIMATE PERC TEST LOCATION

Qya QUATERNARY YOUNG ALLUVIAL FLOOD PLAIN DEPOSITS

Tsa TERTIARY SANTIAGO FORMATION

APPROXIMATE GEOLOGIC CONTACT

CTE A Universal Engineering Sciences Company
Construction Testing & Engineering, Inc.
Inspection | Testing | Geotechnical | Environmental & Construction Engineering | Civil Engineering | Surveying

GEOLOGIC/PERC TEST LOCATION MAP
S. SANTA FE MULTI-FAMILY HOUSING DEVELOPMENT
2927 S. SANTA FE AVENUE
SAN MARCOS, CALIFORNIA

SCALE:	DATE:
1"=40'	10/21
CTE JOB NO.: 10-16426G	FIGURE: 1

S:\Projects\10-16426G (S. Santa Fe Ave Perc Testing)\Figure 1.dwg

APPENDIX A

REFERENCES

1. Ghostrider, Inc., Limited Geotechnical Investigation, 2972 South Santa Fe Avenue, San Marcos, Project No. 19-2118C, dated July 1, 2020.

2. Kennedy, M.P. and Tan, S.S., 2007, "Geologic Map of the Oceanside 30' x 60' Quadrangle, California", California Geological Survey, Map No. 2.

3. Riverside County, Revised 9/2011, "Design Handbook for Low Impact Development BMPs"".

4. City of San Marcos, February 2016, "BMP Design Manual For Permanent Site Design, Storm Water Treatment and Hydromodification Management"

APPENDIX B

PERCOLATION TEST DATA AND INFILTRATION RATE CONVERSION CALCULATIONS

Project: **S. SANTA FE MULTI-FAMILY HOUSING**

Project No.: **10-16426G** Tables P-1

Percolation Field Data and Calculated Rates

P-1 **Total Depth:** **60 inches**

Time	Test Interval Time (minutes)	Test Refill Depth /Inches	Water Level Initial/Start Depth /Inches	Water Level End/Final Depth /Inches	Incremental Water Level Change (inches)	Percolation Rate inches/minute	Percolation Rate inches/hour
7:25:00	Initial	None	12.88	initial	-		
7:55:00	30	12	12.88	14.63	1.75	0.058	3.500
8:25:00	30	12.75	12.00	14.13	2.13	0.071	4.250
8:55:00	30	12.875	12.75	14.13	1.38	0.046	2.750
9:25:00	30	12.125	12.88	14.00	1.13	0.038	2.250
9:55:00	30	13.75	12.13	13.75	1.63	0.054	3.250
10:25:00	30	11.625	13.75	14.63	0.88	0.029	1.750
10:55:00	30	13	11.63	13.00	1.38	0.046	2.750
11:25:00	30	13.875	13.00	13.88	0.88	0.029	1.750
11:55:00	30	12.625	13.88	14.50	0.63	0.021	1.250
12:25:00	30	13.375	12.63	13.38	0.75	0.025	1.500
12:55:00	30	13.5	13.38	14.00	0.63	0.021	1.250
13:25:00	30	NO	13.50	14.13	0.63	0.021	1.250

P-2 **Total Depth:** **60 inches**

Time	Test Interval Time (minutes)	Test Refill Depth /Inches	Water Level Initial/Start Depth /Inches	Water Level End/Final Depth /Inches	Incremental Water Level Change (inches)	Percolation Rate inches/minute	Percolation Rate inches/hour
7:25:00	Initial	None	11.50	initial	-		
7:55:00	30	12.25	11.50	15.13	3.625	0.121	7.250
8:25:00	30	12.125	12.25	15.63	3.375	0.113	6.750
8:55:00	30	12.5	12.13	15.13	3.000	0.100	6.000
9:25:00	30	12	12.50	15.50	3.000	0.100	6.000
9:55:00	30	10	12.00	15.75	3.750	0.125	7.500
10:25:00	30	11.125	10.00	14.13	4.125	0.138	8.250
10:55:00	30	13.625	11.13	13.63	2.500	0.083	5.000
11:25:00	30	12.625	13.63	14.63	1.000	0.033	2.000
11:55:00	30	13.625	12.63	13.63	1.000	0.033	2.000
12:25:00	30	12.75	13.63	14.25	0.625	0.021	1.250
12:55:00	30	13.5	12.75	13.50	0.750	0.025	1.500
13:25:00	30	NO	13.50	14.13	0.625	0.021	1.250

Percolation Rate Conversion P-1

		Inches
Time Interval,	Δt =	30
Final Depth of Water,	D_f =	14.13
Test Hole Radius,	r =	4
Initial Depth to Water,	D_0 =	13.50
Total Depth of Test Hole,	D_T =	60

H_o =	46.5	in
H_f =	45.875	in
$\Delta H = \Delta D$ =	0.625	in
H_{avg} =	46.1875	in
I_t =	0.052	in/hr

Percolation Rate Conversion P-2

		Inches
Time Interval,	Δt =	30
Final Depth of Water,	D_f =	14.13
Test Hole Radius,	r =	4
Initial Depth to Water,	D_0 =	13.50
Total Depth of Test Hole,	D_T =	60

H_o =	46.5	in
H_f =	45.875	in
$\Delta H = \Delta D$ =	0.625	in
H_{avg} =	46.1875	in
I_t =	0.052	in/hr

TABLE

RESULTS OF PERCOLATION TESTING WITH 2.0 FACTOR OF SAFETY APPLIED

Test Location	Test Depth (inches)	Procedure	Soil Type* (USCS Classification)	Percolation Rate (inches per hour)	Infiltration Rate (inches per hour)	Infiltration Rate with FOS of 2 Applied (inches per hour)
P-1	60	Non-Sandy	Qya	1.250	0.052	0.026
P-2	60	Non-Sandy	Qya	1.250	0.052	0.026

APPENDIX C

PERCOLATION TEST BORING LOGS

A Universal Engineering Sciences Company
Construction Testing & Engineering, Inc.
Inspection | Testing | Geotechnical | Environmental & Construction Engineering | Civil Engineering | Surveying

DEFINITION OF TERMS

PRIMARY DIVISIONS			SYMBOLS	SECONDARY DIVISIONS
COARSE GRAINED SOILS MORE THAN HALF OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	**GRAVELS** MORE THAN HALF OF COARSE FRACTION IS LARGER THAN NO. 4 SIEVE	CLEAN GRAVELS < 5% FINES	GW	WELL GRADED GRAVELS, GRAVEL-SAND MIXTURES LITTLE OR NO FINES
			GP	POORLY GRADED GRAVELS OR GRAVEL SAND MIXTURES, LITTLE OF NO FINES
		GRAVELS WITH FINES	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES, NON-PLASTIC FINES
			GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES, PLASTIC FINES
	SANDS MORE THAN HALF OF COARSE FRACTION IS SMALLER THAN NO. 4 SIEVE	CLEAN SANDS < 5% FINES	SW	WELL GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
			SP	POORLY GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
		SANDS WITH FINES	SM	SILTY SANDS, SAND-SILT MIXTURES, NON-PLASTIC FINES
			SC	CLAYEY SANDS, SAND-CLAY MIXTURES, PLASTIC FINES
FINE GRAINED SOILS MORE THAN HALF OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	**SILTS AND CLAYS** LIQUID LIMIT IS LESS THAN 50		ML	INORGANIC SILTS, VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS, SLIGHTLY PLASTIC CLAYEY SILTS
			CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY, SANDY, SILTS OR LEAN CLAYS
			OL	ORGANIC SILTS AND ORGANIC CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS LIQUID LIMIT IS GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS, ELASTIC SILTS
			CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
			OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTY CLAYS
HIGHLY ORGANIC SOILS			PT	PEAT AND OTHER HIGHLY ORGANIC SOILS

GRAIN SIZES

BOULDERS	COBBLES	GRAVEL		SAND			SILTS AND CLAYS
		COARSE	FINE	COARSE	MEDIUM	FINE	

12" 3" 3/4" 4 10 40 200

CLEAR SQUARE SIEVE OPENING U.S. STANDARD SIEVE SIZE

ADDITIONAL TESTS

(OTHER THAN TEST PIT AND BORING LOG COLUMN HEADINGS)

MAX- Maximum Dry Density
GS- Grain Size Distribution
SE- Sand Equivalent
EI- Expansion Index
CHM- Sulfate and Chloride Content , pH, Resistivity
COR - Corrosivity
SD- Sample Disturbed
PM- Permeability
SG- Specific Gravity
HA- Hydrometer Analysis
AL- Atterberg Limits
RV- R-Value
CN- Consolidation
CP- Collapse Potential
HC- Hydrocollapse
REM- Remolded
PP- Pocket Penetrometer
WA- Wash Analysis
DS- Direct Shear
UC- Unconfined Compression
MD- Moisture/Density
M- Moisture
SC- Swell Compression
OI- Organic Impurities

FIGURE: BL1

A Universal Engineering Sciences Company

Construction Testing & Engineering, Inc.

Inspection | Testing | Geotechnical | Environmental & Construction Engineering | Civil Engineering | Surveying

PROJECT:	DRILLER:	SHEET: of
CTE JOB NO:	DRILL METHOD:	DRILLING DATE:
LOGGED BY:	SAMPLE METHOD:	ELEVATION:

BORING LEGEND

Depth (Feet)	Bulk Sample	Driven Type	Blows/Foot	Dry Density (pcf)	Moisture (%)	U.S.C.S. Symbol	Graphic Log	DESCRIPTION	Laboratory Tests
0									
								Block or Chunk Sample	
								Bulk Sample	
5									
								Standard Penetration Test	
10								Modified Split-Barrel Drive Sampler (Cal Sampler)	
								Thin Walled Army Corp. of Engineers Sample	
15								Groundwater Table	
								Soil Type or Classification Change	
20								? ? ? ? ? ? ?	
								Formation Change [(Approximate boundaries queried (?)]	
						"SM"		Quotes are placed around classifications where the soils exist in situ as bedrock	
25									

FIGURE: BL2

A Universal Engineering Sciences Company

Construction Testing & Engineering, Inc.

Inspection | Testing | Geotechnical | Environmental & Construction Engineering | Civil Engineering | Surveying

PROJECT:	S. SANTA FE MULTI-FAMILY HOUSING DE	DRILLER:	PACIFIC DRILLING	SHEET:	1 of 1
CTE JOB NO:	10-16426G	DRILL METHOD:	HOLLOW-STEM AUGER	DRILLING DATE:	9/30/2021
LOGGED BY:	DJT	SAMPLE METHOD:	SPT	ELEVATION:	~497 FEET

BORING: P-1

Depth (Feet)	Bulk Sample	Driven Type	Blows/6"	Dry Density (pcf)	Moisture (%)	U.S.C.S. Symbol	Graphic Log	DESCRIPTION	Laboratory Tests
0						CL		**QUATERNARY YOUNG ALLUVIAL DEPOSITS:** Very stiff, slightly moist, dark brown, sandy CLAY with gravel.	
		▮	5 8 9						GS
5								Total Depth: 5' No Groundwater Encountered Backfilled with Soil Cuttings	
10									
15									
20									
25									

A Universal Engineering Sciences Company

Construction Testing & Engineering, Inc.

Inspection | Testing | Geotechnical | Environmental & Construction Engineering | Civil Engineering | Surveying

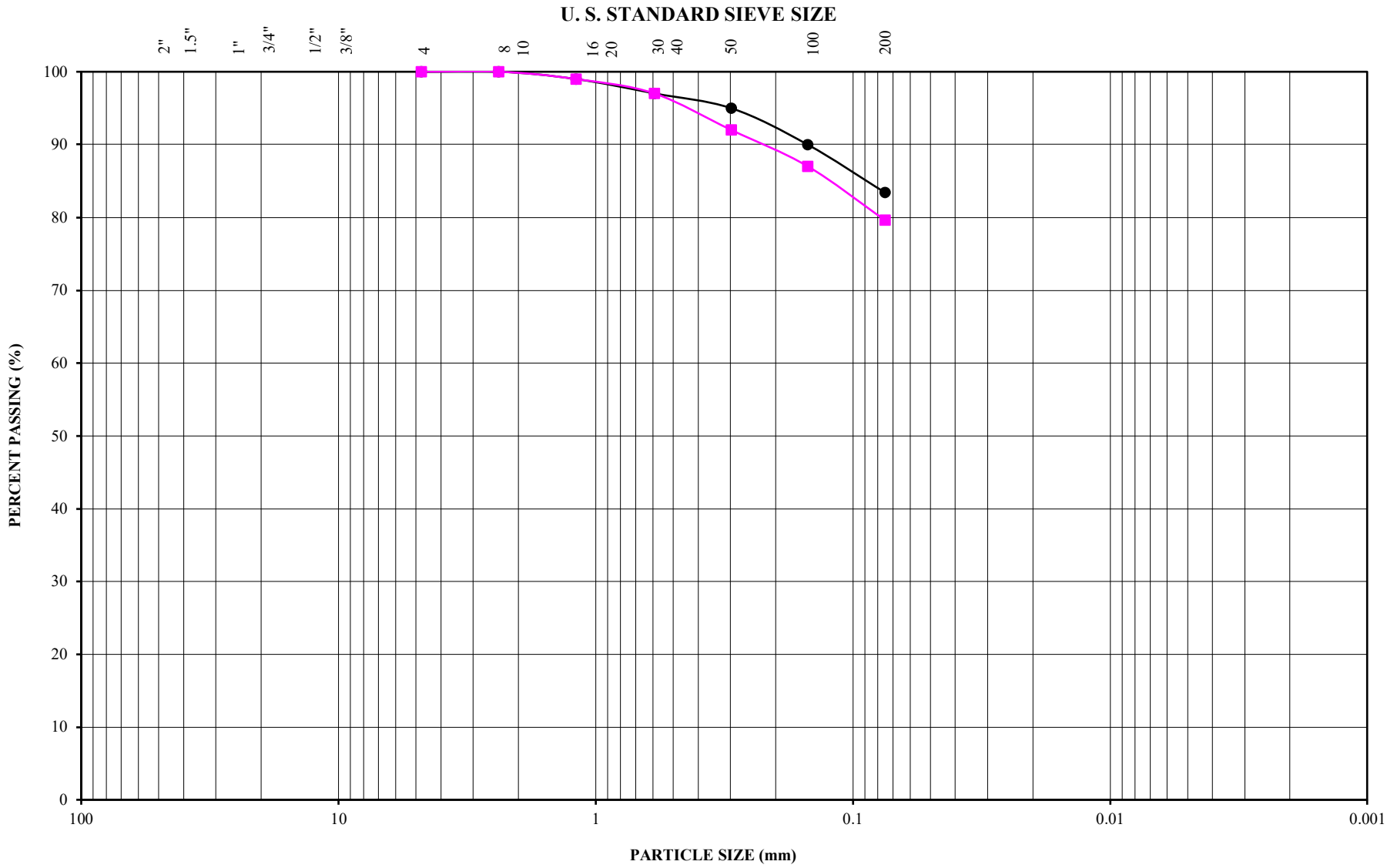
PROJECT:	S. SANTA FE MULTI-FAMILY HOUSING DE	DRILLER:	PACIFIC DRILLING	SHEET:	1 of 1
CTE JOB NO:	10-16426G	DRILL METHOD:	HOLLOW-STEM AUGER	DRILLING DATE:	9/30/2021
LOGGED BY:	DJT	SAMPLE METHOD:	SPT	ELEVATION:	~497 FEET

BORING: P-2

Depth (Feet)	Bulk Sample	Driven Type	Blows/6"	Dry Density (pcf)	Moisture (%)	U.S.C.S. Symbol	Graphic Log	DESCRIPTION	Laboratory Tests
0						CL		**QUATERNARY YOUNG ALLUVIAL DEPOSITS:** Very stiff, slightly moist, dark brown, sandy CLAY with gravel.	
			4 8 8						GS
5								Total Depth: 5' No Groundwater Encountered Backfilled with Soil Cuttings	
10									
15									
20									
25									

APPENDIX D

LABORATORY TEST RESULTS



PARTICLE SIZE ANALYSIS

CTE A Universal Engineering Sciences Company
Construction Testing & Engineering, Inc.
Inspection | Testing | Geotechnical | Environmental & Construction Engineering | Civil Engineering | Surveying

Sample Designation	Sample Depth (feet)	Symbol	Liquid Limit (%)	Plasticity Index	Classification
P-1	4-5	●			CL
P-2	4-5	■			CL
CTE JOB NUMBER:		10-16426G		FIGURE:	C-1

APPENDIX E

C.4-1 WORKSHEET

Worksheet C.4-1: Categorization of Infiltration Feasibility Condition

Categorization of Infiltration Feasibility Condition		Worksheet C.4-1	
Part 1 - Full Infiltration Feasibility Screening Criteria **Would infiltration of the full design volume be feasible from a physical perspective without any undesirable consequences that cannot be reasonably mitigated?**			
Criteria	Screening Question	**Yes**	**No**
1	**Is the estimated reliable infiltration rate below proposed facility locations greater than 0.5 inches per hour?** The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.2 and Appendix D.		X
Provide basis: N/A Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability.			
2	**Can infiltration greater than 0.5 inches per hour be allowed without increasing risk of geotechnical hazards (slope stability, groundwater mounding, utilities, or other factors) that cannot be mitigated to an acceptable level?** The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.2.	N/A	
Provide basis: N/A Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability.			

Worksheet C.4-1 Page 2 of 4			
Criteria	Screening Question	**Yes**	**No**
3	**Can infiltration greater than 0.5 inches per hour be allowed without increasing risk of groundwater contamination (shallow water table, storm water pollutants or other factors) that cannot be mitigated to an acceptable level?** The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.3.	N/A	
Provide basis: N/A Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability.			
4	**Can infiltration greater than 0.5 inches per hour be allowed without causing potential water balance issues such as change of seasonality of ephemeral streams or increased discharge of contaminated groundwater to surface waters?** The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.3.	N/A	
Provide basis: N/A Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability.			
Part 1 Result*	If all answers to rows 1 - 4 are "**Yes**" a full infiltration design is potentially feasible. The feasibility screening category is **Full Infiltration** If any answer from row 1-4 is "**No**", infiltration may be possible to some extent but would not generally be feasible or desirable to achieve a "full infiltration" design. Proceed to Part 2		

*To be completed using gathered site information and best professional judgment considering the definition of MEP in the MS4 Permit. Additional testing and/or studies may be required by City Engineer to substantiate findings.

Worksheet C.4-1 Page 3 of 4

Part 2 – Partial Infiltration vs. No Infiltration Feasibility Screening Criteria

Would infiltration of water in any appreciable amount be physically feasible without any negative consequences that cannot be reasonably mitigated?

Criteria	Screening Question	Yes	No
5	**Do soil and geologic conditions allow for infiltration in any appreciable rate or volume?** The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.2 and Appendix D.		X

Provide basis:

Refer to CTE's "Site Percolation Testing and Infiltration Feasibility Evaluation" letter report, dated October 18, 2021, CTE Job No. 10-16426G.

Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability and why it was not feasible to mitigate low infiltration rates.

6	**Can Infiltration in any appreciable quantity be allowed without increasing risk of geotechnical hazards (slope stability, groundwater mounding, utilities, or other factors) that cannot be mitigated to an acceptable level**? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.2.		X

Provide basis:

Refer to CTE's "Site Percolation Testing and Infiltration Feasibility Evaluation" letter report, dated October 18, 2021, CTE Job No. 10-16426G.

Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability and why it was not feasible to mitigate low infiltration rates.

Worksheet C.4-1 Page 4 of 4			
Criteria	Screening Question	**Yes**	**No**
7	**Can Infiltration in any appreciable quantity be allowed without posing significant risk for groundwater related concerns (shallow water table, storm water pollutants or other factors)?** The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.3.	N/A	
Provide basis: N/A Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability and why it was not feasible to mitigate low infiltration rates.			
8	**Can infiltration be allowed without violating downstream water rights**? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.3.	N/A	
Provide basis: N/A Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability and why it was not feasible to mitigate low infiltration rates.			
Part 2 Result*	If all answers from row 5-8 are yes then partial infiltration design is potentially feasible. The feasibility screening category is **Partial Infiltration.** If any answer from row 5-8 is no, then infiltration of any volume is considered to be **infeasible** within the drainage area. The feasibility screening category is **No Infiltration.**	CTE concludes that the site is in a "no infiltration" conditions.	

*To be completed using gathered site information and best professional judgment considering the definition of MEP in the MS4 Permit. Additional testing and/or studies may be required by Agency/Jurisdictions to substantiate findings

ATTACHMENT 1e

3527 S Santa Fe Townhomes
12/6/2024

Appendix B: Storm Water Pollutant Control Hydrologic Calculations and Sizing Methods

Worksheet B.6-1: Flow-Thru Design Flows

DMA-1

Flow-thru Design Flows		Worksheet B.6-1		
4	DCV requiring flow-thru	$DCV_{flow\text{-}thru}$	1882	cubic-feet
6	Design rainfall intensity	i=	0.20	in/hr
7	Area tributary to BMP (s)	A=	0.51	acres
8	Area-weighted runoff factor (estimate using Appendix B.2)	C=	0.67	unitless
9	Calculate Flow Rate = (C x i x A)	Q=	0.07	cfs
		1.5Q=	0.103	cfs

Modular Wetlands-4-8 treats 0.115 cfs

	Area (sq ft)	unoff Facto	A x RF	Weighted RF
Impervious	15,866	0.9	14,279	
Pervious	6,493	0.1	649	
Total	22,359		14,929	0.67

DMA-2

Flow-thru Design Flows		Worksheet B.6-1		
4	DCV requiring flow-thru	$DCV_{flow\text{-}thru}$	1108	cubic-feet
6	Design rainfall intensity	i=	0.20	in/hr
7	Area tributary to BMP (s)	A=	0.88	acres
8	Area-weighted runoff factor (estimate using Appendix B.2)	C=	0.67	unitless
9	Calculate Flow Rate = (C x i x A)	Q=	0.12	cfs
		1.5Q=	0.177	cfs

Modular Wetlands-4-17 treats 0.206 cfs

	Area (sq ft)	unoff Facto	A x RF	Weighted RF
Impervious	27,334	0.9	24,601	
Pervious	10,965	0.1	1,097	
Total	38,299		25,697	0.67

DMA-3

Flow-thru Design Flows		Worksheet B.6-1		
4	DCV requiring flow-thru	$DCV_{flow\text{-}thru}$	922	cubic-feet
6	Design rainfall intensity	i=	0.20	in/hr
7	Area tributary to BMP (s)	A=	0.40	acres
8	Area-weighted runoff factor (estimate using Appendix B.2)	C=	0.68	unitless
9	Calculate Flow Rate = (C x i x A)	Q=	0.06	cfs
		1.5Q=	0.083	cfs

Modular Wetlands-4-8 treats 0.083 cfs

	Area (sq ft)	unoff Facto	A x RF	Weighted RF
Impervious	12,861	0.9	11,575	
Pervious	4,730	0.1	473	
Total	17,591		12,048	0.68

DMA-4

Flow-thru Design Flows		Worksheet B.6-1		
4	DCV requiring flow-thru	$DCV_{flow\text{-}thru}$	922	cubic-feet
6	Design rainfall intensity	i=	0.20	in/hr
7	Area tributary to BMP (s)	A=	0.50	acres
8	Area-weighted runoff factor (estimate using Appendix B.2)	C=	0.53	unitless
9	Calculate Flow Rate = (C x i x A)	Q=	0.05	cfs
		1.5Q=	0.080	cfs

Modular Wetlands-4-8 treats 0.115 cfs

	Area (sq ft)	unoff Facto	A x RF	Weighted RF
Impervious	11,824	0.9	10,642	
Pervious	10,145	0.1	1,015	
Total	21,969		11,656	0.53

DMA-5

Flow-thru Design Flows		Worksheet B.6-1		
4	DCV requiring flow-thru	$DCV_{flow\text{-}thru}$	922	cubic-feet
6	Design rainfall intensity	i=	0.20	in/hr
7	Area tributary to BMP (s)	A=	0.17	acres
8	Area-weighted runoff factor (estimate using Appendix B.2)	C=	0.74	unitless
9	Calculate Flow Rate = (C x i x A)	Q=	0.03	cfs
		1.5Q=	0.038	cfs

Modular Wetlands-4-4 treats 0.052 cfs

	Area (sq ft)	unoff Facto	A x RF	Weighted RF
Impervious	5,943	0.9	5,349	
Pervious	1,493	0.1	149	
Total	7,436		5,498	0.74

ATTACHMENT 2 BACKUP FOR PDP HYDROMODIFICATION CONTROL MEASURES

This is the cover sheet for Attachment 2.

☐ Mark this box if this attachment is empty because the project is exempt from PDP hydromodification management requirements.

Indicate which Items are Included behind this cover sheet:

Attachment Sequence	Contents	Checklist
Attachment 2a	Hydromodification Management Exhibit (Required)	☑ Included See Hydromodification Management Exhibit Checklist on the back of this Attachment cover sheet.
Attachment 2b	Management of Critical Coarse Sediment Yield Areas (WMAA Exhibit is required, additional analyses are optional) See Section 6.2 of the BMP Design Manual.	☑ Exhibit showing project drainage boundaries marked on WMAA Critical Coarse Sediment Yield Area Map (Required) Optional analyses for Critical Coarse Sediment Yield Area Determination ☐ 6.2.1 Verification of Geomorphic Landscape Units Onsite ☐ 6.2.2 Downstream Systems Sensitivity to Coarse Sediment ☐ 6.2.3 Optional Additional Analysis of Potential Critical Coarse Sediment Yield Areas Onsite
Attachment 2c	Geomorphic Assessment of Receiving Channels (Optional) See Section 6.3.4 of the BMP Design Manual.	☑ Not performed ☐ Included ☐ Submitted as separate stand-alone document
Attachment 2d	Flow Control Facility Design, including Structural BMP Drawdown Calculations and Overflow Design Summary (Required) See Chapter 6 and Appendix G of the BMP Design Manual	☑ Included ☐ Submitted as separate stand-alone document
Attachment 2e	Vector Control Plan (Required when structural BMPs will not drain in 96 hours)	☑ Included (to be provided in Final Engineering) ☐ Not required because BMPs will drain in less than 96 hours

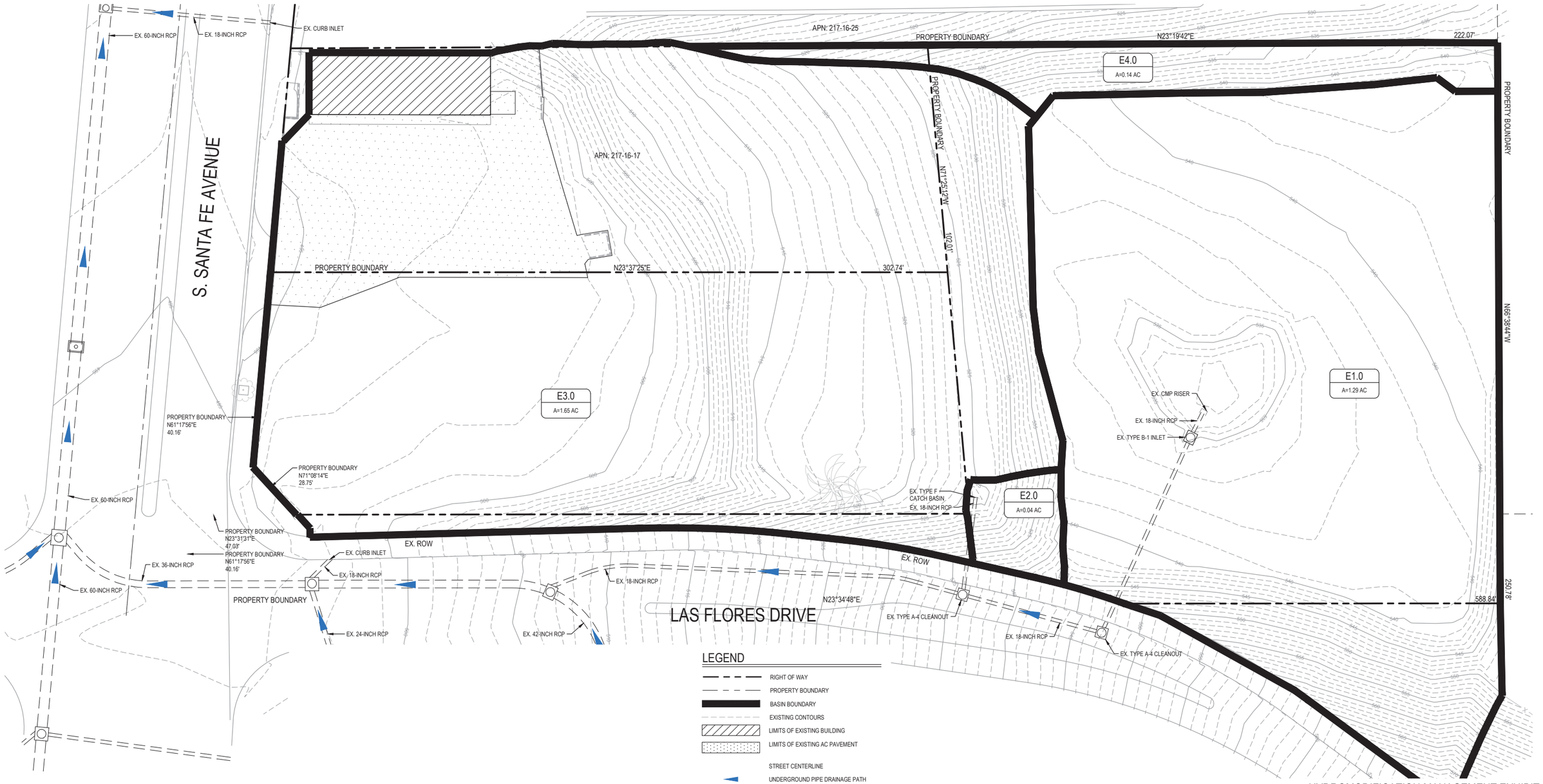
Use this checklist to ensure the required information has been included on the Hydromodification Management Exhibit:

The Hydromodification Management Exhibit must identify:

- ☐ Underlying hydrologic soil group
- ☐ Approximate depth to groundwater
- ☐ Existing natural hydrologic features (watercourses, seeps, springs, wetlands)
- ☐ Critical coarse sediment yield areas to be protected
- ☐ Existing topography
- ☐ Existing and proposed site drainage network and connections to drainage offsite
- ☐ Proposed grading
- ☐ Proposed impervious features
- ☐ Proposed design features and surface treatments used to minimize imperviousness
- ☐ Point(s) of Compliance (POC) for Hydromodification Management
- ☐ Existing and proposed drainage boundary and drainage area to each POC (when necessary, create separate exhibits for pre-development and post-project conditions)
- ☐ Structural BMPs for hydromodification management (identify location, type of BMP, and size/detail)

HYDROMODIFICATION MANAGEMENT EXHIBIT

PRE-PROJECT CONDITIONS
SOUTH SANTA FE TOWNHOMES



LEGEND

- RIGHT OF WAY
- PROPERTY BOUNDARY
- BASIN BOUNDARY
- EXISTING CONTOURS
- LIMITS OF EXISTING BUILDING
- LIMITS OF EXISTING AC PAVEMENT
- STREET CENTERLINE
- UNDERGROUND PIPE DRAINAGE PATH
- STORM DRAINAGE PIPE
- DMA ID / DMA AREA (AC) — DMA REFERENCE CALLOUT

SCALE: 1" = 20'

20 10 0 20 40 60

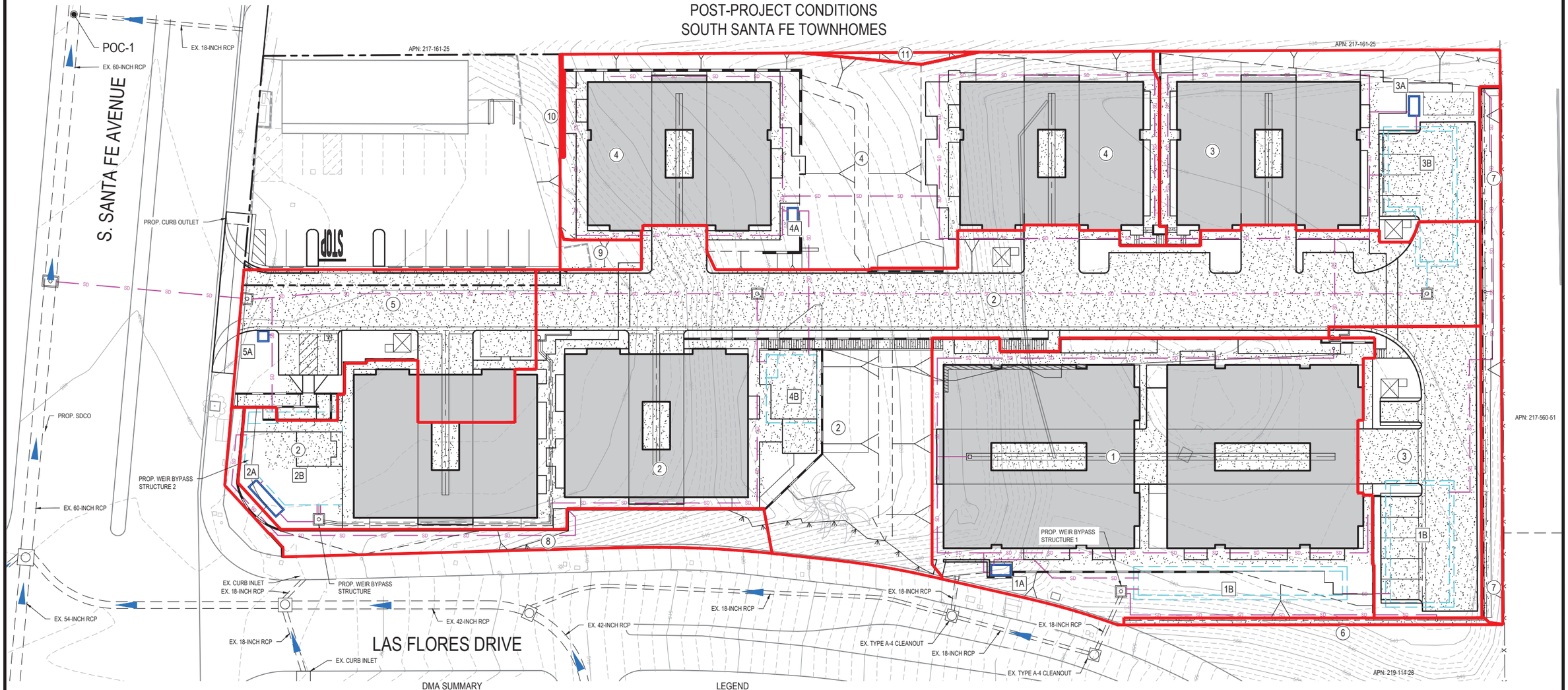
HYDROMODIFICATION MANAGEMENT EXHIBIT
PRE-PROJECT CONDITIONS
SAN MARCOS RESIDENCES
CITY OF SAN MARCOS

PASCO LARET SUITER & ASSOCIATES
San Diego | Solana Beach | Orange County
Phone 858.259.8212 | www.plsaengineering.com

SAVE DATE: 12/6/2024 ~ PLOT DATE: 6/6/2025 ~ FILE NAME: J:\ACTIVE JOBS\3527 MAYER-SOUTH SANTA FE AVE\CIVIL\REPORTS\SWQMP\TOWNHOME SITE PLAN\Attachments\Attachment 2 - Backup for Hydromodification Control Measures\Att 2a - Hydromod Exhibits\3527-WQMP-Hydromod Exhibit, Pre Project.dwg

HYDROMODIFICATION MANAGEMENT EXHIBIT

POST-PROJECT CONDITIONS
SOUTH SANTA FE TOWNHOMES



DMA SUMMARY

DRAINAGE MANAGEMENT AREA (DMA)	TOTAL AREA (SF/AC)	TOTAL IMPV. AREA (SF/AC)	TOTAL PERV. AREA (SF/AC)	DMA TYPE	BMP TYPE	BMP #	BMP SIZE PROVIDED
(1)	22,359/ 0.51	15,866/ 0.36	6,493/ 0.15	DRAINS TO BMP	PROPRIETARY BIOFILTRATION	1A	4'x8'
				DRAINS TO BMP	DETENTION VAULT	1B	2,200 SF 5.12' HIGH
(2)	38,299/ 0.88	27,334/ 0.63	10,965/ 0.25	DRAINS TO BMP	PROPRIETARY BIOFILTRATION	2A	4'x17'
				DRAINS TO BMP	DETENTION VAULT	2B	1,400 SF 5.67' HIGH
(3)	17,591/ 0.40	12,861/ 0.29	4,730/ 0.11	DRAINS TO BMP	PROPRIETARY BIOFILTRATION	3A	4'x8'
				DRAINS TO BMP	DETENTION VAULT	3B	1,264 SF 7' HIGH
(4)	21,969/ 0.50	11,824/ 0.27	10,145/ 0.23	DRAINS TO BMP	PROPRIETARY BIOFILTRATION	4A	4'x8'
				DRAINS TO BMP	DETENTION VAULT	4B	600 SF 5.67' HIGH
(5)	7,436/ 0.17	5,943/ 0.14	1,493/ 0.03	DRAINS TO BMP	PROPRIETARY BIOFILTRATION	5A	4'x4'
(6)	479/ 0.01	396/ 0.009	83/ 0.001	DE MINIMIS	-	-	
(7)	2,103/ 0.05	742/ 0.02	1,361/ 0.03	SELF MITIGATING	DETENTION VAULT	1B	
(8)	3,163/ 0.07	0/ 0.00	3,163/ 0.07	SELF MITIGATING	DETENTION VAULT	2B	
(9)	467/ 0.01	98/ 0.002	369/ 0.008	SELF MITIGATING	-	-	
(10)	45/ 0.001	0/ 0.00	45/ 0.001	SELF MITIGATING	-	-	
(11)	204/ 0.005	0/ 0.00	204/ 0.005	SELF MITIGATING	-	-	

LEGEND

- RIGHT OF WAY
- PROJECT BOUNDARY
- STREET CENTER LINE
- BASIN BOUNDARY
- EXISTING CONTOURS
- SD — PROPOSED STORM DRAIN
- PROPOSED UNDERGROUND DETENTION SYSTEM
- PROPOSED PROPRIETARY BIOFILTRATION SYSTEM
- UNDERGROUND EXISTING PIPE DRAINAGE PATH
- LIMITS OF PROPOSED BUILDING
- LIMITS OF PROPOSED PAVEMENT
- (X) DMA AREA #
- X DMA AREA #

0 20' 40' 60'

GRAPHIC SCALE: 1" = 20'

HYDROMODIFICATION MANAGEMENT EXHIBIT
POST-PROJECT CONDITIONS
SOUTH SANTA FE TOWNHOMES
CITY OF SAN MARCOS

PLSA
PLSAENGINEERING.COM

ATTACHMENT 2b

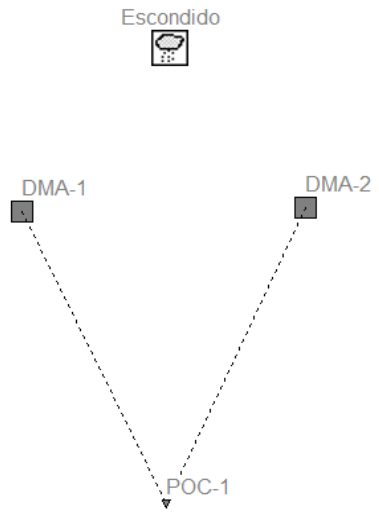

Potential Critical Coarse Sediment Yield Areas, Regional San Diego County Watersheds
Source:Project Clean Water
File Name: WMAA Mapping Data from Attachment C 2018_0906.zip
Date: 10/19/18 (Last Updated)
Legend
Creek
Yes
PROJECT SITE
N33°09'34.56"
W117°12'31.68"
W117°12'5.76"
W117°11'39.84"
N33°09'8.64"
Google Earth
Image Landsat / Copernicus
N
1000 ft

ATTACHMENT 2d

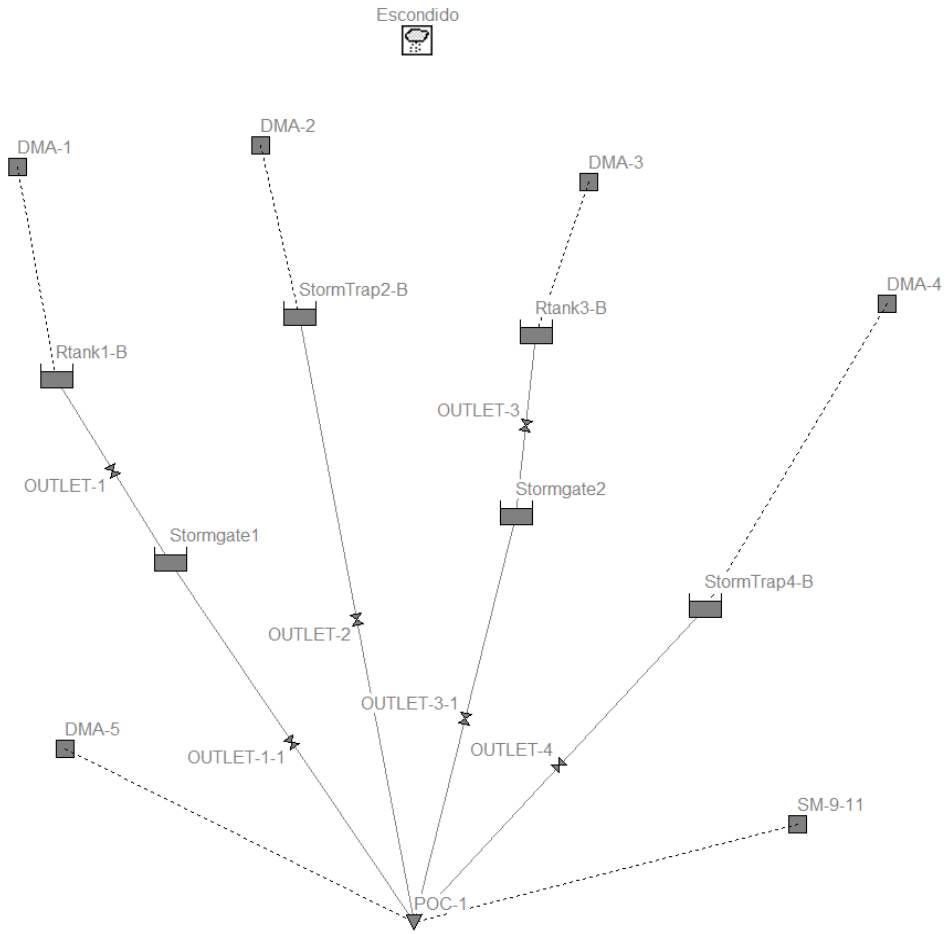
3527 South Santa Fe
12/4/2024

SWMM MODEL SCHEMATICS

PRE-DEVELOPMENT MODEL



POST-PROJECT MODEL



3527 South Santa Fe
12/4/2024

POC-1
SWMM INPUT

PRE-DEVELOPMENT

DMA	BMP	Area (ac)	Width (Area/Flow Length) (ft)	% Slope	% Impervious	% "B" Soils	% "C" Soils	% "D" Soils	Weighted Infiltration (in/hr):	Weighted Suction Head (in):	Weighted Initial Deficit:	N-perv
1	NA	1.09	288	8.0%	0%	0%	100%	0%	0.100	6.000	0.310	0.080
2	NA	1.51	193	13.0%	0%	0%	53%	47%	0.065	7.410	0.305	0.080
	Total:	**2.60**										

POST-PROJECT

DMA	BMP	Area (ac)	Width (Area/Flow Length) (ft)	% Impervious	% Slope	% "B" Soils	% "C" Soils	% "D" Soils	Weighted Infiltration (in/hr):	Weighted Suction Head (in):	Weighted Initial Deficit:	N-perv
1	RTank-1B	0.56	554	68%	1.0%	0%	100%	0%	0.075	6.000	0.310	0.06
2	StormTrap-2B	0.95	1061	66%	9.0%	0%	50%	50%	0.047	7.500	0.305	0.06
3	RTank-3B	0.40	281	74%	1.0%	0%	100%	0%	0.075	6.000	0.310	0.06
4	StormTrap-4B	0.50	382	54%	14.0%	0%	91%	9%	0.070	6.270	0.309	0.06
5	MWS	0.17	285	80%	3.0%	0%	0%	100%	0.019	9.000	0.300	0.06
SM-9-11	NA	0.016	116	14%	50.0%	0%	0%	100%	0.019	9.000	0.300	0.06
	Total:	**2.60**										

Infiltration:		
C:	0.1	in/hr
D:	0.025	in/hr

Suction Head:		
C:	6	in
D:	9	in

Initial Deficit	
C:	0.31
D:	0.30

POC-1

```
[TITLE]
;;Project Title/Notes
3527 South Santa Fe
Pre-Development Condition

[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           13:00:00
REPORT_START_DATE    09/24/1964
REPORT_START_TIME    13:00:00
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             00:15:00
DRY_STEP             04:00:00
ROUTING_STEP         0:01:00
RULE_STEP            00:00:00

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          .06    .08    .11    .15    .17    .19    .19    .18    .15    .11    .08    .06
DRY_ONLY         NO

[RAINGAGES]
;;Name           Format    Interval SCF      Source
```

POC-1

```
;;-------------- --------- ------ ------ ----------
Escondido        INTENSITY 1:00     1.0      TIMESERIES Escondido

[SUBCATCHMENTS]
;;Name           Rain Gage        Outlet           Area     %Imperv  Width    %Slope   CurbLen  SnowPack
;;-------------- ---------------- ---------------- -------- -------- -------- -------- -------- ----------------
DMA-1            Escondido        POC-1            1.09     0        288      8        0
DMA-2            Escondido        POC-1            1.51     0        193      13       0

[SUBAREAS]
;;Subcatchment   N-Imperv   N-Perv     S-Imperv   S-Perv     PctZero    RouteTo    PctRouted
;;-------------- ---------- ---------- ---------- ---------- ---------- ---------- ----------
DMA-1            0.012      0.08       0.05       0.1        25         OUTLET
DMA-2            0.012      0.08       0.05       0.1        25         OUTLET

[INFILTRATION]
;;Subcatchment   Param1     Param2     Param3     Param4     Param5
;;-------------- ---------- ---------- ---------- ---------- ----------
DMA-1            6          0.1        0.31
DMA-2            7.41       0.065      0.305

[OUTFALLS]
;;Name           Elevation  Type       Stage Data       Gated    Route To
;;-------------- ---------- ---------- ---------------- -------- ----------------
POC-1            0          FREE                        NO

[TIMESERIES]
;;Name           Date       Time       Value
;;-------------- ---------- ---------- ----------
Escondido        FILE "Rain Data\escondido\escondido1.dat"

[REPORT]
;;Reporting Options
SUBCATCHMENTS ALL
NODES ALL
LINKS ALL

[TAGS]

[MAP]
DIMENSIONS -829.402 0.000 10000.000 10000.000
Units      None

[COORDINATES]
;;Node           X-Coord            Y-Coord
;;-------------- ------------------ ------------------
POC-1            -33.882            5151.408

[VERTICES]
;;Link           X-Coord            Y-Coord
;;-------------- ------------------ ------------------
```

POC-1

```
[Polygons]
;;Subcatchment   X-Coord            Y-Coord
;;-------------- ------------------ ------------------
DMA-1            -758.346           6657.435
DMA-2            662.783            6679.992

[SYMBOLS]
;;Gage           X-Coord            Y-Coord
;;-------------- ------------------ ------------------
Escondido        -9.075             7491.454
```

POC-1

```
[TITLE]
;;Project Title/Notes
3527 South Santa Fe
Post-Project Condition

[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           13:00:00
REPORT_START_DATE    09/24/1964
REPORT_START_TIME    13:00:00
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             00:15:00
DRY_STEP             04:00:00
ROUTING_STEP         0:01:00
RULE_STEP            00:00:00

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          .06    .08    .11    .15    .17    .19    .19    .18    .15    .11    .08    .06
DRY_ONLY         NO

[RAINGAGES]
;;Name           Format    Interval SCF      Source
```

POC-1

```
;;-------------- --------- ------ ------ ----------
Escondido        INTENSITY 1:00     1.0      TIMESERIES Escondido

[SUBCATCHMENTS]
;;Name           Rain Gage        Outlet           Area     %Imperv  Width    %Slope   CurbLen  SnowPack
;;-------------- ---------------- ---------------- -------- -------- -------- -------- -------- ----------------
DMA-1            Escondido        Rtank1-B         0.56     68       554      1        0
DMA-2            Escondido        StormTrap2-B     0.95     66       1061     9        0
DMA-3            Escondido        Rtank3-B         0.40     74       281      1        0
DMA-4            Escondido        StormTrap4-B     0.5      54       382      14       0
DMA-5            Escondido        POC-1            0.17     80       285      3        0
SM-9-11          Escondido        POC-1            0.016    14       116      50       0

[SUBAREAS]
;;Subcatchment   N-Imperv   N-Perv     S-Imperv   S-Perv     PctZero    RouteTo    PctRouted
;;-------------- ---------- ---------- ---------- ---------- ---------- ---------- ----------
DMA-1            0.012      0.06       0.05       0.1        25         OUTLET
DMA-2            0.012      0.06       0.05       0.1        25         OUTLET
DMA-3            0.012      0.06       0.05       0.1        25         OUTLET
DMA-4            0.012      0.06       0.05       0.1        25         OUTLET
DMA-5            0.012      0.06       0.05       0.1        25         OUTLET
SM-9-11          0.012      0.06       0.05       0.1        25         OUTLET

[INFILTRATION]
;;Subcatchment   Param1     Param2     Param3     Param4     Param5
;;-------------- ---------- ---------- ---------- ---------- ----------
DMA-1            6          0.075      0.31       7          0
DMA-2            7.5        0.047      0.305      7          0
DMA-3            6          0.075      0.31       7          0
DMA-4            6.27       0.07       0.309      7          0
DMA-5            9          0.019      0.3        7          0
SM-9-11          9          0.019      0.3        7          0

[OUTFALLS]
;;Name           Elevation  Type       Stage Data       Gated    Route To
;;-------------- ---------- ---------- ---------------- -------- ----------------
POC-1            0          FREE                        NO

[STORAGE]
;;Name           Elev.    MaxDepth   InitDepth  Shape      Curve Type/Params            SurDepth  Fevap    Psi      Ksat     IMD
;;-------------- -------- ---------- ---------- ---------- ---------------------------- --------- --------          -------- --------
Rtank1-B         0        5.12       0          TABULAR    Rtank1-B                     0         0
StormTrap2-B     0        5.67       0          TABULAR    StormTrap2-B                 0         0
Rtank3-B         0        7          0          TABULAR    Rtank3-B                     0         0
StormTrap4-B     0        5.67       0          TABULAR    StormTrap4-B                 0         0
Stormgate1       0        5.69       0          TABULAR    Stormgate1                   0         0
Stormgate2       0        7.52       0          TABULAR    Stormgate2                   0         0

[OUTLETS]
;;Name           From Node        To Node          Offset     Type            QTable/Qcoeff    Qexpon     Gated
;;-------------- ---------------- ---------------- ---------- --------------- ---------------- ---------- --------
```

POC-1

```
OUTLET-1         Rtank1-B         Stormgate1       0          TABULAR/DEPTH   Outlet-1-Rtank1-B           NO
OUTLET-2         StormTrap2-B     POC-1            0          TABULAR/DEPTH   Outlet-2-StormTrap2-B           NO
OUTLET-3         Rtank3-B         Stormgate2       0          TABULAR/DEPTH   Outlet-3-Rtank3-B           NO
OUTLET-4         StormTrap4-B     POC-1            0          TABULAR/DEPTH   Outlet-4-StormTrap4-B           NO
OUTLET-1-1       Stormgate1       POC-1            0          TABULAR/DEPTH   Outlet-1-1-Stormgate1           NO
OUTLET-3-1       Stormgate2       POC-1            0          TABULAR/DEPTH   Outlet-3-1-Stormgate2           NO

[CURVES]
;;Name           Type       X-Value    Y-Value
;;-------------- ---------- ---------- ----------
Outlet-1-Rtank1-B Rating     0          0
Outlet-1-Rtank1-B            0.2        0.012
Outlet-1-Rtank1-B            0.4        0.019
Outlet-1-Rtank1-B            0.6        0.024
Outlet-1-Rtank1-B            0.8        0.028
Outlet-1-Rtank1-B            1          0.031
Outlet-1-Rtank1-B            1.2        0.034
Outlet-1-Rtank1-B            1.4        0.037
Outlet-1-Rtank1-B            1.6        0.04
Outlet-1-Rtank1-B            1.8        0.042
Outlet-1-Rtank1-B            2          0.044
Outlet-1-Rtank1-B            2.2        0.047
Outlet-1-Rtank1-B            2.4        0.049
Outlet-1-Rtank1-B            2.6        0.051
Outlet-1-Rtank1-B            2.8        0.053
Outlet-1-Rtank1-B            3          0.055
Outlet-1-Rtank1-B            3.2        0.056
Outlet-1-Rtank1-B            3.4        0.058
Outlet-1-Rtank1-B            3.6        0.06
Outlet-1-Rtank1-B            3.8        0.062
Outlet-1-Rtank1-B            4          0.063
Outlet-1-Rtank1-B            4.2        0.065
Outlet-1-Rtank1-B            4.4        0.066
Outlet-1-Rtank1-B            4.6        0.068
Outlet-1-Rtank1-B            4.8        0.069
Outlet-1-Rtank1-B            5          0.071
Outlet-1-Rtank1-B            5.12       0.072
;
Outlet-2-StormTrap2-B Rating     0          0
Outlet-2-StormTrap2-B            0.2        0.003
Outlet-2-StormTrap2-B            0.4        0.004
Outlet-2-StormTrap2-B            0.6        0.005
Outlet-2-StormTrap2-B            0.8        0.006
Outlet-2-StormTrap2-B            1          0.006
Outlet-2-StormTrap2-B            1.2        0.007
Outlet-2-StormTrap2-B            1.4        0.008
Outlet-2-StormTrap2-B            1.6        0.008
Outlet-2-StormTrap2-B            1.8        0.009
Outlet-2-StormTrap2-B            2          0.009
Outlet-2-StormTrap2-B            2.2        0.01
Outlet-2-StormTrap2-B            2.4        0.01
```

POC-1

```
Outlet-2-StormTrap2-B           2.6         0.011
Outlet-2-StormTrap2-B           2.8         0.011
Outlet-2-StormTrap2-B           3           0.011
Outlet-2-StormTrap2-B           3.2         0.012
Outlet-2-StormTrap2-B           3.4         0.012
Outlet-2-StormTrap2-B           3.6         0.012
Outlet-2-StormTrap2-B           3.8         0.013
Outlet-2-StormTrap2-B           4           0.013
Outlet-2-StormTrap2-B           4.2         0.301
Outlet-2-StormTrap2-B           4.4         0.639
Outlet-2-StormTrap2-B           4.6         0.841
Outlet-2-StormTrap2-B           4.8         1.002
Outlet-2-StormTrap2-B           5           1.14
Outlet-2-StormTrap2-B           5.2         1.347
Outlet-2-StormTrap2-B           5.4         3.18
Outlet-2-StormTrap2-B           5.6         6.094
Outlet-2-StormTrap2-B           5.67        7.301
;
Outlet-3-Rtank3-B Rating    0           0
Outlet-3-Rtank3-B           0.2         0.008
Outlet-3-Rtank3-B           0.4         0.011
Outlet-3-Rtank3-B           0.6         0.014
Outlet-3-Rtank3-B           0.8         0.017
Outlet-3-Rtank3-B           1           0.019
Outlet-3-Rtank3-B           1.2         0.02
Outlet-3-Rtank3-B           1.4         0.022
Outlet-3-Rtank3-B           1.6         0.024
Outlet-3-Rtank3-B           1.8         0.025
Outlet-3-Rtank3-B           2           0.027
Outlet-3-Rtank3-B           2.2         0.028
Outlet-3-Rtank3-B           2.4         0.029
Outlet-3-Rtank3-B           2.6         0.03
Outlet-3-Rtank3-B           2.8         0.032
Outlet-3-Rtank3-B           3           0.033
Outlet-3-Rtank3-B           3.2         0.034
Outlet-3-Rtank3-B           3.4         0.035
Outlet-3-Rtank3-B           3.6         0.036
Outlet-3-Rtank3-B           3.8         0.037
Outlet-3-Rtank3-B           4           0.038
Outlet-3-Rtank3-B           4.2         0.039
Outlet-3-Rtank3-B           4.4         0.04
Outlet-3-Rtank3-B           4.6         0.041
Outlet-3-Rtank3-B           4.8         0.041
Outlet-3-Rtank3-B           5           0.042
Outlet-3-Rtank3-B           5.2         0.043
Outlet-3-Rtank3-B           5.4         0.044
Outlet-3-Rtank3-B           5.6         0.045
Outlet-3-Rtank3-B           5.8         0.046
Outlet-3-Rtank3-B           6           0.046
Outlet-3-Rtank3-B           6.2         0.047
Outlet-3-Rtank3-B           6.4         0.048
```

POC-1

```
Outlet-3-Rtank3-B            6.6         0.049
Outlet-3-Rtank3-B            6.8         0.049
Outlet-3-Rtank3-B            7           0.05
;
Outlet-4-StormTrap4-B Rating     0           0
Outlet-4-StormTrap4-B            0.2         0.002
Outlet-4-StormTrap4-B            0.4         0.003
Outlet-4-StormTrap4-B            0.6         0.003
Outlet-4-StormTrap4-B            0.8         0.004
Outlet-4-StormTrap4-B            1           0.004
Outlet-4-StormTrap4-B            1.2         0.005
Outlet-4-StormTrap4-B            1.4         0.005
Outlet-4-StormTrap4-B            1.6         0.005
Outlet-4-StormTrap4-B            1.8         0.006
Outlet-4-StormTrap4-B            2           0.006
Outlet-4-StormTrap4-B            2.2         0.006
Outlet-4-StormTrap4-B            2.4         0.006
Outlet-4-StormTrap4-B            2.6         0.007
Outlet-4-StormTrap4-B            2.8         0.007
Outlet-4-StormTrap4-B            3           0.007
Outlet-4-StormTrap4-B            3.2         0.007
Outlet-4-StormTrap4-B            3.4         0.008
Outlet-4-StormTrap4-B            3.6         0.008
Outlet-4-StormTrap4-B            3.8         0.159
Outlet-4-StormTrap4-B            4           0.544
Outlet-4-StormTrap4-B            4.2         0.772
Outlet-4-StormTrap4-B            4.4         0.943
Outlet-4-StormTrap4-B            4.6         1.088
Outlet-4-StormTrap4-B            4.8         1.215
Outlet-4-StormTrap4-B            5           1.33
Outlet-4-StormTrap4-B            5.2         1.478
Outlet-4-StormTrap4-B            5.4         2.437
Outlet-4-StormTrap4-B            5.6         3.935
Outlet-4-StormTrap4-B            5.67        4.553
;
Outlet-1-1-Stormgate1 Rating     0           0
Outlet-1-1-Stormgate1            0.2         0.17
Outlet-1-1-Stormgate1            0.4         0.632
Outlet-1-1-Stormgate1            0.6         1.298
Outlet-1-1-Stormgate1            0.8         2.051
Outlet-1-1-Stormgate1            1           2.674
Outlet-1-1-Stormgate1            1.2         3.164
Outlet-1-1-Stormgate1            1.4         3.588
Outlet-1-1-Stormgate1            1.6         3.966
Outlet-1-1-Stormgate1            1.8         4.312
Outlet-1-1-Stormgate1            2           4.632
Outlet-1-1-Stormgate1            2.2         4.931
Outlet-1-1-Stormgate1            2.4         5.213
Outlet-1-1-Stormgate1            2.6         5.48
Outlet-1-1-Stormgate1            2.8         5.735
Outlet-1-1-Stormgate1            3           5.979
```

POC-1

```
Outlet-1-1-Stormgate1            3.2        6.214
Outlet-1-1-Stormgate1            3.4        6.44
Outlet-1-1-Stormgate1            3.6        6.658
Outlet-1-1-Stormgate1            3.8        6.87
Outlet-1-1-Stormgate1            4          7.075
Outlet-1-1-Stormgate1            4.2        7.274
Outlet-1-1-Stormgate1            4.4        7.468
Outlet-1-1-Stormgate1            4.6        7.657
Outlet-1-1-Stormgate1            4.8        7.842
Outlet-1-1-Stormgate1            5          8.022
Outlet-1-1-Stormgate1            5.2        8.212
Outlet-1-1-Stormgate1            5.4        9.632
Outlet-1-1-Stormgate1            5.6        11.979
Outlet-1-1-Stormgate1            5.69       13.247
;
Outlet-3-1-Stormgate2 Rating     0          0
Outlet-3-1-Stormgate2            0.2        0.17
Outlet-3-1-Stormgate2            0.4        0.632
Outlet-3-1-Stormgate2            0.6        1.298
Outlet-3-1-Stormgate2            0.8        2.051
Outlet-3-1-Stormgate2            1          2.674
Outlet-3-1-Stormgate2            1.2        3.164
Outlet-3-1-Stormgate2            1.4        3.588
Outlet-3-1-Stormgate2            1.6        3.966
Outlet-3-1-Stormgate2            1.8        4.312
Outlet-3-1-Stormgate2            2          4.632
Outlet-3-1-Stormgate2            2.2        4.931
Outlet-3-1-Stormgate2            2.4        5.213
Outlet-3-1-Stormgate2            2.6        5.48
Outlet-3-1-Stormgate2            2.8        5.735
Outlet-3-1-Stormgate2            3          5.979
Outlet-3-1-Stormgate2            3.2        6.214
Outlet-3-1-Stormgate2            3.4        6.44
Outlet-3-1-Stormgate2            3.6        6.658
Outlet-3-1-Stormgate2            3.8        6.87
Outlet-3-1-Stormgate2            4          7.075
Outlet-3-1-Stormgate2            4.2        7.274
Outlet-3-1-Stormgate2            4.4        7.468
Outlet-3-1-Stormgate2            4.6        7.657
Outlet-3-1-Stormgate2            4.8        7.842
Outlet-3-1-Stormgate2            5          8.022
Outlet-3-1-Stormgate2            5.2        8.198
Outlet-3-1-Stormgate2            5.4        8.371
Outlet-3-1-Stormgate2            5.6        8.54
Outlet-3-1-Stormgate2            5.8        8.706
Outlet-3-1-Stormgate2            6          8.869
Outlet-3-1-Stormgate2            6.2        9.029
Outlet-3-1-Stormgate2            6.4        9.186
Outlet-3-1-Stormgate2            6.6        9.34
Outlet-3-1-Stormgate2            6.8        9.492
Outlet-3-1-Stormgate2            7          9.641
```

POC-1

```
Outlet-3-1-Stormgate2            7.2        10.085
Outlet-3-1-Stormgate2            7.4        11.875
Outlet-3-1-Stormgate2            7.52       13.334
;
Rtank1-B         Storage    0          2090
Rtank1-B                    5.12       2090
;
StormTrap2-B     Storage    0          1190
StormTrap2-B                5.67       1190
;
Rtank3-B         Storage    0          1200.8
Rtank3-B                    7          1200.8
;
StormTrap4-B     Storage    0          510
StormTrap4-B                5.67       510
;
Stormgate1       Storage    0          16
Stormgate1                  5.69       16
;
Stormgate2       Storage    0          16
Stormgate2                  7.52       16

[TIMESERIES]
;;Name           Date       Time       Value
;;-------------- ---------- ---------- ----------
Escondido        FILE "Rain Data\escondido\escondido1.dat"

[REPORT]
;;Reporting Options
SUBCATCHMENTS ALL
NODES ALL
LINKS ALL

[TAGS]

[MAP]
DIMENSIONS -2361.375 0.000 10000.000 10000.000
Units      None

[COORDINATES]
;;Node           X-Coord            Y-Coord
;;-------------- ------------------ ------------------
POC-1            367.387            1986.771
Rtank1-B         -1852.918          5433.483
StormTrap2-B     -346.741           5826.202
Rtank3-B         1114.197           5710.015
StormTrap4-B     2166.127           3972.116
Stormgate1       -1142.903          4267.564
Stormgate2       991.562            4562.225

[VERTICES]
```

POC-1

```
;;Link           X-Coord            Y-Coord
;;-------------- ------------------ ------------------

[Polygons]
;;Subcatchment   X-Coord            Y-Coord
;;-------------- ------------------ ------------------
DMA-1            -2092.081          6778.774
DMA-2            -586.916           6911.793
DMA-3            1443.046           6681.614
DMA-4            3293.806           5908.130
DMA-5            -1797.398          3088.207
SM-9-11          2739.090           2608.857

;;Storage Node   X-Coord            Y-Coord
;;-------------- ------------------ ------------------
Rtank1-B         -1852.918          5433.483
StormTrap2-B     -346.741           5826.202
Rtank3-B         1114.197           5710.015
StormTrap4-B     2166.127           3972.116
Stormgate1       -1142.903          4267.564
Stormgate2       991.562            4562.225

[SYMBOLS]
;;Gage           X-Coord            Y-Coord
;;-------------- ------------------ ------------------
Escondido        392.092            7571.018
```

```
  EPA STORM WATER MANAGEMENT MODEL - VERSION 5.2 (Build 5.2.4)
  ------------------------------------------------------------

  3527 South Santa Fe
  Pre-Development Condition

  ****************
  Analysis Options
  ****************
  Flow Units ............... CFS
  Process Models:
    Rainfall/Runoff ........ YES
    RDII ................... NO
    Snowmelt ............... NO
    Groundwater ............ NO
    Flow Routing ........... NO
    Water Quality .......... NO
  Infiltration Method ...... GREEN_AMPT
  Starting Date ............ 09/24/1964 13:00:00
  Ending Date .............. 05/23/2008 22:00:00
  Antecedent Dry Days ...... 0.0
  Report Time Step ......... 01:00:00
  Wet Time Step ............ 00:15:00
  Dry Time Step ............ 04:00:00


  *************************        Volume         Depth
  Runoff Quantity Continuity     acre-feet        inches
  *************************     ---------       -------
  Total Precipitation ......       132.409       611.120
  Evaporation Loss .........         1.894         8.743
  Infiltration Loss ........       118.708       547.885
  Surface Runoff ...........        12.932        59.686
  Final Storage ............         0.000         0.000
  Continuity Error (%) .....        -0.850


  *************************        Volume        Volume
  Flow Routing Continuity        acre-feet      10^6 gal
  *************************     ---------     ----------
  Dry Weather Inflow .......         0.000         0.000
  Wet Weather Inflow .......        12.932         4.214
  Groundwater Inflow .......         0.000         0.000
  RDII Inflow ..............         0.000         0.000
  External Inflow ..........         0.000         0.000
  External Outflow .........        12.932         4.214
  Flooding Loss ............         0.000         0.000
  Evaporation Loss .........         0.000         0.000
  Exfiltration Loss ........         0.000         0.000
  Initial Stored Volume ....         0.000         0.000
  Final Stored Volume ......         0.000         0.000
  Continuity Error (%) .....         0.000
```

```
**************************
Subcatchment Runoff Summary
**************************
```

Subcatchment	Total Precip in	Total Runon in	Total Evap in	Total Infil in	Imperv Runoff in	Perv Runoff in	Total Runoff in	Total Runoff 10^6 gal	Peak Runoff CFS	Runoff Coeff
DMA-1	611.12	0.00	6.59	555.76	0.00	52.92	52.92	1.57	0.81	0.087
DMA-2	611.12	0.00	10.30	542.20	0.00	64.57	64.57	2.65	1.18	0.106

```
Analysis begun on:  Wed Dec  4 09:37:48 2024
Analysis ended on:  Wed Dec  4 09:37:59 2024
Total elapsed time: 00:00:11
```

```
  EPA STORM WATER MANAGEMENT MODEL - VERSION 5.2 (Build 5.2.4)
  ------------------------------------------------------------

  3527 South Santa Fe
  Post-Project Condition

  ****************
  Analysis Options
  ****************
  Flow Units ............... CFS
  Process Models:
    Rainfall/Runoff ........ YES
    RDII ................... NO
    Snowmelt ............... NO
    Groundwater ............ NO
    Flow Routing ........... YES
    Ponding Allowed ........ NO
    Water Quality .......... NO
  Infiltration Method ...... GREEN_AMPT
  Flow Routing Method ...... KINWAVE
  Starting Date ............ 09/24/1964 13:00:00
  Ending Date .............. 05/23/2008 22:00:00
  Antecedent Dry Days ...... 0.0
  Report Time Step ......... 01:00:00
  Wet Time Step ............ 00:15:00
  Dry Time Step ............ 04:00:00
  Routing Time Step ........ 60.00 sec


  **************************        Volume         Depth
  Runoff Quantity Continuity     acre-feet        inches
  **************************     ---------       -------
  Total Precipitation ......       132.206       611.120
  Evaporation Loss .........        12.305        56.880
  Infiltration Loss ........        38.479       177.870
  Surface Runoff ...........        83.709       386.945
  Final Storage ............         0.005         0.022
  Continuity Error (%) .....        -1.734


  **************************        Volume        Volume
  Flow Routing Continuity        acre-feet      10^6 gal
  **************************     ---------     ---------
  Dry Weather Inflow .......         0.000         0.000
  Wet Weather Inflow .......        83.709        27.278
  Groundwater Inflow .......         0.000         0.000
  RDII Inflow ..............         0.000         0.000
  External Inflow ..........         0.000         0.000
  External Outflow .........        78.386        25.543
  Flooding Loss ............         0.000         0.000
  Evaporation Loss .........         0.000         0.000
  Exfiltration Loss ........         0.000         0.000
  Initial Stored Volume ....         0.000         0.000
```

```
Final Stored Volume ......         0.009         0.003
Continuity Error (%) .....         6.348


*******************************
Highest Flow Instability Indexes
*******************************
Link OUTLET-1-1 (7)
Link OUTLET-3-1 (7)


*************************
Routing Time Step Summary
*************************
Minimum Time Step           :    59.00 sec
Average Time Step           :    60.00 sec
Maximum Time Step           :    60.00 sec
% of Time in Steady State   :     0.00
Average Iterations per Step :     1.00
% of Steps Not Converging   :     0.00


***************************
Subcatchment Runoff Summary
***************************

---------------------------------------------------------------------------------------------------------------------
                          Total      Total      Total      Total     Imperv       Perv      Total       Total     Peak  Runoff
                         Precip      Runon       Evap      Infil    Runoff     Runoff     Runoff      Runoff   Runoff   Coeff
Subcatchment                 in         in         in         in        in         in         in  10^6 gal      CFS
---------------------------------------------------------------------------------------------------------------------
DMA-1                    611.12       0.00      57.76     174.49    367.89      20.56     388.46        5.91     0.46   0.636
DMA-2                    611.12       0.00      57.31     171.45    358.35      35.45     393.79       10.16     0.79   0.644
DMA-3                    611.12       0.00      62.81     141.82    399.49      16.63     416.12        4.52     0.33   0.681
DMA-4                    611.12       0.00      46.66     248.81    293.23      31.91     325.14        4.41     0.41   0.532
DMA-5                    611.12       0.00      69.89      83.89    433.96      36.97     470.93        2.17     0.14   0.771
SM-9-11                  611.12       0.00      33.71     359.99     76.84     160.18     237.02        0.10     0.01   0.388


******************
Node Depth Summary
******************

-------------------------------------------------------------------------------
                            Average  Maximum  Maximum  Time of Max    Reported
                              Depth    Depth      HGL   Occurrence   Max Depth
Node                 Type      Feet     Feet     Feet  days hr:min        Feet
-------------------------------------------------------------------------------
POC-1                OUTFALL   0.00     0.00     0.00     0  00:00        0.00
Rtank1-B             STORAGE   0.01     4.80     4.80   803  10:05        4.80
StormTrap2-B         STORAGE   0.15     4.52     4.52  10332  04:02        4.52
Rtank3-B             STORAGE   0.02     6.58     6.58   803  10:06        6.58
StormTrap4-B         STORAGE   0.09     3.93     3.93  10332  03:51        3.93
Stormgate1           STORAGE   0.00     0.10     0.10   803  10:07        0.06
```

Stormgate2	STORAGE	0.00	0.07	0.07	803	10:08	0.07

****
Node Inflow Summary
****

Node	Type	Maximum Lateral Inflow CFS	Maximum Total Inflow CFS	Time of Max Occurrence days hr:min	Lateral Inflow Volume 10^6 gal	Total Inflow Volume 10^6 gal	Flow Balance Error Percent
POC-1	OUTFALL	0.16	1.40	10332 04:01	2.28	25.5	0.000
Rtank1-B	STORAGE	0.46	0.46	10332 03:31	5.91	5.91	0.000
StormTrap2-B	STORAGE	0.79	0.79	10332 04:01	10.2	10.2	0.009
Rtank3-B	STORAGE	0.33	0.33	10332 03:31	4.52	4.52	0.001
StormTrap4-B	STORAGE	0.41	0.41	10332 03:46	4.41	4.41	0.015
Stormgate1	STORAGE	0.00	0.07	803 10:05	0	5.91	20.903
Stormgate2	STORAGE	0.00	0.05	803 10:06	0	4.52	18.597

****
Node Flooding Summary
****

No nodes were flooded.

****
Storage Volume Summary
****

Storage Unit	Average Volume 1000 ft³	Avg Pcnt Full	Evap Pcnt Loss	Exfil Pcnt Loss	Maximum Volume 1000 ft³	Max Pcnt Full	Time of Max Occurrence days hr:min	Maximum Outflow CFS
Rtank1-B	0.026	0.2	0.0	0.0	10.027	93.7	803 10:05	0.07
StormTrap2-B	0.175	2.6	0.0	0.0	5.383	79.8	10332 04:02	0.76
Rtank3-B	0.020	0.2	0.0	0.0	7.900	94.0	803 10:06	0.05
StormTrap4-B	0.047	1.6	0.0	0.0	2.003	69.3	10332 03:51	0.41
Stormgate1	0.000	0.0	0.0	0.0	0.002	1.7	803 10:07	0.08
Stormgate2	0.000	0.0	0.0	0.0	0.001	0.9	803 10:08	0.06

****
Outfall Loading Summary
****

Outfall Node	Flow Freq Pcnt	Avg Flow CFS	Max Flow CFS	Total Volume 10^6 gal

POC-1	16.54	0.01	1.40	25.541
System	16.54	0.01	1.40	25.541

****
Link Flow Summary
****

Link	Type	Maximum |Flow| CFS	Time of Max Occurrence days	hr:min	Maximum |Veloc| ft/sec	Max/ Full Flow	Max/ Full Depth
OUTLET-1	DUMMY	0.07	803	10:05			
OUTLET-2	DUMMY	0.76	10332	04:02			
OUTLET-3	DUMMY	0.05	803	10:06			
OUTLET-4	DUMMY	0.41	10332	03:51			
OUTLET-1-1	DUMMY	0.08	803	10:05			
OUTLET-3-1	DUMMY	0.06	803	10:06			

****
Conduit Surcharge Summary
****

No conduits were surcharged.

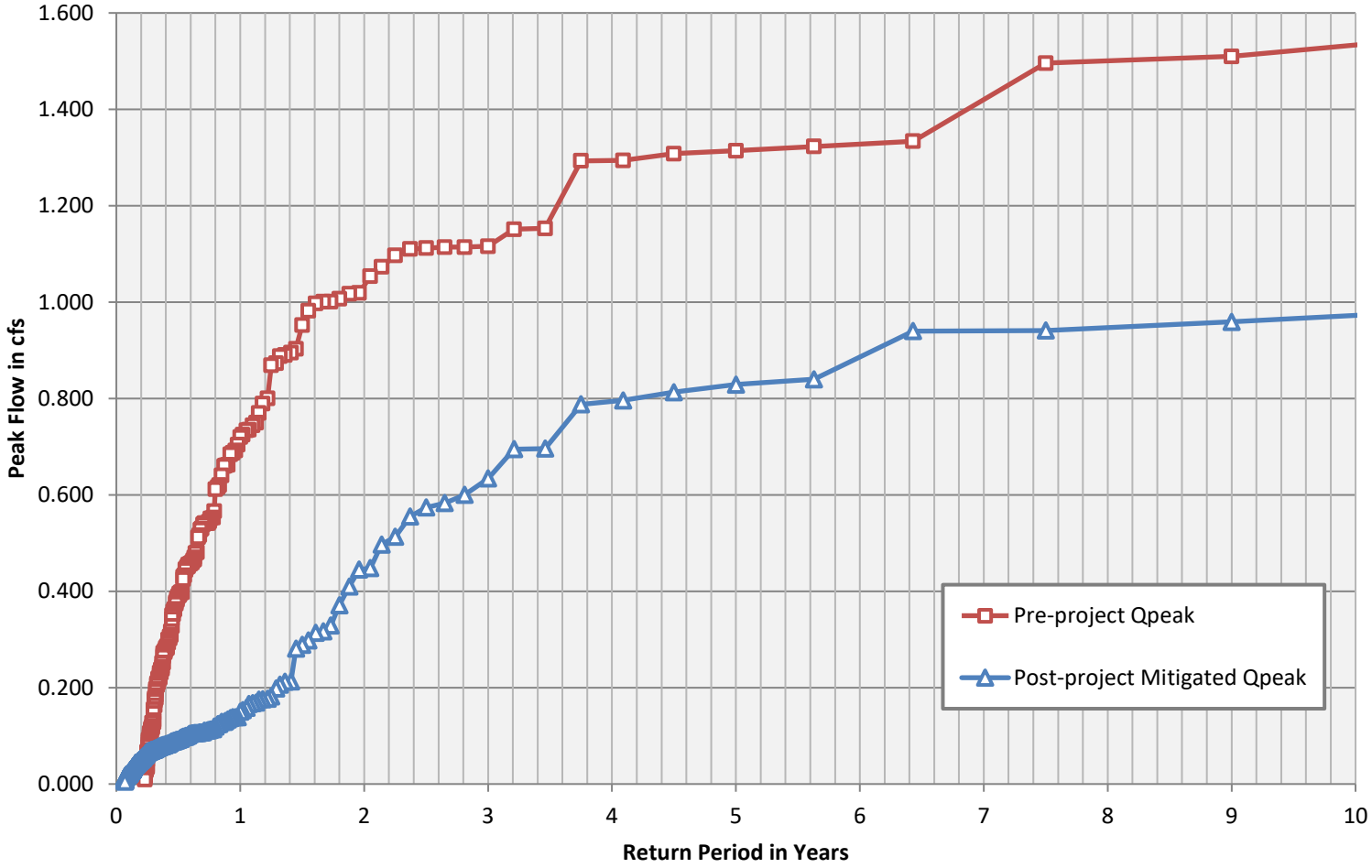
Analysis begun on: Wed Dec 4 09:42:20 2024
Analysis ended on: Wed Dec 4 09:43:01 2024
Total elapsed time: 00:00:41

POC-1

Peak Flow Frequency Summary

Return Period	Pre-project Qpeak (cfs)	Post-project - Mitigated Q (cfs)
LF = 0.1xQ2	0.103	0.045
2-year	1.035	0.446
Permavoid Layer	1.314	0.829
10-year	1.534	0.972

POC-1
Peak Flow Frequency Curves



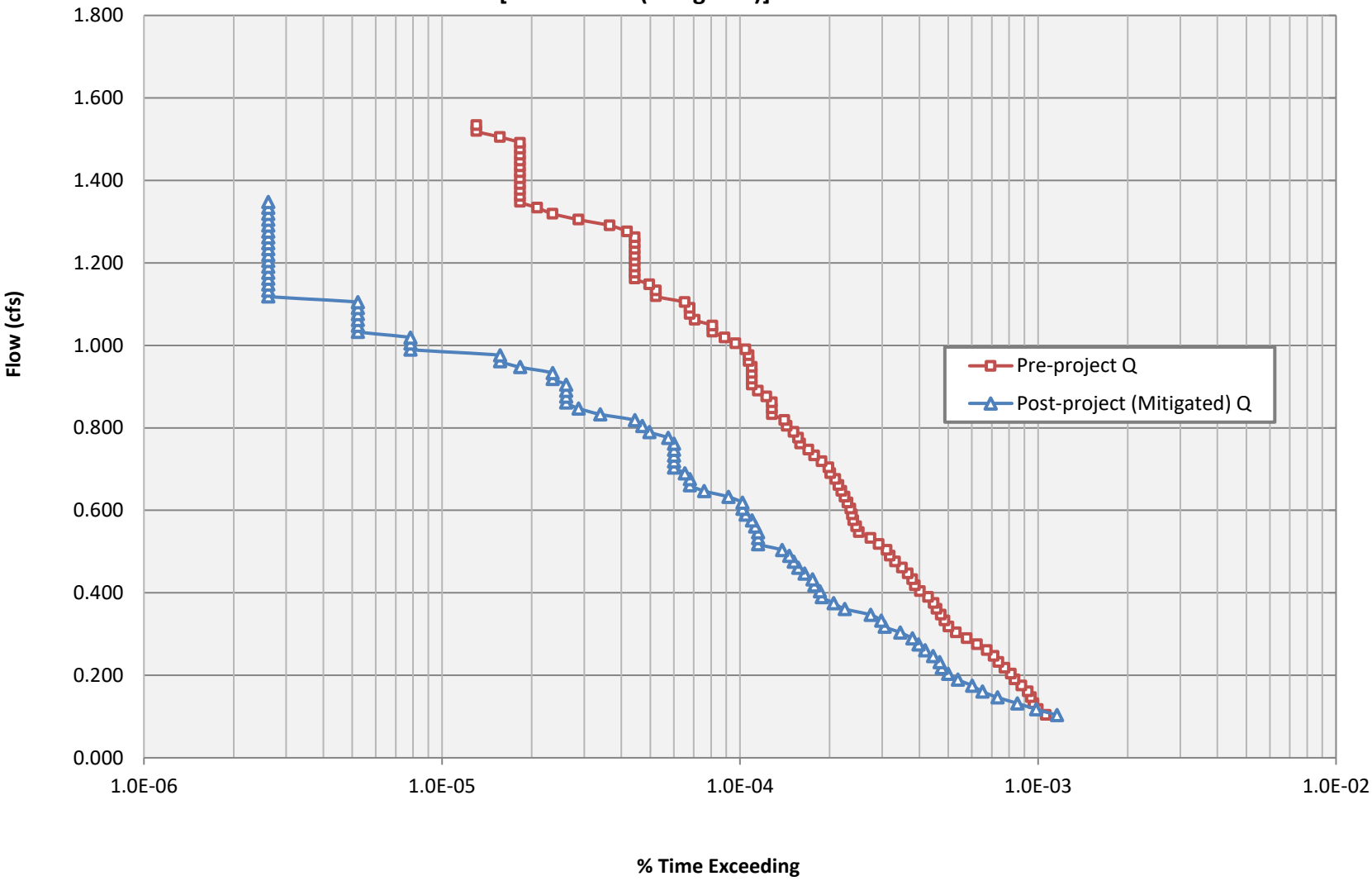
Low-flow Threshold:	10%		**POC-1**
0.1xQ2 (Pre):	0.103	cfs	
Q10 (Pre):	1.534	cfs	
Ordinate #:	100		
Incremental Q (Pre):	0.01430	cfs	
Total Hourly Data:	382736	hours	**The proposed BMP:** **PASSED**

Permavoid Layer	Pre-project Flow (cfs)	Pre-project Hours	Pre-project % Time Exceeding		Post-project % Time Exceeding	Percentage	Pass/Fail
0	0.103	407	1.06E-03	443	1.16E-03	109%	Pass
1	0.118	383	1.00E-03	377	9.85E-04	98%	Pass
2	0.132	370	9.67E-04	326	8.52E-04	88%	Pass
3	0.146	363	9.48E-04	280	7.32E-04	77%	Pass
4	0.161	354	9.25E-04	249	6.51E-04	70%	Pass
5	0.175	337	8.81E-04	230	6.01E-04	68%	Pass
6	0.189	320	8.36E-04	206	5.38E-04	64%	Pass
7	0.204	311	8.13E-04	191	4.99E-04	61%	Pass
8	0.218	296	7.73E-04	182	4.76E-04	61%	Pass
9	0.232	282	7.37E-04	179	4.68E-04	63%	Pass
10	0.246	272	7.11E-04	170	4.44E-04	63%	Pass
11	0.261	258	6.74E-04	160	4.18E-04	62%	Pass
12	0.275	239	6.24E-04	152	3.97E-04	64%	Pass
13	0.289	221	5.77E-04	145	3.79E-04	66%	Pass
14	0.304	203	5.30E-04	132	3.45E-04	65%	Pass
15	0.318	192	5.02E-04	117	3.06E-04	61%	Pass
16	0.332	186	4.86E-04	114	2.98E-04	61%	Pass
17	0.347	181	4.73E-04	105	2.74E-04	58%	Pass
18	0.361	175	4.57E-04	86	2.25E-04	49%	Pass
19	0.375	171	4.47E-04	79	2.06E-04	46%	Pass
20	0.389	164	4.28E-04	72	1.88E-04	44%	Pass
21	0.404	154	4.02E-04	71	1.86E-04	46%	Pass
22	0.418	148	3.87E-04	68	1.78E-04	46%	Pass
23	0.432	145	3.79E-04	67	1.75E-04	46%	Pass
24	0.447	140	3.66E-04	63	1.65E-04	45%	Pass
25	0.461	134	3.50E-04	60	1.57E-04	45%	Pass
26	0.475	127	3.32E-04	58	1.52E-04	46%	Pass
27	0.490	122	3.19E-04	56	1.46E-04	46%	Pass
28	0.504	119	3.11E-04	53	1.38E-04	45%	Pass
29	0.518	112	2.93E-04	44	1.15E-04	39%	Pass
30	0.532	105	2.74E-04	44	1.15E-04	42%	Pass
31	0.547	96	2.51E-04	44	1.15E-04	46%	Pass
32	0.561	94	2.46E-04	43	1.12E-04	46%	Pass
33	0.575	92	2.40E-04	42	1.10E-04	46%	Pass
34	0.590	91	2.38E-04	40	1.05E-04	44%	Pass
35	0.604	90	2.35E-04	39	1.02E-04	43%	Pass
36	0.618	88	2.30E-04	39	1.02E-04	44%	Pass
37	0.633	86	2.25E-04	35	9.14E-05	41%	Pass
38	0.647	84	2.19E-04	29	7.58E-05	35%	Pass
39	0.661	82	2.14E-04	26	6.79E-05	32%	Pass
40	0.675	80	2.09E-04	26	6.79E-05	33%	Pass
41	0.690	77	2.01E-04	25	6.53E-05	32%	Pass
42	0.704	76	1.99E-04	23	6.01E-05	30%	Pass
43	0.718	72	1.88E-04	23	6.01E-05	32%	Pass
44	0.733	68	1.78E-04	23	6.01E-05	34%	Pass
45	0.747	65	1.70E-04	23	6.01E-05	35%	Pass
46	0.761	61	1.59E-04	23	6.01E-05	38%	Pass
47	0.776	60	1.57E-04	22	5.75E-05	37%	Pass
48	0.790	58	1.52E-04	19	4.96E-05	33%	Pass
49	0.804	55	1.44E-04	18	4.70E-05	33%	Pass
50	0.819	54	1.41E-04	17	4.44E-05	31%	Pass
51	0.833	49	1.28E-04	13	3.40E-05	27%	Pass
52	0.847	49	1.28E-04	11	2.87E-05	22%	Pass
53	0.861	49	1.28E-04	10	2.61E-05	20%	Pass
54	0.876	47	1.23E-04	10	2.61E-05	21%	Pass

Permavoid Layer	Pre-project Flow (cfs)	Pre-project Hours	Pre-project % Time Exceeding		Post-project % Time Exceeding	Percentage	Pass/Fail
55	0.890	44	1.15E-04	10	2.61E-05	23%	Pass
56	0.904	42	1.10E-04	10	2.61E-05	24%	Pass
57	0.919	42	1.10E-04	9	2.35E-05	21%	Pass
58	0.933	42	1.10E-04	9	2.35E-05	21%	Pass
59	0.947	42	1.10E-04	7	1.83E-05	17%	Pass
60	0.962	41	1.07E-04	6	1.57E-05	15%	Pass
61	0.976	41	1.07E-04	6	1.57E-05	15%	Pass
62	0.990	40	1.05E-04	3	7.84E-06	8%	Pass
63	1.004	37	9.67E-05	3	7.84E-06	8%	Pass
64	1.019	34	8.88E-05	3	7.84E-06	9%	Pass
65	1.033	31	8.10E-05	2	5.23E-06	6%	Pass
66	1.047	31	8.10E-05	2	5.23E-06	6%	Pass
67	1.062	27	7.05E-05	2	5.23E-06	7%	Pass
68	1.076	26	6.79E-05	2	5.23E-06	8%	Pass
69	1.090	26	6.79E-05	2	5.23E-06	8%	Pass
70	1.105	25	6.53E-05	2	5.23E-06	8%	Pass
71	1.119	20	5.23E-05	1	2.61E-06	5%	Pass
72	1.133	20	5.23E-05	1	2.61E-06	5%	Pass
73	1.147	19	4.96E-05	1	2.61E-06	5%	Pass
74	1.162	17	4.44E-05	1	2.61E-06	6%	Pass
75	1.176	17	4.44E-05	1	2.61E-06	6%	Pass
76	1.190	17	4.44E-05	1	2.61E-06	6%	Pass
77	1.205	17	4.44E-05	1	2.61E-06	6%	Pass
78	1.219	17	4.44E-05	1	2.61E-06	6%	Pass
79	1.233	17	4.44E-05	1	2.61E-06	6%	Pass
80	1.248	17	4.44E-05	1	2.61E-06	6%	Pass
81	1.262	17	4.44E-05	1	2.61E-06	6%	Pass
82	1.276	16	4.18E-05	1	2.61E-06	6%	Pass
83	1.290	14	3.66E-05	1	2.61E-06	7%	Pass
84	1.305	11	2.87E-05	1	2.61E-06	9%	Pass
85	1.319	9	2.35E-05	1	2.61E-06	11%	Pass
86	1.333	8	2.09E-05	1	2.61E-06	13%	Pass
87	1.348	7	1.83E-05	1	2.61E-06	14%	Pass
88	1.362	7	1.83E-05	0	0.00E+00	0%	Pass
89	1.376	7	1.83E-05	0	0.00E+00	0%	Pass
90	1.391	7	1.83E-05	0	0.00E+00	0%	Pass
91	1.405	7	1.83E-05	0	0.00E+00	0%	Pass
92	1.419	7	1.83E-05	0	0.00E+00	0%	Pass
93	1.433	7	1.83E-05	0	0.00E+00	0%	Pass
94	1.448	7	1.83E-05	0	0.00E+00	0%	Pass
95	1.462	7	1.83E-05	0	0.00E+00	0%	Pass
96	1.476	7	1.83E-05	0	0.00E+00	0%	Pass
97	1.491	7	1.83E-05	0	0.00E+00	0%	Pass
98	1.505	6	1.57E-05	0	0.00E+00	0%	Pass
99	1.519	5	1.31E-05	0	0.00E+00	0%	Pass
100	1.534	5	1.31E-05	0	0.00E+00	0%	Pass

POC-1

Flow Duration Curve
[Pre vs. Post (Mitigated)]



Summary for Pond 2P: Rtank 1-B Alt1

Volume	Invert	Avail.Storage	Storage Description
#1	526.60'	10,701 cf	**Tank 1-B (Conic)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
526.60	2,200	0.0	0	0	2,200
527.00	2,200	95.0	836	836	2,267
528.00	2,200	95.0	2,090	2,926	2,433
529.00	2,200	95.0	2,090	5,016	2,599
530.00	2,200	95.0	2,090	7,106	2,765
531.72	2,200	95.0	3,595	10,701	3,051

Device	Routing	Invert	Outlet Devices
#1	Primary	526.60'	**12.00" Round Culvert** L= 6.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 526.60' / 526.53' S= 0.0117 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	526.60'	**1.10" Vert. Orifice** C= 0.600 Limited to weir flow at low heads

Stage-Discharge for Pond 2P: Rtank 1-B Alt1

Elevation (feet)	Primary (cfs)
526.60	0.000
526.80	0.012
527.00	0.019
527.20	0.024
527.40	0.028
527.60	0.031
527.80	0.034
528.00	0.037
528.20	0.040
528.40	0.042
528.60	0.044
528.80	0.047
529.00	0.049
529.20	0.051
529.40	0.053
529.60	0.055
529.80	0.056
530.00	0.058
530.20	0.060
530.40	0.062
530.60	0.063
530.80	0.065
531.00	0.066
531.20	0.068
531.40	0.069
531.60	**0.071**
531.72	**0.072**

Summary for Pond 3P: Stormgate 1

Volume	Invert	Avail.Storage	Storage Description
#1	526.53'	91 cf	**Stormgate (Conic)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
526.53	16	0.0	0	0	16
527.00	16	100.0	8	8	23
528.00	16	100.0	16	24	37
529.00	16	100.0	16	40	51
530.00	16	100.0	16	56	65
531.72	16	100.0	28	83	90
532.22	16	100.0	8	91	97

Device	Routing	Invert	Outlet Devices
#1	Primary	526.53'	**12.00" Round Culvert** L= 13.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 526.53' / 526.08' S= 0.0346 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Primary	531.72'	**Custom Weir, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 0.50 0.50 Width (feet) 4.00 4.00 0.00

Stage-Discharge for Pond 3P: Stormgate 1

Elevation (feet)	Primary (cfs)
526.53	0.000
526.73	0.170
526.93	0.632
527.13	1.298
527.33	2.051
527.53	2.674
527.73	3.164
527.93	3.588
528.13	3.966
528.33	4.312
528.53	4.632
528.73	4.931
528.93	5.213
529.13	5.480
529.33	5.735
529.53	5.979
529.73	6.214
529.93	6.440
530.13	6.658
530.33	6.870
530.53	7.075
530.73	7.274
530.93	7.468
531.13	7.657
531.33	7.842
531.53	8.022
531.73	8.212
531.93	9.632
532.13	**11.979**
532.22	**13.247**

Summary for Pond 4P: StormTrap 2-B Alt 1

Volume	Invert	Avail.Storage	Storage Description
#1	486.93'	6,747 cf	**Tank 2-B (Conic)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
486.93	1,400	0.0	0	0	1,400
488.00	1,400	85.0	1,273	1,273	1,542
489.00	1,400	85.0	1,190	2,463	1,675
490.00	1,400	85.0	1,190	3,653	1,807
490.93	1,400	85.0	1,107	4,760	1,931
491.00	1,400	85.0	83	4,843	1,940
492.00	1,400	85.0	1,190	6,033	2,072
492.60	1,400	85.0	714	6,747	2,152

Device	Routing	Invert	Outlet Devices
#1	Primary	486.93'	**12.00" Round Culvert** L= 34.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 486.93' / 486.59' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	486.93'	**0.50" Vert. Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	490.93'	**12.00" W x 3.00" H Vert. Orifice** C= 0.600 Limited to weir flow at low heads
#4	Device 1	492.10'	**Custom Weir, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 0.50 0.50 Width (feet) 5.00 5.00 0.00

Stage-Discharge for Pond 4P: StormTrap 2-B Alt 1

Elevation (feet)	Primary (cfs)
486.93	0.000
487.13	0.003
487.33	0.004
487.53	0.005
487.73	0.006
487.93	0.006
488.13	0.007
488.33	0.008
488.53	0.008
488.73	0.009
488.93	0.009
489.13	0.010
489.33	0.010
489.53	0.011
489.73	0.011
489.93	0.011
490.13	0.012
490.33	0.012
490.53	0.012
490.73	0.013
490.93	0.013
491.13	0.301
491.33	0.639
491.53	0.841
491.73	1.002
491.93	1.140
492.13	1.347
492.33	3.180
492.53	**6.094**
492.60	**7.301**

Summary for Pond 5P: Rtank 3-B Alt1

Volume	Invert	Avail.Storage	Storage Description
#1	520.06'	8,406 cf	**Tank 3-B (Conic)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
520.06	1,264	0.0	0	0	1,264
521.00	1,264	95.0	1,129	1,129	1,382
522.00	1,264	95.0	1,201	2,330	1,509
523.00	1,264	95.0	1,201	3,530	1,635
524.00	1,264	95.0	1,201	4,731	1,761
525.00	1,264	95.0	1,201	5,932	1,887
526.00	1,264	95.0	1,201	7,133	2,013
527.06	1,264	95.0	1,273	8,406	2,146

Device	Routing	Invert	Outlet Devices
#1	Primary	520.06'	**12.00" Round Culvert** L= 14.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 520.06' / 519.94' S= 0.0086 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	520.06'	**0.85" Vert. Orifice** C= 0.600 Limited to weir flow at low heads

Stage-Discharge for Pond 5P: Rtank 3-B Alt1

Elevation (feet)	Primary (cfs)
520.06	0.000
520.26	0.008
520.46	0.011
520.66	0.014
520.86	0.017
521.06	0.019
521.26	0.020
521.46	0.022
521.66	0.024
521.86	0.025
522.06	0.027
522.26	0.028
522.46	0.029
522.66	0.030
522.86	0.032
523.06	0.033
523.26	0.034
523.46	0.035
523.66	0.036
523.86	0.037
524.06	0.038
524.26	0.039
524.46	0.040
524.66	0.041
524.86	0.041
525.06	0.042
525.26	0.043
525.46	0.044
525.66	0.045
525.86	0.046
526.06	0.046
526.26	0.047
526.46	0.048
526.66	0.049
526.86	0.049
527.06	**0.050**

Summary for Pond 6P: Stormgate 2

Volume	Invert	Avail.Storage	Storage Description
#1	519.94'	120 cf	**Stormgate 2 (Conic)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
519.94	16	0.0	0	0	16
521.00	16	100.0	17	17	31
522.00	16	100.0	16	33	45
523.00	16	100.0	16	49	59
524.00	16	100.0	16	65	74
525.00	16	100.0	16	81	88
526.00	16	100.0	16	97	102
527.06	16	100.0	17	114	117
527.46	16	100.0	6	120	123

Device	Routing	Invert	Outlet Devices
#1	Primary	519.94'	**12.00" Round Culvert** L= 290.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 519.94' / 490.01' S= 0.1032 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Primary	527.06'	**Custom Weir, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 0.40 0.40 Width (feet) 4.00 4.00 0.00

Stage-Discharge for Pond 6P: Stormgate 2

Elevation (feet)	Primary (cfs)
519.94	0.000
520.14	0.170
520.34	0.632
520.54	1.298
520.74	2.051
520.94	2.674
521.14	3.164
521.34	3.588
521.54	3.966
521.74	4.312
521.94	4.632
522.14	4.931
522.34	5.213
522.54	5.480
522.74	5.735
522.94	5.979
523.14	6.214
523.34	6.440
523.54	6.658
523.74	6.870
523.94	7.075
524.14	7.274
524.34	7.468
524.54	7.657
524.74	7.842
524.94	8.022
525.14	8.198
525.34	8.371
525.54	8.540
525.74	8.706
525.94	8.869
526.14	9.029
526.34	9.186
526.54	9.340
526.74	9.492
526.94	9.641
527.14	10.085
527.34	**11.875**
527.46	**13.334**

Summary for Pond 7P: StormTrap 4-B Alt1

Volume	Invert	Avail.Storage	Storage Description
#1	490.33'	2,892 cf	**Tank 4-B (Conic)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
490.33	600	0.0	0	0	600
491.00	600	85.0	342	342	658
492.00	600	85.0	510	852	745
493.00	600	85.0	510	1,362	832
494.00	600	85.0	510	1,872	919
495.00	600	85.0	510	2,382	1,006
496.00	600	85.0	510	2,892	1,092

Device	Routing	Invert	Outlet Devices
#1	Primary	490.33'	**12.00" Round Culvert** L= 32.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 490.33' / 490.01' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	490.33'	**0.40" Vert. Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	494.00'	**12.00" W x 3.00" H Vert. Orifice** C= 0.600 Limited to weir flow at low heads
#4	Primary	495.50'	**Custom Weir, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 0.50 0.50 Width (feet) 2.50 2.50 0.00

Stage-Discharge for Pond 7P: StormTrap 4-B Alt1

Elevation (feet)	Primary (cfs)
490.33	0.000
490.53	0.002
490.73	0.003
490.93	0.003
491.13	0.004
491.33	0.004
491.53	0.005
491.73	0.005
491.93	0.005
492.13	0.006
492.33	0.006
492.53	0.006
492.73	0.006
492.93	0.007
493.13	0.007
493.33	0.007
493.53	0.007
493.73	0.008
493.93	0.008
494.13	0.159
494.33	0.544
494.53	0.772
494.73	0.943
494.93	1.088
495.13	1.215
495.33	1.330
495.53	1.478
495.73	2.437
495.93	**3.935**
496.00	**4.553**

Vault Drawdown Calculation

Project Name	South Santa Fe	RTank-1B
Project No	3527	12/4/2024
Vault Drawdown Time:	**76.9**	**hrs**

Note: Drawdown time is calculated assuming an initial water surface depth equal to the invert of the lowest surface discharge opening in the vault outlet structure.

Underdrain Orifice Diameter(in):	**1.1**
C:	**0.6**

Surface Depth (ft)	**Volume (cf)**	**$Q_{orifice}$ (cfs)**
5.12	10701	0.071
3.4	7106	0.058
2.4	5016	0.048
1.4	2926	0.036
0.4	836	0.018
0	0	0.000

Ave Q:	**0.03863**
Drawdown (hrs) (Vol/Ave Q):	**76.9**

Vault Drawdown Calculation

Project Name	South Santa Fe	StormTrap-2B
Project No	3527	12/4/2024
Vault Drawdown Time:	**164.9**	**hrs**

Note: Drawdown time is calculated assuming an initial water surface depth equal to the invert of the lowest surface discharge opening in the vault outlet structure.

Underdrain Orifice Diameter(in):	**0.5**
C:	**0.6**

Surface Depth (ft)	**Volume (cf)**	**$Q_{orifice}$ (cfs)**
4	4760	0.013
3.07	3653	0.011
2.07	2463	0.009
1.07	1273	0.007
0.00	0	0.00

Ave Q:	**0.00802**
Drawdown (hrs) (Vol/Ave Q):	**164.9**

Vault Drawdown Calculation

Project Name	South Santa Fe	RTank-3B
Project No	3527	12/4/2024
Vault Drawdown Time:	**74.0**	**hrs**

Note: Drawdown time is calculated assuming an initial water surface depth equal to the invert of the lowest surface discharge opening in the vault outlet structure.

Underdrain Orifice Diameter(in):	**0.85**
C:	**0.6**

Surface Depth (ft)	**Volume (cf)**	**$Q_{orifice}$ (cfs)**
7	8406	0.050
6	7133	0.046
5	5932	0.042
4	4731	0.038
3	3530	0.032
2	2330	0.026
1	1129	0.018
0	0	0.000

Ave Q:	**0.03155**
Drawdown (hrs) (Vol/Ave Q):	**74.0**

Vault Drawdown Calculation

Project Name	South Santa Fe	StormTrap-4B
Project No	3527	12/4/2024
Vault Drawdown Time:	**112.0**	**hrs**

Note: Drawdown time is calculated assuming an initial water surface depth equal to the invert of the lowest surface discharge opening in the vault outlet structure.

Underdrain Orifice Diameter(in):	**0.4**
C:	**0.6**

Surface Depth (ft)	**Volume (cf)**	**$Q_{orifice}$ (cfs)**
3.67	1872	0.008
2.67	1362	0.007
1.67	852	0.005
0.67	342	0.003
0	0	0.000

Ave Q:	**0.00464**
Drawdown (hrs) (Vol/Ave Q):	**112.0**

TORY R. WALKER ENGINEERING
RELIABLE SOLUTIONS IN WATER RESOURCES

Manning's *n* Values for Overland Flow[1]

The BMP Design Manuals within the County of San Diego allow for a land surface description other than short prairie grass to be used for hydromodification BMP design only if documentation provided is consistent with Table A.6 of the SWMM 5 User's Manual.

In January 2016, the EPA released the SWMM Reference Manual Volume I – Hydrology (SWMM Hydrology Reference Manual). The SWMM Hydrology Reference Manual complements the SWMM 5 User's Manual by providing an in-depth description of the program's hydrologic components. Table 3-5 of the SWMM Hydrology Reference Manual expounds upon Table A.6 of the SWMM 5 User's Manual by providing Manning's *n* values for additional overland flow surfaces. Therefore, in order to provide SWMM users with a wider range of land surfaces suitable for local application and to provide Copermittees with confidence in the design parameters, we recommend using the values published by Yen and Chow in Table 3-5 of the EPA SWMM Reference Manual Volume I – Hydrology. The values are provided in the table below:

Overland Surface	**Manning value (*n*)**
Smooth asphalt pavement	0.010
Smooth impervious surface	0.011
Tar and sand pavement	0.012
Concrete pavement	0.014
Rough impervious surface	0.015
Smooth bare packed soil	0.017
Moderate bare packed soil	0.025
Rough bare packed soil	0.032
Gravel soil	0.025
Mowed poor grass	0.030
Average grass, closely clipped sod	0.040
Pasture	0.040
Timberland	0.060
Dense grass	0.060
Shrubs and bushes	0.080
Land Use	
Business	0.014
Semibusiness	0.022
Industrial	0.020
Dense residential	0.025
Suburban residential	0.030
Parks and lawns	0.040

[1]Content summarized from *Improving Accuracy in Continuous Simulation Modeling: Guidance for Selecting Pervious Overland Flow Manning's n Values in the San Diego Region* (TRWE, 2016).

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for San Diego County Area, California

July 27, 2021

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Information for All Uses

Soil Properties and Qualities

The Soil Properties and Qualities section includes various soil properties and qualities displayed as thematic maps with a summary table for the soil map units in the selected area of interest. A single value or rating for each map unit is generated by aggregating the interpretive ratings of individual map unit components. This aggregation process is defined for each property or quality.

Soil Qualities and Features

Soil qualities are behavior and performance attributes that are not directly measured, but are inferred from observations of dynamic conditions and from soil properties. Example soil qualities include natural drainage, and frost action. Soil features are attributes that are not directly part of the soil. Example soil features include slope and depth to restrictive layer. These features can greatly impact the use and management of the soil.

Hydrologic Soil Group (2972/2982 South Santa Fe Avenue)

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

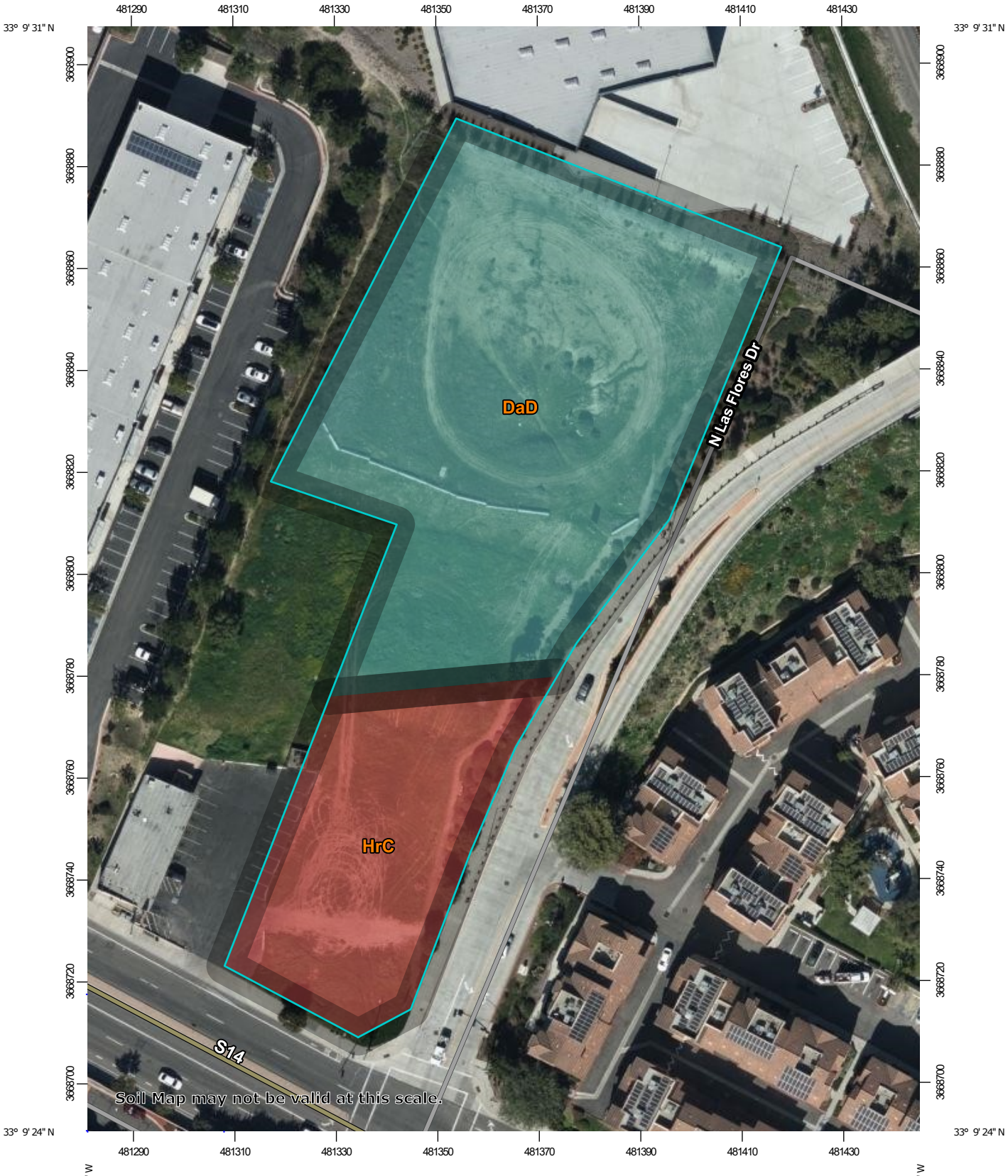
Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Map—Hydrologic Soil Group (2972/2982 South Santa Fe Avenue)



Map Scale: 1:1,060 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 15 30 60 90

Feet: 0 50 100 200 300

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

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Soil Rating Lines

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Soil Rating Points

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

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

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

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

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

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

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

Soil Survey Area: San Diego County Area, California
Survey Area Data: Version 15, May 27, 2020

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

Date(s) aerial images were photographed: Jan 24, 2020—Feb 12, 2020

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

Table—Hydrologic Soil Group (2972/2982 South Santa Fe Avenue)

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
DaD	Diablo clay, 9 to 15 percent slopes, warm MAAT	C	1.7	72.6%
HrC	Huerhuero loam, 2 to 9 percent slopes	D	0.6	27.4%
Totals for Area of Interest			**2.3**	**100.0%**

Rating Options—Hydrologic Soil Group (2972/2982 South Santa Fe Avenue)

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

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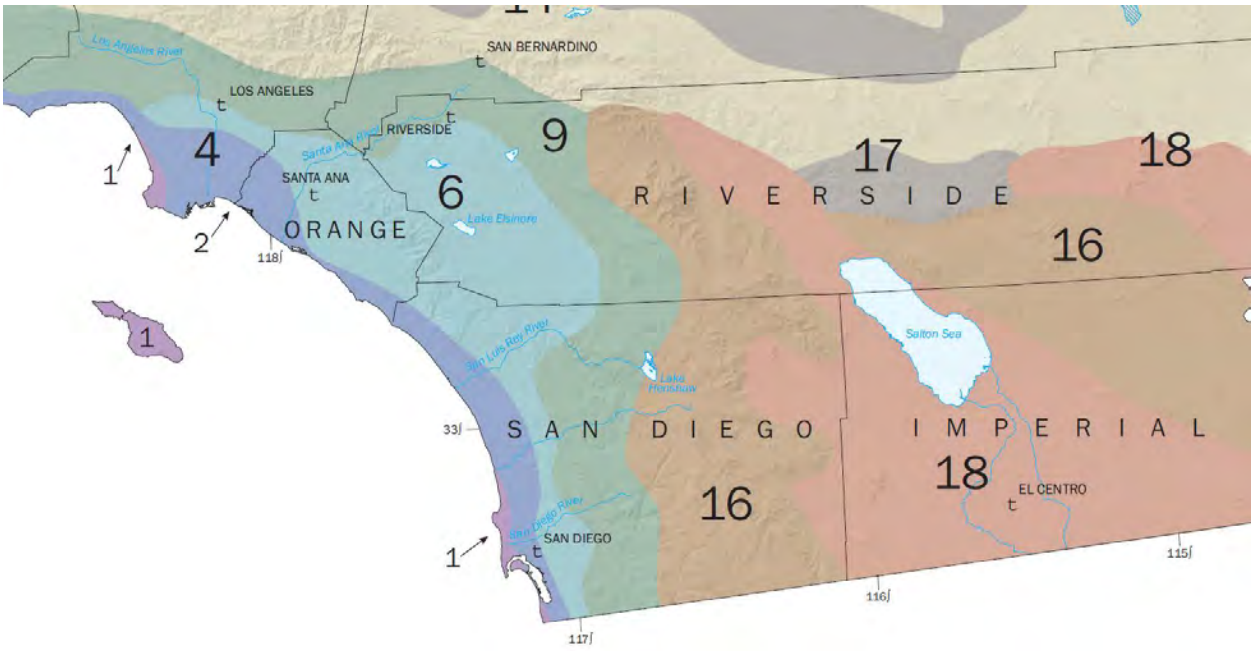


Figure G.1-2: California Irrigation Management Information System "Reference Evapotranspiration Zones"

Table G.1-1: Monthly Average Reference Evapotranspiration by ETo Zone (inches/month and inches/day) for use in SWMM Models for Hydromodification Management Studies in San Diego County CIMIS Zones 1, 4, 6, 9, and 16 (See CIMIS ETo Zone Map)

	January	February	March	April	May	June	July	August	September	October	November	December
Zone	in/month	in/month	in/month	in/month	in/month	in/month	in/month	in/month	in/month	in/month	in/month	in/month
1	0.93	1.4	2.48	3.3	4.03	4.5	4.65	4.03	3.3	2.48	1.2	0.62
4	1.86	2.24	3.41	4.5	5.27	5.7	5.89	5.58	4.5	3.41	2.4	1.86
6	1.86	2.24	3.41	4.8	5.58	6.3	6.51	6.2	4.8	3.72	2.4	1.86
9	2.17	2.8	4.03	5.1	5.89	6.6	7.44	6.82	5.7	4.03	2.7	1.86
16	1.55	2.52	4.03	5.7	7.75	8.7	9.3	8.37	6.3	4.34	2.4	1.55
	January	February	March	April	May	June	July	August	September	October	November	December
Days	31	28	31	30	31	30	31	31	30	31	30	31
Zone	in/day	in/day	in/day	in/day	in/day	in/day	in/day	in/day	in/day	in/day	in/day	in/day
1	0.030	0.050	0.080	0.110	0.130	0.150	0.150	0.130	0.110	0.080	0.040	0.020
4	0.060	0.080	0.110	0.150	0.170	0.190	0.190	0.180	0.150	0.110	0.080	0.060
6	0.060	0.080	0.110	0.160	0.180	0.210	0.210	0.200	0.160	0.120	0.080	0.060
9	0.070	0.100	0.130	0.170	0.190	0.220	0.240	0.220	0.190	0.130	0.090	0.060
16	0.050	0.090	0.130	0.190	0.250	0.290	0.300	0.270	0.210	0.140	0.080	0.050

ATTACHMENT 3 STRUCTURAL BMP MAINTENANCE INFORMATION

This is the cover sheet for Attachment 3.

Indicate which Items are Included behind this cover sheet:

Attachment Sequence	Contents	Checklist
Attachment 3a	Structural BMP Maintenance Thresholds and Actions (Required)	☑ Included See Structural BMP Maintenance Information Checklist on the back of this Attachment cover sheet.
Attachment 3b	Draft Maintenance Agreement (when applicable)	☐ Included ☐ Not Applicable

Use this checklist to ensure the required information has been included in the Structural BMP Maintenance Information Attachment:

☑ **Preliminary Design / Planning / CEQA level submittal:**

Attachment 3a must identify:

- ☐ Typical maintenance indicators and actions for proposed structural BMP(s) based on Section 7.7 of the BMP Design Manual

Attachment 3b is not required for preliminary design / planning / CEQA level submittal.

☐ **Final Design level submittal:**

Attachment 3a must identify:

- ☐ Specific maintenance indicators and actions for proposed structural BMP(s). This shall be based on Section 7.7 of the BMP Design Manual and enhanced to reflect actual proposed components of the structural BMP(s)
- ☐ 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)
- ☐ 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
- ☐ When applicable, necessary special training or certification requirements for inspection and maintenance personnel such as confined space entry or hazardous waste management

Attachment 3b: For private entity operation and maintenance, Attachment 3b shall include a draft maintenance agreement in the local jurisdiction's standard format (PDP applicant to contact the [City Engineer] to obtain the current maintenance agreement forms).

R-TANK MAINTENANCE

Designing an underground stormwater detention system with future maintenance in mind is a simple process that includes three primary objectives: **PREVENT** debris from entering the system by using good pre-treatment systems, **ISOLATE** debris and sediments that manage to enter the system, and **PROTECT** the body of the system by providing backflush mechanisms to ensure longevity.

1. PREVENT

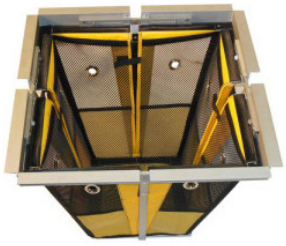
Keeping debris and sediment out of the system by pre-treating runoff is one of the smartest things an engineer can do when designing underground detention systems. It makes no sense to allow trash and sediments to flow unrestricted into an underground system where removal will be expensive. Instead, capture pollutants simply and inexpensively in the inlets, where removal is easy. There are several ways this can be accomplished with minimal cost impacts to your project.

Trash Guard Plus®

Trash Guard Plus®

Trash Guard Plus is a patented stormwater pretreatment device that traps debris, sediment and floatables in the inlet. It helps extend maintenance cycles by using the full volume of the inlet structure for sediment capacity. And it is easy to maintain by accessing pollutants through the manhole lid.

Trash Guard Plus works by both screening debris out of the runoff and by slowing the flow of runoff, causing sediments to fall to the bottom of the inlet. Testing at NC State has shown the Trash Guard to be effective at removing trash, sediment, nutrients, and metals.



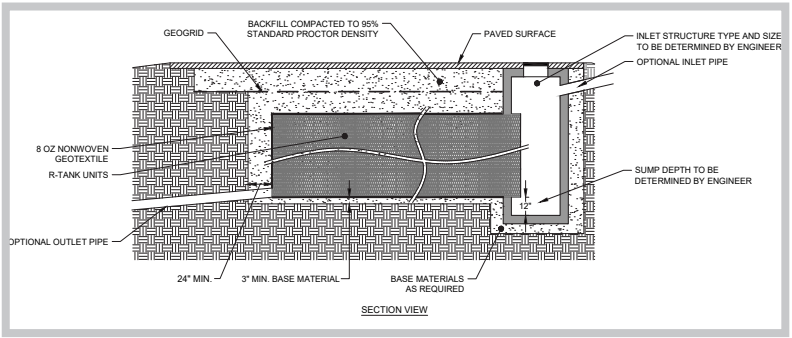
Gratemaster

Gratemaster

To treat a single inlet that serves as a junction for a larger drainage area, consider an insert like the Gratemaster. Ideal for capturing sediment and trash, it makes clean-up a snap by holding all the pollutants right near the surface for easy extraction.

R-Tank Screening

For a more centralized approach, some engineers prefer to create an opening in the inlet structures to allow the R-Tank modules to penetrate the structure to act as a trash screen. This works best with a structure that includes a sump (see drawing below).



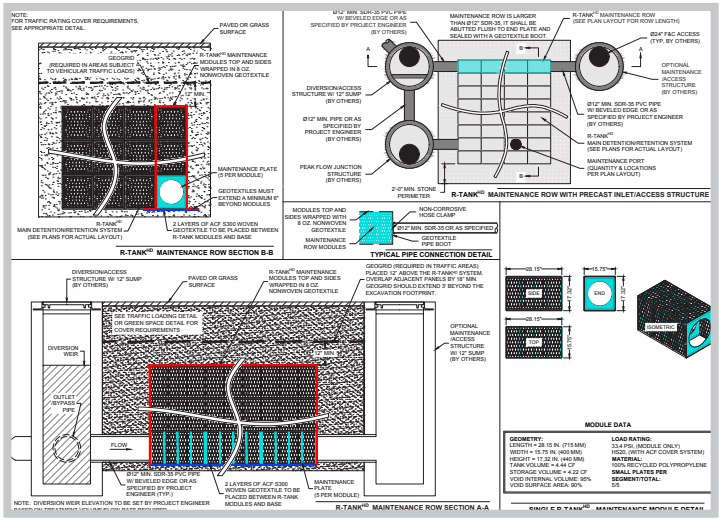
R-TANK MAINTENANCE

2. ISOLATE

Some pollutants may elude the pre-treatment systems. Trap these materials inside the maintenance row (see drawing to right). Consolidating sediments in a single location makes them easy to remove. Maintenance rows are formed by using maintenance modules, which have open internal components that are fully accessible by conventional jet-vac systems. These modules are set in a row (or multiple rows) to your desired length. Longer maintenance rows should include an access structure on both ends. Extremely long rows may require access from the middle of the row, as well.

The maintenance row is always wrapped in geotextile independently from the rest of the system. The geotextile retains trash, sediments, and other solids, preventing contamination of the rest of the system.

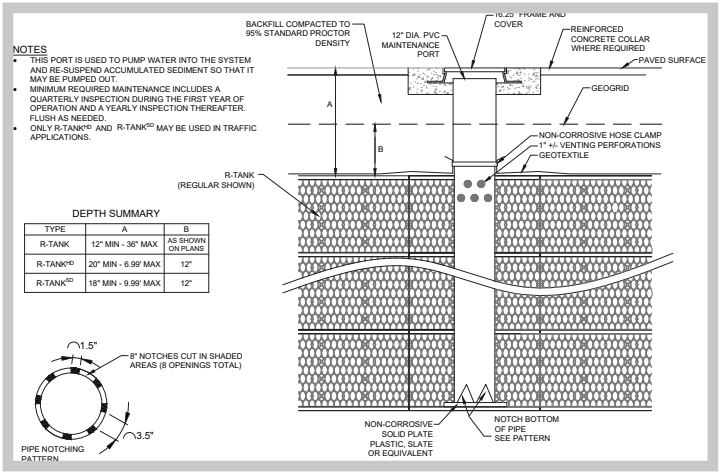
The maintenance row should be sized to treat the first flush (usually 1”) of runoff. Use a bypass structure to divert that flow into the maintenance row, and allow larger flows to continue to a downstream inlet where they can enter the R-Tank outside of the maintenance row.



The maintenance row is only available in LD, HD, and UD modules. For SD and XD modules, consider creating a forebay around the inlet locations to collect sediment. This is done by using a taller module installed at a lower invert. Geotextile baffles between the forebay and the rest of the system can help retain sediments. Concentrate Maintenance Ports (see PROTECT below) in the forebay to ensure access to sediment for removal.

3. PROTECT

Every good system has a fall-back plan. You can ensure a long system life by including maintenance ports throughout the system footprint to remove any pollutants that evade the pretreatment system and maintenance row. Maintenance ports should be specified within 10’ of inlet and outlet connections, and roughly 50’ on center (see maintenance port detail to right).



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STORMTRAP MAINTENANCE MANUAL

1. Introduction

Regular inspections are recommended to ensure that the system is functioning as designed. Please call your Authorized StormTrap Representative if you have questions in regards to the inspection and maintenance of the StormTrap system. Prior to entry into any underground storm sewer or underground detention systems, appropriate OSHA and local safety regulations and guidelines should be followed.

2. Inspection Schedules for Municipalities

StormTrap Stormwater Management Systems are recommended for inspection whenever the upstream and downstream catch basins and stormwater pipes of the stormwater collection system are inspected or maintained. This will economize the cost of the inspection if it is done at the same time the Municipal crews are visiting the area.

3. Inspection Schedules for Private Development

StormTrap Stormwater Mangement Systems, for a private development, are recommended for inspection after each major storm water event. At a minimum, until a cleaning schedule can be established, an annual inspection is recommended. If inspected on an annual basis, the inspection should be conducted before the stormwater season begins to be sure that everything is functioning properly for the upcoming storm season.

4. Inspection Process

Inspections should be done such that at least 2-3 days has lapsed since the most recent rain event to allow for draining. Visually inspect the system at all manhole locations. Utilizing a sediment pole, measure and document the amount of silt at each manhole location (Figure 1). Inspect each pipe opening to ensure that the silt level or any foreign objects are not blocking the pipes. Be sure to inspect the outlet pipe(s) because this is typically the smallest

pipe in the system. It is common that most of the larger materials will be collected upstream of the system in catch basins, and it is therefore important at time of inspections to check these structures for large trash or blockages.

Remove any blockages if you can during the inspection process only if you can do so safely from the top of the system without entering into the system**. Do not go into the system under any circumstances** without proper ventilation equipment and training. Pass any information requiring action onto the appropriate maintenance personnel if you cannot remove the blockages from above during the inspection process. Be sure to describe the location of each manhole and the type of material that needs to be removed.

The sediment level of the system should also be measured and recorded during the inspection process. Recording the sediment level at each manhole is very important in order get a history of sediment that can be graphed over time (i.e. years) in order to estimate when the system will need to be maintained next. It is also important to keep these records to verify that the inspection process was actually performed if anyone asks for your records in the future.

The sediment level in the underground detention system can be determined from the outside of the system by opening up all the manholes and using a sediment pole to measure the amount of sediment at each location. Force the stick to the bottom of the system and then remove it and measure the amount of sediment at that location. Again, do not go into the system under any circumstances without proper ventilation equipment and training.

5. When to Clean the System

Any blockages should be safely removed as soon as practical so that the Stormwater detention system will fill and drain properly before the next stormwater event.

The Dry Detention System should be completely cleaned whenever the sediment occupies more than 10% to 15% of the originally designed system's volume. The Wet Detention System should be cleaned when the sediment occupies more than 30% or 1/3rd of the originally designed system's volume. NOTE: Check with your municipality in regards to

cleaning criteria, as the allowable sediment before cleaning may be more or less then described above.

6. How to Clean the StormTrap

The system should be completely cleaned back to 100% of the originally designed storage volume whenever the above sediment levels have been reached. Be sure to wait at least 3 days after a stormwater event to be sure that the system is completely drained (if it is a Dry Detention System), and all of the sediments have settled to the bottom of the system (if it is a Wet Detention System).

Do not enter the System unless you are properly trained, equipped, and qualified to enter a confined space as identified by local occupational safety and health regulations.

There are many maintenance companies that are in business to help you clean your underground stormwater detention systems and water quality units. Please call your StormTrap representative for referrals in your area.

A. Dry Detention System Cleaning

Maintenance is typically performed using a vacuum truck. Sediment should be flushed towards a vacuum hose for thorough removal. For a Dry Detention System, remove the manhole cover at the top of the system and lower a vacuum hose into one of the rows of the StormTrap system. Open up the manhole at the opposite end of the StormTrap and use sewer jetting equipment to force water in the same row from one end of the StormTrap row to the opposite side. The rows of the StormTrap are completely open in one contiguous channel from one end to the other for easy cleaning.

Place the vacuum hose and the sewer jetting equipment in the next row and repeat the process until all of the rows have been cleaned.

When finished, replace all covers that were removed and dispose of the collected material properly.

B. Wet Detention System Cleaning

If the system was designed to maintain a permanent pool of water, floatables and any oil should be removed in a separate procedure prior to the removal of all sediment.

The floatable trash is removed first by using a bucket strainer to capture and remove any floating debris.

The floatable oils are then removed off the top of the water by using the vacuum truck to suck off any floatable fluids and liquids.

The next step is to use the vacuum truck to gently remove the clarified water above the sediment layer.

The final step is to clean the sediment for each row as described above in the paragraph "A. Dry Detention System Cleaning". For smaller systems, the vacuum truck can remove all of the sediment in the basin without using the sewer jetting equipment because of the smaller space.

7. Inspection Reports

Proof of these inspections is the responsibility of the property owner. All inspection reports and data should be kept on site or at a location where they will be accessible for years in the future. Some municipalities require these inspection and cleaning reports to be forwarded to the proper governmental permitting agency on an annual basis.

Refer to your local and national regulations for any additional maintenance requirements and schedules not contained herein. Inspections should be a part of your standard operating procedure.

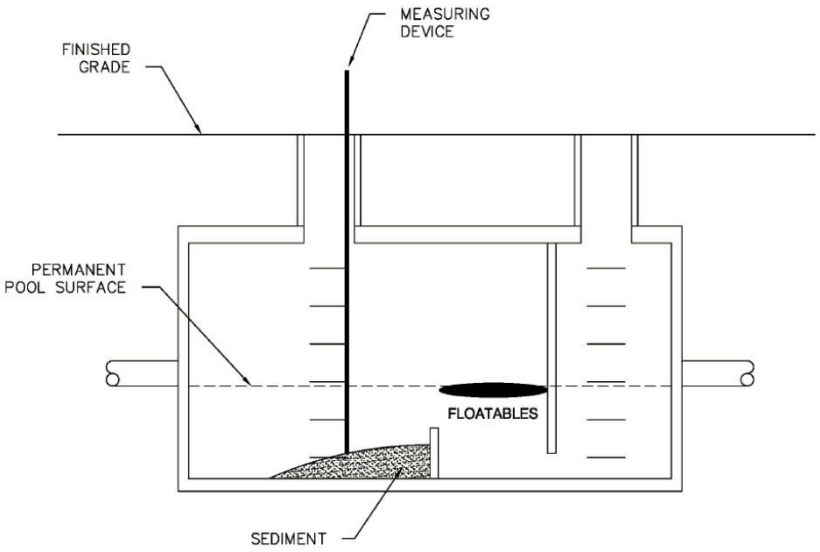

Figure 1. During inspection, measure the distance from finished grade to the top of the sediment inside the system.

Sample inspection and maintenance log

Date	Depth of Sediment	Accumulated Trash	Maintenance Performed	Maintenance Personnel	Comments
2/5/2012	3”	None	Sediment Removal/Vac	B. Johnson	

PHONE 815 941 4549
FAX 331 318 5347
WEB www.stormtrap.com
EMAIL info@stormtrap.com
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CONTECH®
ENGINEERED SOLUTIONS

Modular Wetlands® Linear
Operation & Maintenance Manual

MODULAR WETLANDS®

MODULAR WETLANDS® LINEAR OPERATION & MAINTENANCE MANUAL

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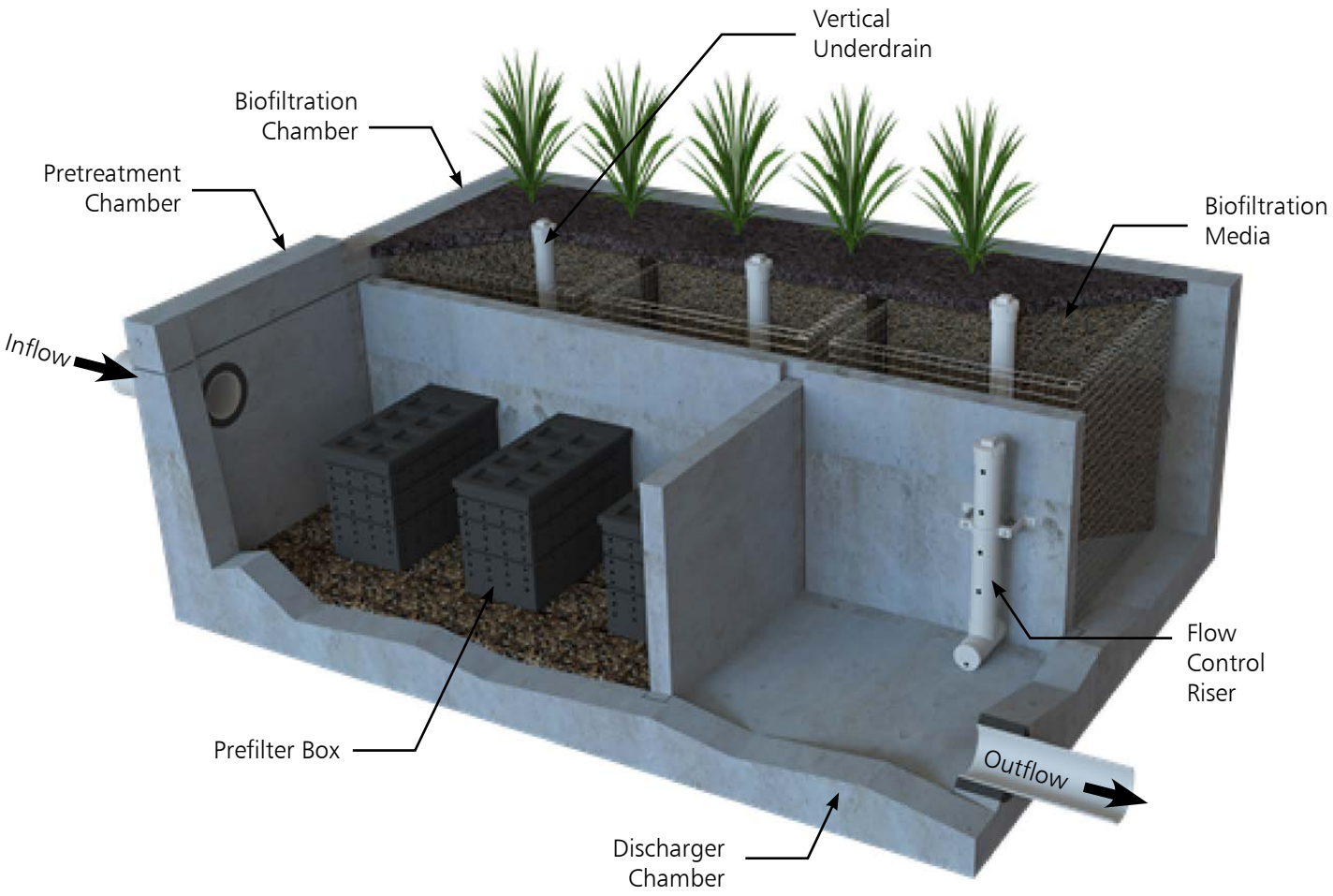
OVERVIEW

The Modular Wetlands® Linear Biofilter is designed to remove high levels of trash, debris, sediments, nutrients, metals, and hydrocarbons. Its simple design allows for quick and easy installation. The system is housed in a standard precast structure and can be installed at various depths to meet site-specific conditions.

INTRODUCTION

This is the Modular Wetlands Linear Biofilter operation and maintenance manual. Before starting, read the instructions and equipment lists closely. It is important to follow all necessary safety procedures associated with state and local regulations. Some steps required confined space entry. Please contact Contech for more information on pre-authorized third party contractors who can provide installation services in your area. For a list of service providers in your area please visit: www.conteches.com/maintenance.



INSTRUCTIONS

INSPECTION SUMMARY

Stormwater regulations require BMPs be inspected and maintained to ensure they are operating as designed to allow for effective pollutant removal and provide protection to receiving water bodies. It is recommended that inspections be performed multiple times during the first year to assess the site specific loading conditions. The first year of inspections can be used to set inspection and maintenance intervals for subsequent years to ensure appropriate maintenance is provided.

- Inspect pre-treatment, biofiltration, and discharge chambers an average of once every six to twelve months. Varies based on site specific and local conditions.
- Average inspection time is approximately 15 minutes. Always ensure appropriate safety protocol and procedures are followed.

The following is a list of equipment required to allow for simple and effective inspection of the Modular Wetlands Linear:

- Modular Wetlands Linear Inspection Form
- Flashlight
- Manhole hook or appropriate tools to remove access hatches and covers
- Appropriate traffic control signage and procedures
- Measuring pole and/or tape measure
- Protective clothing and eye protection
- 7/16" open or closed ended wrench
- Large permanent black marker (initial inspections only - first year)

Note: entering a confined space requires appropriate safety and certification. It is generally not required for routine inspections of the system

INSPECTION AND MAINTENANCE NOTES

1. Following maintenance and/or inspection, it is recommended that the maintenance operator prepare a maintenance/inspection record. The record should include any maintenance activities performed, amount and description of debris collected, and condition of the system and its various filter mechanisms.
2. The owner should keep maintenance/inspection record(s) for a minimum of five years from the date of maintenance. These records should be made available to the governing municipality for inspection upon request at any time.
3. Transport all debris, trash, organics, and sediments to approved facility for disposal in accordance with local and state requirements.
4. Entry into chambers may require confined space training based on state and local regulations.
5. No fertilizer shall be used in the biofiltration chamber.
6. Irrigation should be provided as recommended by manufacturer and/or landscape architect. Amount of irrigation required is dependent on plant species. Some plants may not require irrigation after initial establishment.

INSPECTION PROCESS

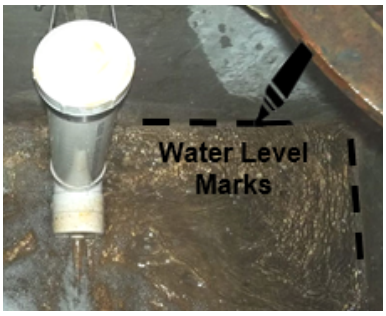
1. Prepare the inspection form by writing in the necessary information including project name, location, date & time, unit number and other information (see inspection form).
2. Observe the inside of the system through the access covers. If minimal light is available and vision into the unit is impaired, utilize a flashlight to see inside the system and all of its chambers.
3. Look for any out of the ordinary obstructions in the inflow pipe, pre-treatment chamber, biofiltration chamber, discharge chamber or outflow pipe. Write down any observations on the inspection form.
4. Through observation and/or digital photographs, estimate the amount of trash, debris accumulated in the pre-treatment chamber. Utilizing a tape measure or measuring stick, estimate the amount of sediment in this chamber. Record this depth on the inspection form.
5. Through visual observation, inspect the condition of the pre-filter cartridges. Look for excessive build-up of sediment on the cartridges, any build-up on the tops of the cartridges, or clogging of the holes. Record this information on the inspection form. The prefilter cartridges can be further inspected by removing the cartridge tops and assessing the color of the BioMediaGREEN filter cubes (requires entry into pre-treatment chamber - see notes previous notes regarding confined space entry). Record the color of the material. New material is a light green color. As the media becomes clogged, it will turn darker in color, eventually becoming dark brown or black. The closer to black the media is the higher percentage that the media is exhausted and is in need of replacement.

6. The biofiltration chamber is generally maintenance-free due to the system's advanced pre-treatment chamber. For units which have open planters with vegetation, it is recommended that the vegetation be inspected. Look for any plants that are dead or showing signs of disease or other negative stressors. Record the general health of the plants on the inspection form and indicate through visual observation or digital photographs if trimming of the vegetation is required.
7. The discharge chamber houses the orifice control structure, drain down filter (only in California - older models), and is connected to the outflow pipe. It is important to check to ensure the orifice is in proper operating conditions and free of any obstructions. It is also important to assess the condition of the drain down filter media which utilizes a block form of the BioMediaGREEN. Assess in the same manner as the cubes in the pre-filter cartridge as mentioned above. Generally, the discharge chamber will be clean and free of debris. Inspect the water marks on the side walls. If possible, inspect the discharge chamber during a rain event to assess the amount of flow leaving the system while it is at 100% capacity (pre-treatment chamber water level at peak HGL - top of bypass weir). The water level of the flowing water should be compared to the watermark level on the side walls, which is an indicator of the highest discharge rate the system achieved when initially installed. Record on the form if there is any difference in level from the watermark in inches.

NOTE: During the first few storms, the water level in the outflow chamber should be observed and a 6" long horizontal watermark line drawn (using a large permanent marker) at the water level in the discharge chamber while the system is operating at 100% capacity. The diagram below illustrates where the line should be drawn. This line is a reference point for future inspections of the system.

Water level in the discharge chamber is a function of flow rate and pipe size. Observation of the water level during the first few months of operation can be used as a benchmark level for future inspections. The initial mark and all future observations shall be made when the system is at 100% capacity (water level at maximum level in the pre-treatment chamber). If future water levels are below this mark when the system is at 100% capacity, this is an indicator that maintenance to the pre-filter cartridges may be needed.

8. Finalize the inspection report for analysis by the maintenance manager to determine if maintenance is required.



MAINTENANCE INDICATORS

Based upon the observations made during inspection, maintenance of the system may be required based on the following indicators:

- Missing or damaged internal components or cartridges
- Obstructions in the system or its inlet and/or outlet pipes
- Excessive accumulation of floatables in the pretreatment chamber in which the length and width of the chamber is fully impacted more than 18". See photo below.
- Excessive accumulation of sediment in the pretreatment chamber of more than 6" in depth.
- Excessive accumulation of sediment on the BioMediaGREEN media housed within the pretreatment cartridges. The following chart shows photos of the condition of the BioMediaGREEN contained within the pre-filter cartridges. When media is more than 85% clogged, replacement is required.
- Excessive accumulation of sediment on the BioMediaGREEN media housed within the pretreatment cartridges. When media is more than 85% clogged, replacement is required. The darker the BioMediaGREEN, the more clogged it is and in need of replacement.

INSPECTION PROCESS

- Excessive accumulation of sediment on the BioMediaGREEN media housed within the drain down filter (California only - older models). The following photos show the condition of the BioMediaGREEN contained within the drain down filter. When media is more than 85% clogged, replacement is required.

- Overgrown vegetation.

- Water level in the discharge chamber during 100% operating capacity (pretreatment chamber water level at max height) is lower than the water mark by 20%.

MAINTENANCE SUMMARY

The time has come to maintain your Modular Wetlands® Linear. All necessary pre-maintenance steps must be carried out before maintenance occurs. Once traffic control has been set up per local and state regulations and access covers have been safely opened, the maintenance process can begin. It should be noted that some maintenance activities require confined space entry. All confined space requirements must be strictly followed before entry into the system. In addition, the following is recommended:

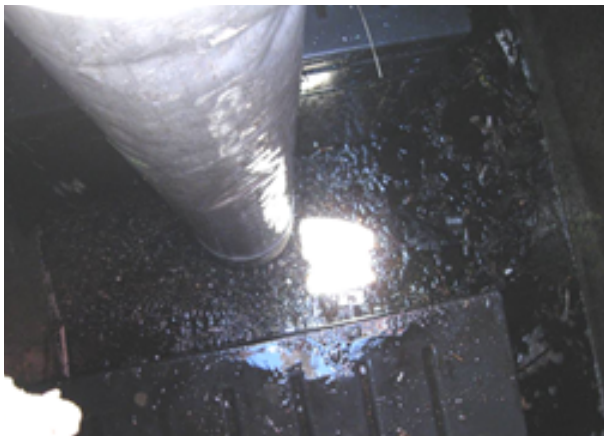
- Prepare the maintenance form by writing in the necessary information including project name, location, date & time, unit number and other info (see maintenance form).
- Set up all appropriate safety and cleaning equipment.
- Ensure traffic control is set up and properly positioned.
- Prepared pre-checks (OSHA, safety, confined space entry) are performed.

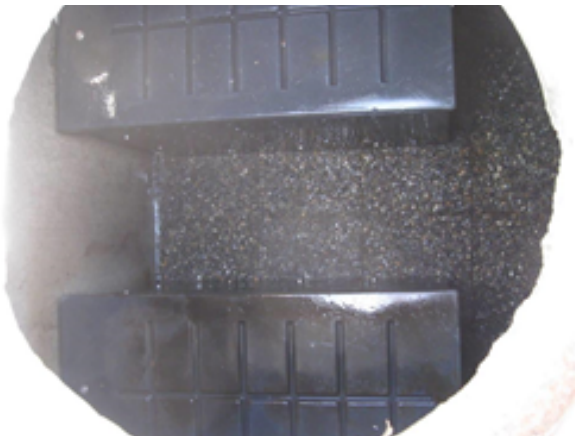
The following is a list of equipment to required for maintenance of the Modular Wetlands® Linear:

- Modular Wetlands Linear Maintenance Form
- Manhole hook or appropriate tools to access hatches and covers
- Protective clothing, flashlight, and eye protection
- 7/16" open or closed ended wrench
- Vacuum assisted truck with pressure washer
- Replacement BioMediaGREEN for pre-filter cartridges if required (order from one of Contech's Maintenance Team members at https://www.conteches.com/maintenance).

MAINTENANCE | PRETREATMENT CHAMBER

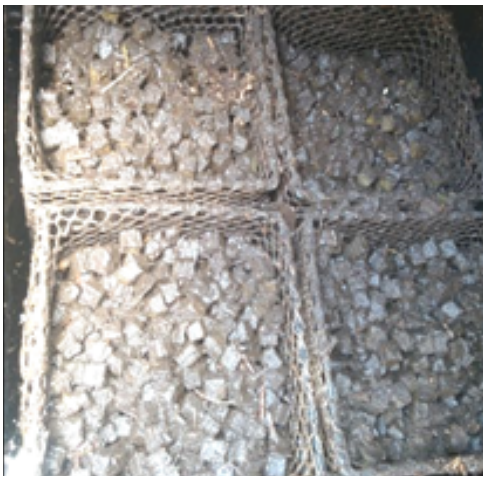
1. Remove access cover over pre-treatment chamber and position vacuum truck accordingly.
2. With a pressure washer, spray down pollutants accumulated on walls and pre-filter cartridges.
3. Vacuum out pre-treatment chamber and remove all accumulated pollutants including trash, debris, and sediments. Be sure to vacuum the floor until the pervious pavers are visible and clean.
4. If pre-filter cartridges require media replacement, continue to step 5. If not, replace access cover and move to step 11.





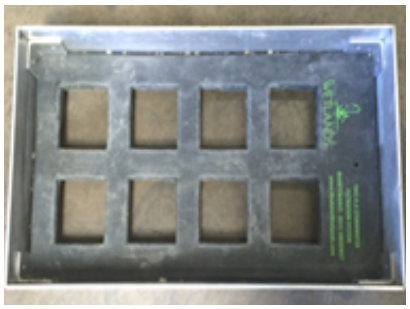
MAINTENANCE | PREFILTER CARTRIDGES

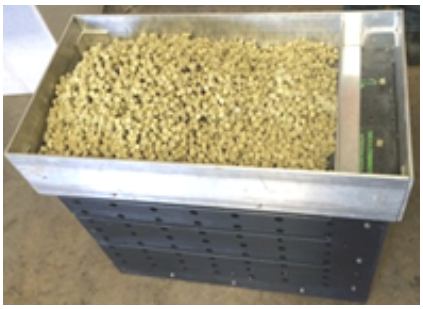
5. After successfully cleaning out the pre-treatment chamber (previous page) enter the pre-treatment chamber.
6. Unscrew the two bolts (circles shown below) holding the lid on each cartridge filter and remove lid.



7. Place the vacuum hose over each individual media filter to suck out filter media.

8. Once filter media has been sucked out, use a pressure washer to spray down the inside of the cartridge and it's media cages. Remove cleaned media cages and place to the side. Once removed, the vacuum hose can be inserted into the cartridge to vacuum out any remaining material near the bottom of the cartridge.
9. Reinstall media cages and fill with new media from the manufacturer or outside supplier. Manufacturer will provide specification of media and sources to purchase. Utilize the manufacture-provided refilling tray and place on top of the cartridge. Fill the tray with new bulk media and shake down into place. Using your hands, lightly compact the media into each filter cage. Once the cages are full, remove the refilling tray and replace the cartridge top, ensuring bolts are properly tightened.





10. Exit the pre-treatment chamber. Replace access hatch or manhole cover.

MAINTENANCE | BIOFILTRATION CHAMBER

11. In general, the biofiltration chamber is maintenance-free with the exception of maintaining the vegetation. The Modular Wetlands Linear utilizes vegetation similar to surrounding landscape areas, therefore trim vegetation to match surrounding vegetation. If any plants have died, replace them with new ones.

12. Each vertical under drain on the biofiltration chamber has a removable (threaded cap) that can be taken off to check any blockages or root growth. Once removed, a jetting attachment can be used to clean out the under drain and orifice riser.
13. As with all biofilter systems, at some point the biofiltration media (WetlandMedia) will need to be replaced. Either because of physical clogging of sorptive exhaustion of the media ion exchange capacity (to remove dissolved metals and phosphorous). The general life of this media is 10 to 20 years based on site specific conditions and pollutant loading. Utilize the vacuum truck to vacuum out the media by placing the hose into the chamber. Once all the media is removed use the power washer to spray down all the netting on the outer metal cage. Inspect the netting for any damage or holes. If the netting is damaged it can be repaired or replaced with guidance by the manufacturer.
14. Contact one of Contech's Maintenance Team members at https://www.conteches.com/maintenance to order new WetlandMedia. The quantity of media needed can be determined by providing the model number and unit depth. Media will be provided in super sacks for easy installation. Each sack will weigh between 1000 and 2000 lbs. A lifting apparatus (backhoe, boom truck, or other) is recommended to position the super sack over the biofiltration chamber. Fill the media cages up to the same level as the old media. Replant with vegetation.

MAINTENANCE | DISCHARGE CHAMBER

15. Remove access hatch or manhole cover over discharge chamber.
16. Enter chamber to gain access to the drain down filter. Unlock the locking mechanism and lift up drain down filter housing to remove used BioMediaGREEN filter block as shown below. *NOTE: Drain down filter is only found on units installed in California prior to 2023. If no drain down filter is present, skip steps 16 and 17.*

17. Insert a new BioMediaGREEN filter block and lock drain down filter housing back in place.
18. Replace access hatch or manhole cover over discharge chamber.

NOTES

CONTECH® ENGINEERED SOLUTIONS

Inspection Report
Modular Wetlands Linear

Project Name _____

Project Address _____
(city) (Zip Code)

Owner / Management Company _____

Contact _____ Phone ( ) –

For Office Use Only
(Reviewed By)
(Date)
Office personnel to complete section to the left.

Inspector Name _____ Date ____/____/____ Time _____ AM / PM

Type of Inspection ☐ Routine ☐ Follow Up ☐ Complaint ☐ Storm Storm Event in Last 72-hours? ☐ No ☐ Yes

Weather Condition _____ Additional Notes _____

Inspection Checklist

Modular Wetland System Type (Curb, Grate or UG Vault): _____ Size (22', 14' or etc.): _____

Structural Integrity:	**Yes**	**No**	**Comments**
Damage to pre-treatment access cover (manhole cover/grate) or cannot be opened using normal lifting pressure?			
Damage to discharge chamber access cover (manhole cover/grate) or cannot be opened using normal lifting pressure?			
Does the MWS unit show signs of structural deterioration (cracks in the wall, damage to frame)?			
Is the inlet/outlet pipe or drain down pipe damaged or otherwise not functioning properly?			
Working Condition:			
Is there evidence of illicit discharge or excessive oil, grease, or other automobile fluids entering and clogging the unit?			
Is there standing water in inappropriate areas after a dry period?			
Is the filter insert (if applicable) at capacity and/or is there an accumulation of debris/trash on the shelf system?			
Does the depth of sediment/trash/debris suggest a blockage of the inflow pipe, bypass or cartridge filter? If yes, specify which one in the comments section. Note depth of accumulation in in pre-treatment chamber.			Depth:
Does the cartridge filter media need replacement in pre-treatment chamber and/or discharge chamber?			Chamber:
Any signs of improper functioning in the discharge chamber? Note issues in comments section.			
Other Inspection Items:			
Is there an accumulation of sediment/trash/debris in the wetland media (if applicable)?			
Is it evident that the plants are alive and healthy (if applicable)? Please note Plant Information below.			
Is there a septic or foul odor coming from inside the system?			

Waste:	**Yes**	**No**
Sediment / Silt / Clay		
Trash / Bags / Bottles		
Green Waste / Leaves / Foliage		

Recommended Maintenance	
No Cleaning Needed	
Schedule Maintenance as Planned	
Needs Immediate Maintenance	

Plant Information	
Damage to Plants	
Plant Replacement	
Plant Trimming	

Additional Notes: _____

CONTECH®
ENGINEERED SOLUTIONS

Cleaning and Maintenance Report
Modular Wetlands Linear

Project Name _____

Project Address _____
(city) (Zip Code)

Owner / Management Company _____

Contact _____ Phone ( ) –

For Office Use Only
(Reviewed By)
(Date)
Office personnel to complete section to the left.

Inspector Name _____ Date ____/____/____ Time _____AM / PM

Type of Inspection ☐ Routine ☐ Follow Up ☐ Complaint ☐ Storm Storm Event in Last 72-hours? ☐ No ☐ Yes

Weather Condition _____ Additional Notes _____

Site Map #	GPS Coordinates of Insert	Manufacturer / Description / Sizing	Trash Accumulation	Foliage Accumulation	Sediment Accumulation	Total Debris Accumulation	Condition of Media 25/50/75/100 (will be changed @ 75%)	Operational Per Manufactures' Specifications (If not, why?)
	Lat: Long:	MWS Catch Basins						
		MWS Sedimentation Basin						
		Media Filter Condition						
		Plant Condition						
		Drain Down Media Condition						
		Discharge Chamber Condition						
		Drain Down Pipe Condition						
		Inlet and Outlet Pipe Condition						

Comments:

CONTECH®
ENGINEERED SOLUTIONS

800-338-1122

WWW.CONTECHES.COM

CONTECH ENGINEERED SOLUTIONS LLC PROVIDES SITE SOLUTIONS FOR THE CIVIL ENGINEERING INDUSTRY. CONTECH'S PORTFOLIO INCLUDES BRIDGES, DRAINAGE, SANITARY SEWER, STORMWATER AND EARTH STABILIZATION PRODUCTS. FOR INFORMATION ON OTHER CONTECH DIVISION OFFERINGS, VISIT CONTECHES.COM OR CALL 800-338-1122.

SUPPORT

DRAWINGS AND SPECIFICATIONS ARE AVAILABLE AT WWW.CONTECHES.COM

Modular Wetlands Maintenance Guide 1/2023

ATTACHMENT 4 COPY OF PLAN SHEETS WITH PERMANENT STORM WATER BMPS

This is the cover sheet for Attachment 4.

Use this checklist to ensure the required information has been included on the plans:

The plans must identify:

- ☐ Structural BMP(s) with ID numbers matching Form I-6 Summary of PDP Structural BMPs
- ☐ 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)
- ☐ Signage indicating the location and boundary of structural BMP(s) as required by the [City Engineer]
- ☐ 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)
- ☐ 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
- ☐ 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 showing vegetation requirements for vegetated structural BMP(s)
- ☐ All BMPs must be fully dimensioned on the plans
- ☐ When proprietary BMPs are used, site-specific cross section with outflow, inflow, and model number shall be provided. Photocopies of general brochures are not acceptable.

TENTATIVE SUBDIVISION MAP FOR CONDOMINIUM PURPOSES FOR:
2972 & 2982 S. SANTA FE AVENUE

LEGEND

- PROPERTY BOUNDARY
- CENTERLINE OF ROAD
- ADJACENT PROPERTY LINE / RIGHT-OF-WAY
- EXISTING CONTOUR LINE — 64 —
- EXISTING SPOT ELEVATION (XXX.XX) FG
- PROPOSED SPOT ELEVATION XXX.XX FS
- PROPOSED CURB & GUTTER
- PROPOSED RIBBON GUTTER
- PROPOSED RETAINING WALL
- PROPOSED GRADING DAYLIGHT
- PROPOSED STORM DRAIN — SD — SD —
- PROPOSED DOMESTIC WATER — W — W —
- PROPOSED FIRE WATER — F — F —
- PROPOSED SEWER — S — S —
- PROPOSED BUILDING
- PROPOSED AC PAVEMENT
- PROPOSED CONCRETE PAVEMENT
- PROPOSED ARTIFICIAL TURF
- PROPOSED UNDERGROUND STORM DRAIN DETENTION SYSTEM
- PROPOSED PROPRIETARY BIOFILTRATION SYSTEM
- PROPOSED FIRE HYDRANT
- PROPOSED AREA DRAIN
- EXISTING WATER MAIN — W — W —
- EXISTING SEWER MAIN — S — S —
- EXISTING STORM DRAIN — SD — SD —
- EXISTING GAS MAIN — G — G —
- EXISTING TELECOM CONDUIT — T — T —

RAW EARTHWORK QUANTITIES

CUT:	23,300 CY
FILL:	3,200 CY
NET (EXPORT):	20,100 CY

THE ABOVE RAW EARTHWORK QUANTITIES ARE ESTIMATES ONLY. CONTRACTOR SHALL NOT RELY UPON QUANTITIES FOR BID PURPOSES. CONTRACTOR TO VERIFY EARTHWORK QUANTITIES TO THEIR SATISFACTION PRIOR TO START OF WORK.

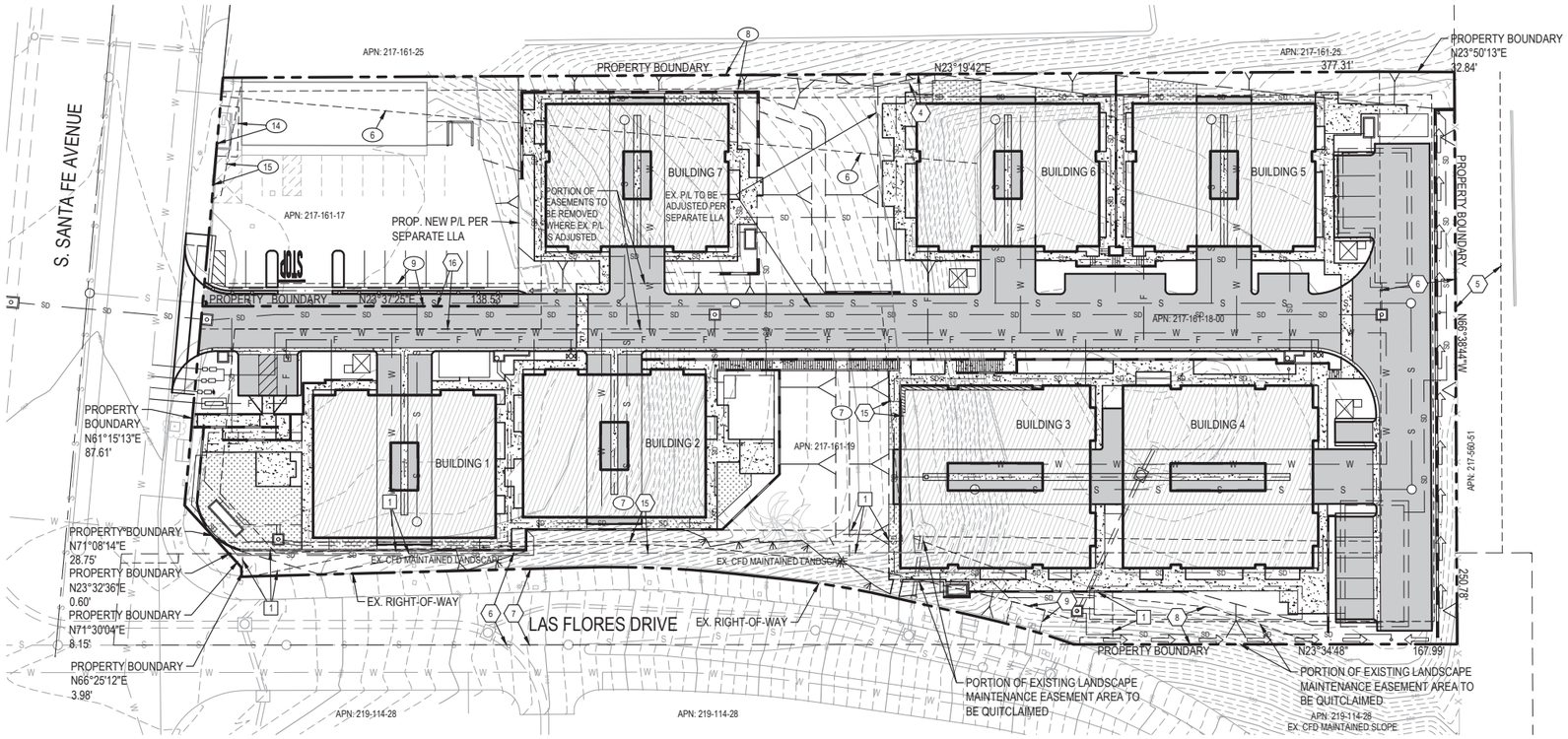
NOTE: QUANTITIES DO NOT INCLUDE ANY EARTHWORK FOR REMEDIAL PURPOSES. EARTHWORK ESTIMATES ARE BASED ON IN PLACE VOLUMES AN DO NOT ACCOUNT FOR ANY SHRINKAGE OR SWELL OF THE SOIL THAT MAY OCCUR DURING GRADING.

LANDSCAPE EASEMENT NOTES

ALL PROPOSED PRIVATE IMPROVEMENTS WITHIN EXISTING CITY LANDSCAPE MAINTENANCE EASEMENT WILL REQUIRE AN ENCROACHMENT AGREEMENT AND ALL PRIVATE IMPROVEMENTS AND APPURTENANCES WITHIN LANDSCAPE MAINTENANCE EASEMENT TO BE PRIVATELY OWNED AND MAINTAINED.

CONDOMINIUM NOTE

THIS SUBDIVISION IS A RESIDENTIAL CONDOMINIUM PROJECT AS DEFINED IN SECTION 4125 OF THE CIVIL CODE OF THE STATE OF CALIFORNIA AND IS FILED PURSUANT TO THE SUBDIVISION MAP ACT, THE TOTAL NUMBER OF RESIDENTIAL CONDOMINIUM UNITS IS 46.



ABBREVIATIONS

AC	ASPHALT CONCRETE	EX	EXISTING	MIN	MINIMUM	SMH	SEWER MANHOLE
ADA	AMERICAN WITH DISABILITIES ACT	FF	FINISH FLOOR	PA	PLANTER AREA	TC	TOP OF CURB
BFD	BACKFLOW DEVICE	FG	FINISHED GRADE	PBOX	PULL BOX	TD	TOP OF DECK
BLDG	BUILDING	FL	FLOW LINE	P/L	PROPERTY LINE	TE	TRASH ENCLOSURE
BS	BOTTOM OF STAIRS	FM	FORCE MAIN	POC	POINT OF CONNECTION	TG	TOP OF GRATE
BW	BOTTOM OF WALL	FS	FINISHED SURFACE	POT	PATH OF TRAVEL	TS	TOP OF STAIRS
CB	CATCH BASIN	GA	GUY ANCHOR	PP	POWER POLE	TW	TOP OF WALL
CF	CURB FACE	GB	GRADE BREAK	PROP	PROPOSED	TYP	TYPICAL
CMU	CONCRETE MASONRY UNIT	GFF	GARAGE FINISH FLOOR	PVC	POLYVINYL CHLORIDE	WAR	WATER AIR RELEASE
CO	CLEANOUT	GP	GUY POLE	R/W	RIGHT-OF-WAY	WM	WATER METER
COMM	COMMUNICATIONS	GV	GAS VALVE	SCO	SEWER CLEANOUT	WV	WATER VALVE
CONC	CONCRETE	HP	HIGH POINT	SD	STORM DRAIN		
DS	DOWNSPOUT	HT	HEIGHT	SDCO	STORM DRAIN CLEANOUT		
EG	EDGE OF GUTTER	INV	INVERT	SDMH	STORM DRAIN MANHOLE		
ELEC	ELECTRICAL	MH	MANHOLE	SL	STREET LIGHT		

PROPOSED EASEMENT INFORMATION

[1] PROPOSED LANDSCAPE MAINTENANCE EASEMENT FOR OPEN SPACE SLOPE TO THE CITY OF SAN MARCOS.

EXISTING EASEMENT INFORMATION (217-161-18, -19)

〈2〉 EASEMENT GRANTED TO THE COUNTY OF SAN DIEGO FOR PUBLIC HIGHWAY PURPOSES, RECORDED JUNE 11, 1913 IN BOOK 500, PAGE 135, OFFICIAL RECORDS TO BE VACATED. NOT PLOTTABLE.

〈3〉 EASEMENT GRANTED TO VISTA IRRIGATION DISTRICT FOR PIPELINE AND OTHER DISTRICT WORKS, RECORDED OCTOBER 24, 1925, IN BOOK 1136, PAGE 238, OFFICIAL RECORDS TO BE QUITCLAIMED. NOT PLOTTABLE.

〈4〉 EASEMENT GRANTED TO SAN DIEGO GAS AND ELECTRIC COMPANY FOR PUBLIC UTILITIES, INGRESS AND EGRESS, RECORDED JUNE 19, 1973 AS DOC. NO. 73-167727, OFFICIAL RECORDS TO BE QUITCLAIMED.

〈5〉 EASEMENT GRANTED TO THE COUNTY OF SAN DIEGO FOR UTILITY PURPOSES, RECORDED OCTOBER 25, 1979 AS DOC. NO. 79-448104, OFFICIAL RECORDS TO BE VACATED.

〈6〉 EASEMENT GRANTED TO THE COUNTY OF SAN DIEGO FOR UTILITY PURPOSES, RECORDED JUNE 24, 1987 AS DOC. NO. 87-353275 TO BE VACATED.

〈7〉 EASEMENT GRANTED TO THE CITY OF SAN MARCOS FOR PUBLIC STREET AND UTILITY PURPOSES, RECORDED OCTOBER 13, 2005 AS DOC. NO. 2005-0887133.

〈8〉 EASEMENT GRANTED TO THE CITY OF SAN MARCOS FOR OPEN SPACE SLOPE LANDSCAPE MAINTENANCE AND ACCESS PURPOSES, RECORDED OCTOBER 13, 2005 AS DOC. NO. 2005-0887134, OFFICIAL RECORDS.

〈9〉 EASEMENT GRANTED TO VISTA IRRIGATION DISTRICT FOR UTILITY PURPOSES, RECORDED NOVEMBER 17, 2005 AS DOC. NO. 2005-0996226, OFFICIAL RECORDS TO BE REVISED.

〈13〉 EASEMENT GRANTED TO COUNTY OF SAN DIEGO FOR PUBLIC STREET PURPOSES, RECORDED JUNE 11, 1913 IN BOOK 500, PAGE 135 OF DEEDS TO BE VACATED. NOT PLOTTABLE.

〈14〉 EASEMENT GRANTED TO VISTA IRRIGATION DISTRICT FOR PIPELINES, INGRESS AND EGRESS, AND ALL NECESSARY APPURTENANCES, RECORDED OCTOBER 24, 1925 IN BOOK 1136, PAGE 238 OF DEEDS TO BE QUITCLAIMED. NOT PLOTTABLE.

〈15〉 EASEMENT GRANTED TO BARENY COLEMAN AND JEAN S. COLEMAN FOR PUBLIC UTILITIES, INGRESS AND EGRESS RECORDED OCTOBER 27, 1959 IN BOOK 7959, PAGE 126, OFFICIAL RECORDS TO BE QUITCLAIMED.

〈16〉 EASEMENT GRANTED TO FAIRMONT FOODS COMPANY FOR ROAD AND UTILITY PURPOSES, RECORDED JULY 5, 1973 AS DOC. NO. 73-184604, OFFICIAL RECORDS TO BE ADJUSTED.

〈17〉 EASEMENT GRANTED TO COUNTY OF SAN DIEGO FOR UTILITIES, INGRESS AND EGRESS, RECORDED JUNE 24, 1987 AS DOC. NO. 87-353275, OFFICIAL RECORDS TO BE VACATED. NOT PLOTTABLE.

NOTE: ALL EXISTING COUNTY HIGHWAY EASEMENTS WITHIN THE PROPERTY BOUNDARIES TO BE VACATED.

EXISTING EASEMENT INFORMATION (217-161-17)

〈4〉 EASEMENT GRANTED TO THE COUNTY OF SAN DIEGO FOR PUBLIC HIGHWAY PURPOSES, RECORDED JUNE 11, 1913, BOOK 500, PAGE 136, OFFICIAL RECORDS. NOT PLOTTABLE.

〈5〉 EASEMENT GRANTED TO VISTA IRRIGATION DISTRICT FOR PIPELINE AND OTHER DISTRICT WORK PURPOSES, RECORDED OCTOBER 24, 1925, IN BOOK 1136, PAGE 238, OFFICIAL RECORDS TO BE QUITCLAIMED. NOT PLOTTABLE.

〈6〉 EASEMENT GRANTED TO SAN DIEGO GAS AND ELECTRIC COMPANY FOR PUBLIC UTILITY PURPOSES, RECORDED APRIL 25, 1951, IN BOOK 4073, PAGE 83, OFFICIAL RECORDS TO BE QUITCLAIMED.

〈7〉 EASEMENT GRANTED TO BARNEY COLEMAN AND JEAN S. COLEMAN FOR INGRESS AND EGRESS FOR PUBLIC UTILITY PURPOSES, RECORDED OCTOBER 27, 1959 IN BOOK 7959, PAGE 126, OFFICIAL RECORDS TO BE QUITCLAIMED.

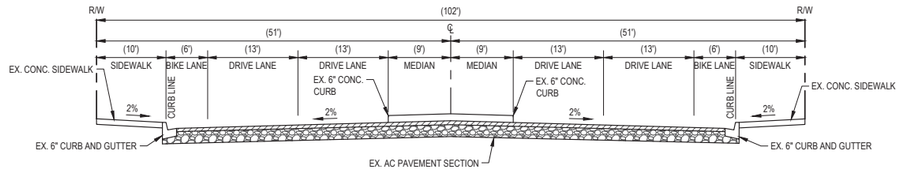
〈8〉 EASEMENT GRANTED TO SAN DIEGO GAS AND ELECTRIC COMPANY FOR PUBLIC UTILITY PURPOSES, RECORDED JUNE 19, 1973, DOCUMENT NO. 73-167728, OFFICIAL RECORDS TO BE QUITCLAIMED.

〈9〉 EASEMENT GRANTED TO MARY ELIZABETH ESHLEMAN FOR ROAD AND UTILITY PURPOSES, RECORDED JULY 5, 1973, DOCUMENT NO. 1973-184604, OFFICIAL RECORDS. A PORTION TO BE QUITCLAIMED.

〈14〉 EASEMENT GRANTED TO SAN DIEGO GAS & ELECTRIC COMPANY FOR PUBLIC UTILITY PURPOSES, RECORDED JULY 3, 2003, DOCUMENT NO. 2003-0793497, OFFICIAL RECORDS.

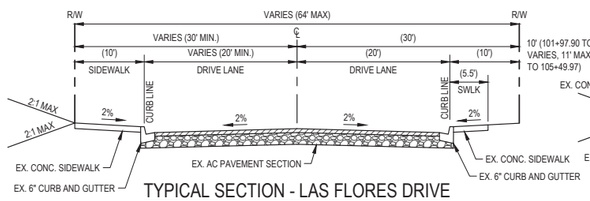
〈15〉 EASEMENT GRANTED TO CITY OF SAN MARCOS FOR SLOPE AND DRAINAGE PURPOSES, RECORDED MARCH 12, 2004, DOCUMENT NO. 2004-0206660, OFFICIAL RECORDS.

NOTE: ALL EXISTING COUNTY HIGHWAY EASEMENTS WITHIN THE PROPERTY BOUNDARIES TO BE VACATED.



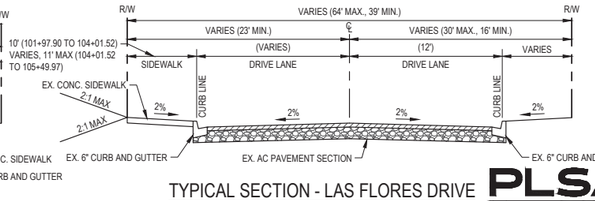
TYPICAL SECTION - S. SANTA FE AVENUE

SCALE: NTS



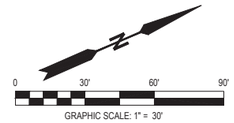
TYPICAL SECTION - LAS FLORES DRIVE

SCALE: NTS
UP TO STA. 101+97.90 (PER IP-4629)



TYPICAL SECTION - LAS FLORES DRIVE

SCALE: NTS
UP TO STA. 101+97.90 TO STA. 105+49.97 (PER IP-4629)



OWNER'S STATEMENT

WE HEREBY CERTIFY THAT WE ARE THE RECORD OWNERS OF THE PROPERTY SHOWN ON THESE PLANS AND THAT SAID PLANS SHOW OUR ENTIRE CONTIGUOUS OWNERSHIP (EXCLUDING SUBDIVISION LOTS). WE UNDERSTAND THAT PROPERTY IS CONSIDERED CONTIGUOUS EVEN IF IT IS SEPARATED BY ROADS, STREETS, UTILITY EASEMENTS OR RAILROADS RIGHTS-OF-WAY.

OWNER

SANTA FE FLORES LP
CONTACT: PAUL MAYER
P.O. BOX 903
RANCHO SANTA FE, CA 92067

PAUL MAYER

ENGINEER OF WORK

REGISTERED PROFESSIONAL ENGINEER — WILLIAM J. SUITER — No. RCE 68964 — EXP. 12-31-25 — Civil — STATE OF CALIFORNIA

WILLIAM J. SUITER RCE 68964

LEGAL DESCRIPTION

PORTION OF LOT 4 IN BLOCK 95 OF RANCHO LOS VALLECITOS DE SAN MARCOS, IN THE CITY OF SAN MARCOS, COUNTY OF SAN DIEGO, STATE OF CALIFORNIA, ACCORDING TO MAP NO. 806, FILED IN THE OFFICE OF THE COUNTY RECORDER OF SAN DIEGO COUNTY, DECEMBER 21, 1895.

ASSESSOR'S PARCEL NUMBER

217-161-18-00, 217-161-19-00, PORTION OF 217-161-17-00

AERIAL TOPOGRAPHY

AERIAL TOPOGRAPHY SUPPLIED BY: HOOPER LAND COMPANY
1642 MOON ROCK ROAD
FALLBROOK, CA 92028
(760) 723-2891
SURVEY COMPLETED: JUNE 2020

GENERAL NOTES:

1. APN: 217-161-18-00, 217-161-19-00 , PORTION OF 217-161-17-00
2. GROSS ACREAGE: 2.87 AC
3. GROSS ACREAGE WITHOUT LAS FLORES ROW: 2.60 AC
4. NET ACREAGE : 2.60 AC
5. NUMBER OF DWELLING UNITS: 46
6. EXISTING ZONING: MULTIFAMILY RESIDENTIAL 3-10 (R-3-10) & COMMERCIAL (C)
7. PROPOSED ZONING: MULTIFAMILY RESIDENTIAL 3-6 (R-3-6)
8. EXISTING GENERAL PLAN: MEDIUM DENSITY RESIDENTIAL 2 (MDR2) & COMMERCIAL (C)
9. PROPOSED GENERAL PLAN: MEDIUM HIGH DENSITY RESIDENTIAL (MHDR)
10. FINISH GRADES SHOWN HEREON ARE APPROXIMATE AND ARE SUBJECT TO CHANGE IN FINAL DESIGN.
11. PROPOSED DENSITY: 17.69 DU/AC
12. CUT AND FILL SLOPES NO STEEPER THAN 2:1
13. PUBLIC SERVICES AND DISTRICTS:
    - GAS & ELECTRIC: SAN DIEGO GAS AND ELECTRIC
    - TELEPHONE: AT&T
    - WATER: VISTA IRRIGATION DISTRICT
    - SEWER: BUENA SANITATION DISTRICT/ CITY OF VISTA
    - FIRE DISTRICT: CITY OF SAN MARCOS
    - SCHOOL DISTRICT: SAN MARCOS UNIFIED SCHOOL DISTRICT
14. PROPOSED SETBACKS: FRONT YARD = MINIMUM 15' / SIDE YARD = MINIMUM 10' / REAR YARD= MINIMUM 10'
13. SEE STORM WATER QUALITY MANAGMENT PLAN PREPARED BY: PLSA (DATED: JUNE 2025)
14. SEE PRELIMINARY DRAINAGE STUDY PREPARED BY: PLSA (DATED: JUNE 2025)
15. SEE GEOTECHNICAL EVALUATION PREPARED BY: GEOCON , INC. DATED: AUGUST 12, 2024 (PROJECT NO. G3355-42-01)

PROJECT DESCRIPTION

GENERAL PLAN AMENDMENT, ZONE CHANGE, MULTI-FAMILY SITE DEVELOPMENT PLAN AND TENTATIVE SUBDIVISION MAP (TSP) FOR CONDOMINIUM PURPOSES PROPOSING A 46-UNIT MULTIFAMILY DEVELOPMENT WITH PARKING LOTS, ACCESS DRIVE, AMENITY AREAS, MISCELLANEOUS HARDSCAPE AND LANDSCAPING.

SHEET INDEX

SHEET NO.	DESCRIPTION
1	TITLE SHEET
2	PRELIMINARY GRADING PLAN
3	SITE SECTIONS
4-6	DETAILS

BASIS OF BEARINGS

THE BASIS OF BEARINGS FOR THIS SURVEY IS THE CALIFORNIA COORDINATE SYSTEM, NAD 83 (CCS83), ZONE 6, AS DETERMINED LOCALLY BY A LINE BETWEEN FIRST ORDER CONTROL STATIONS SM127 AND VC 009 BEING A GRID BEARING OF S 0°54'41" E AS DERIVED FROM GEODETIC VALUES SHOWN ON RECORD OF SURVEY 13928, CITY OF SAN MARCOS SURVEY CONTROL, FILED ON 10/01/1992 AS FILE NUMBER 92-625379 IN THE OFFICE OF THE COUNTY RECORDER OF SAN DIEGO COUNTY.

BENCHMARK

ELEVATIONS SHOWN HEREON ARE BASED ON 2" IRON PIPE & DISK AS SHOWN ON ROS 13928 AS SM 127. ELEVATION: 450.50 FEET. NGVD 29

SHEET: 1 OF 6 — CITY OF SAN MARCOS

GENERAL PLAN AMENDMENT NUMBER: GPA25-0001

OWNER: SANTA FE FLORES LP — CONTACT: PAUL MAYER — PHONE: 858-888-2488

ADDRESS: PO BOX 903, RANCHO SANTA FE, CA 92067

ARCHITECT, ENGINEER, DESIGNER: PLSA — PHONE: 949-661-6695

ADDRESS: 34270 PACIFIC COAST HIGHWAY SUITE B, DANA POINT, CA 92629

TYPE OF DEVELOPMENT: RESIDENTIAL, TOWNHOMES

ZONE: MULTIFAMILY RESIDENTIAL (R-3-6) — APN(S): 217-161-17, -18, -19

SITE DATA				DWELLING UNITS		OPEN SPACE DATA	
AREA (SQ. FT.)			COVERAGE %	STUDIO	-	COMMON (SF)	PRIVATE (SF)
LOT:	113,209		100%	1 BDRM	-	14,795	21,610
BUILDING:	38,672		34%	2 BDRM	18		
PARKING/PVMT:	35,778		32%	3 BDRM	28		
LOADING:	0		0%	4 BDRM	-		
LANDSCAPING:	38,759		34%	TOTAL UNITS	46		
PARKING		ORD. REQ.		DRIVEWAY (SIZE & SLOPE)		SETBACKS	
GARAGE	92	LOADING	0	ONE WAY: N/A	FRONT: 15'	REAR: 10'	
GUEST	14	HANDICAP	1	TWO WAY: 24' MIN	L. SIDE: 10'		
OPEN	0	TOTAL	107	SLOPE: VARIES	R. SIDE: 10'		

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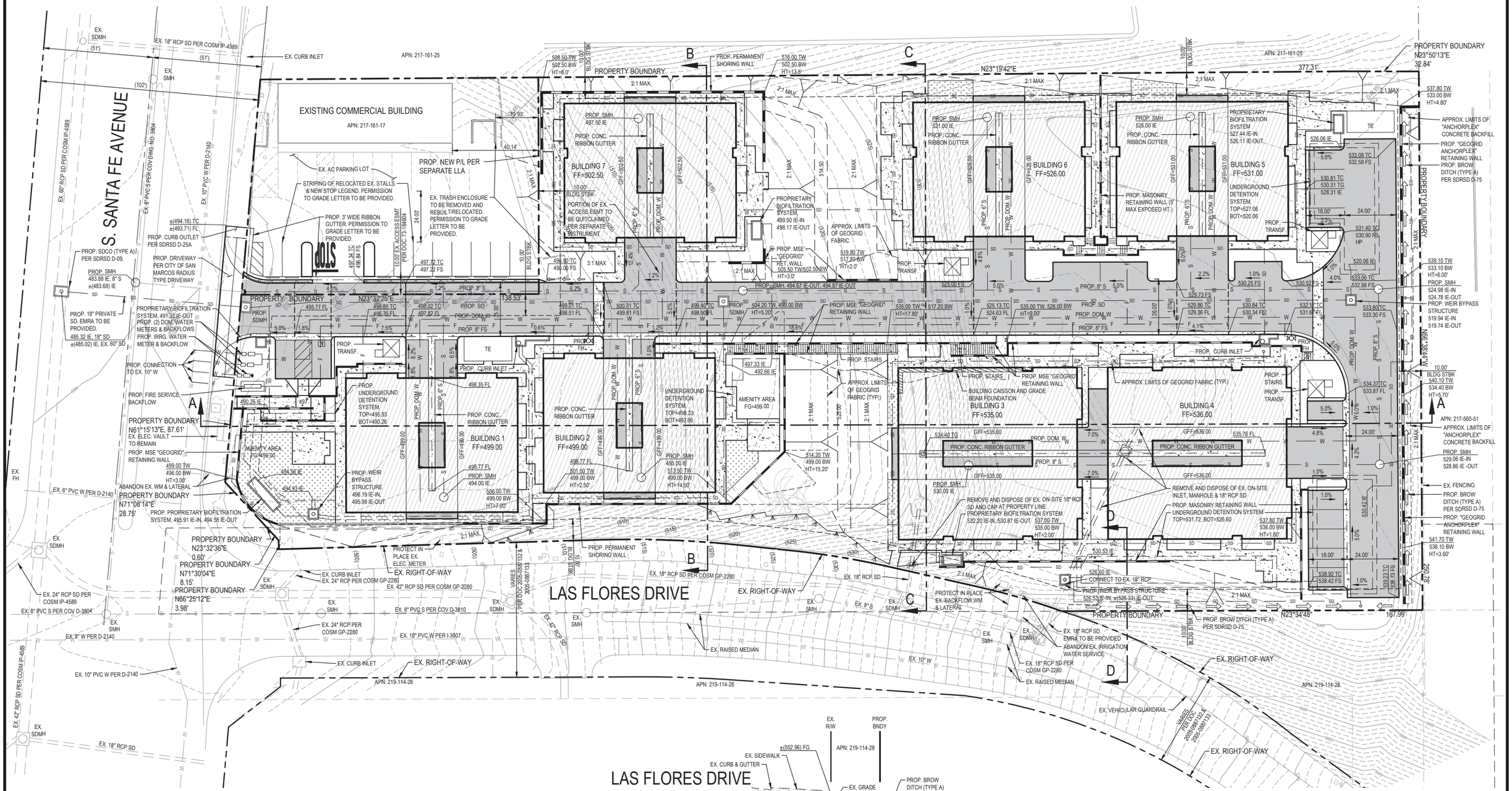
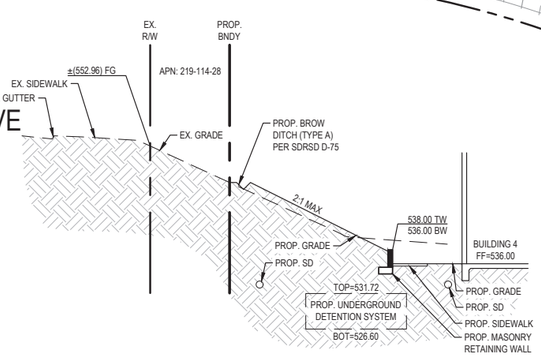


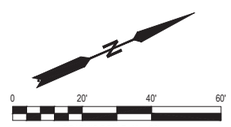
NOTES

1. BOTTOM OF WALL (BW) ELEVATIONS ON THIS PLAN IDENTIFIES THE LOWER SURFACE GRADE ADJACENT TO THE RETAINING WALL.
2. RETAINING WALL HEIGHTS (HT) ON THIS PLAN IDENTIFY THE EXPOSED HEIGHT (ABOVE GRADE) OF THE PROPOSED RETAINING WALLS.



SECTION D-D

SCALE: NTS



GRAPHIC SCALE: 1" = 20'

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SHEET: 2 OF 6

CITY OF SAN MARCOS

GENERAL PLAN AMENDMENT NUMBER: GPA25-0001

OWNER: SANTA FE FLORES LP CONTACT: PAUL MAYER PHONE: 858-888-2488

ADDRESS: PO BOX 903, RANCHO SANTA FE, CA 92067

ARCHITECT, ENGINEER, DESIGNER: PLSA PHONE: 949-661-6695

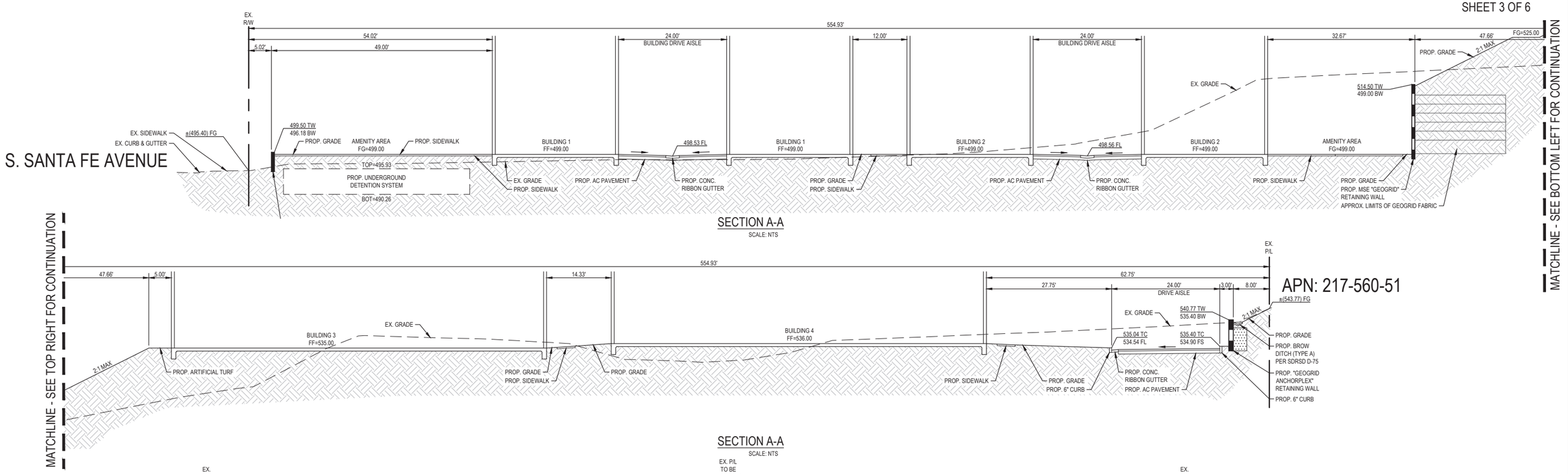
ADDRESS: 34270 PACIFIC COAST HIGHWAY SUITE B, DANA POINT, CA 92629

TYPE OF DEVELOPMENT: RESIDENTIAL, TOWNHOMES

ZONE: MULTIFAMILY RESIDENTIAL (R-3-6) APN(S): 217-161-17, -18, -19

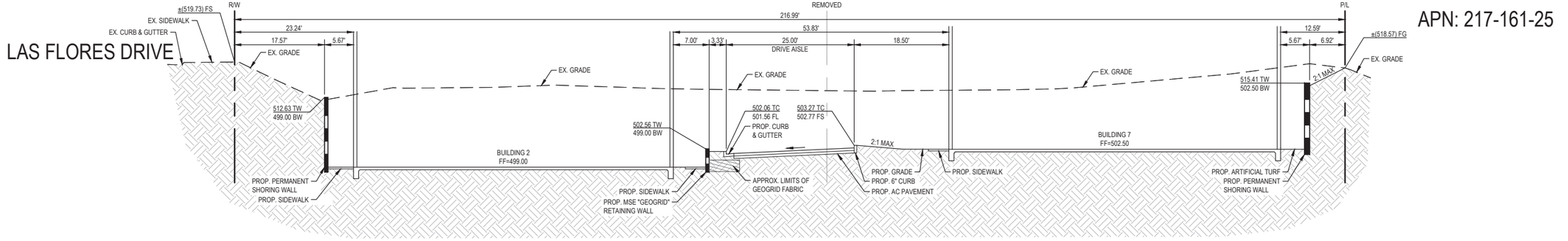
SITE DATA			DWELLING	UNITS	OPEN SPACE DATA	
AREA (SQ. FT.)		COVERAGE %	STUDIO	-	COMMON (SF)	PRIVATE (SF)
LOT:	113,209	100%	1 BDRM	-	14,795	21,610
BUILDING:	38,672	34%	2 BDRM	18		
PARKING/PVMT:	35,778	32%	3 BDRM	28		
LOADING:	0	0%	4 BDRM	-		
LANDSCAPING:	38,759	34%	TOTAL UNITS	46		

PARKING		ORD. REQ.		DRIVEWAY (SIZE & SLOPE)	SETBACKS	
GARAGE	92	LOADING	0	ONE WAY: N/A	FRONT: 15'	REAR: 10'
GUEST	14	HANDICAP	1	TWO WAY: 24' MIN	L. SIDE: 10'	
OPEN	0	TOTAL	107	SLOPE: VARIES	R. SIDE: 10'	

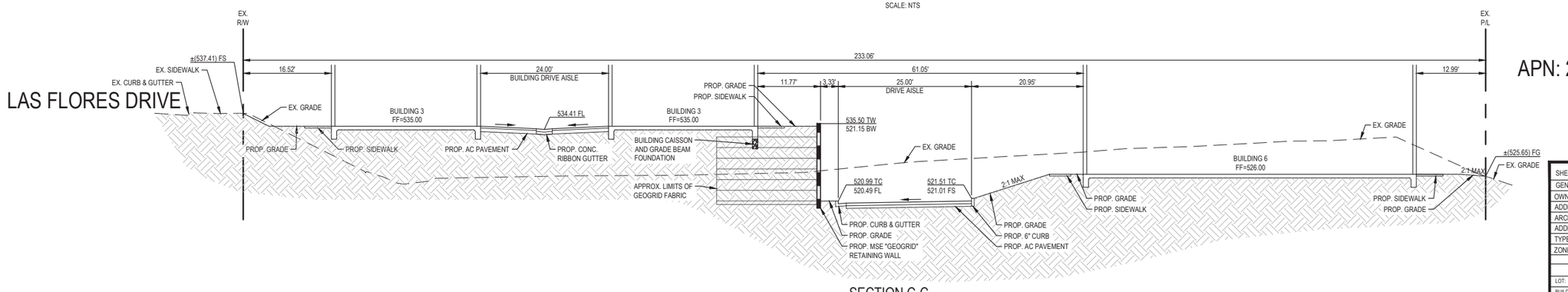


SECTION A-A
SCALE: NTS

SECTION A-A
SCALE: NTS



SECTION B-B
SCALE: NTS



SECTION C-C
SCALE: NTS

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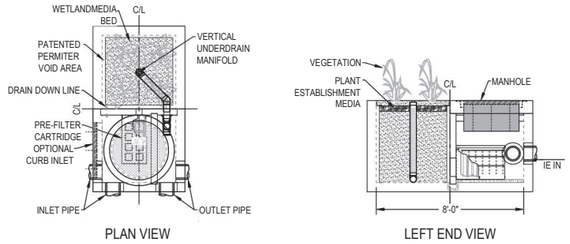
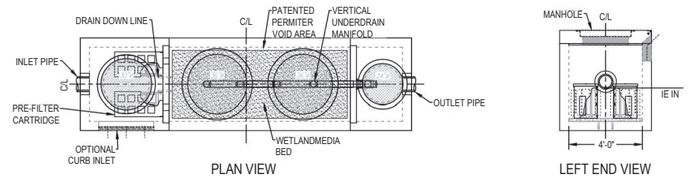
SHEET: 3 OF 6			CITY OF SAN MARCOS				
GENERAL PLAN AMENDMENT NUMBER: GPA25-0001							
OWNER: SANTA FE FLORES LP			CONTACT: PAUL MAYER			PHONE: 858-888-2488	
ADDRESS: PO BOX 903, RANCHO SANTA FE, CA 92067							
ARCHITECT, ENGINEER, DESIGNER: PLSA						PHONE: 949-661-6695	
ADDRESS: 34270 PACIFIC COAST HIGHWAY SUITE B, DANA POINT, CA 92629							
TYPE OF DEVELOPMENT: RESIDENTIAL, TOWNHOMES							
ZONE: MULTIFAMILY RESIDENTIAL (R-3-6)				APN(S): 217-161-17, -18, -19			
SITE DATA				DWELLING UNITS		OPEN SPACE DATA	
AREA (SQ. FT.)		COVERAGE %		STUDIO	-	COMMON (SF)	PRIVATE (SF)
LOT:	113,209	100%		1 BDRM	-	14,795	21,610
BUILDING:	38,672	34%		2 BDRM	18		
PARKING/PVMT:	35,778	32%		3 BDRM	28		
LOADING:	0	0%		4 BDRM	-		
LANDSCAPING:	38,759	34%		TOTAL UNITS	46		
PARKING		ORD. REQ.		DRIVEWAY (SIZE & SLOPE)	SETBACKS		
GARAGE	92	LOADING	0	ONE WAY: N/A	FRONT: 15'	REAR: 10'	
GUEST	14	HANDICAP	1	TWO WAY: 24' MIN	L. SIDE: 10'		
OPEN	0	TOTAL	107	SLOPE: VARIES	R. SIDE: 10'		



PLAN VIEW | LEFT END VIEW | ELEVATION VIEW | RIGHT END VIEW

TYPICAL BIOFILTRATION SYSTEM (WITH INTERNAL BYPASS)

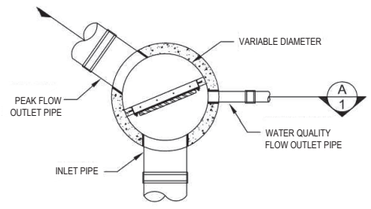
NOT TO SCALE



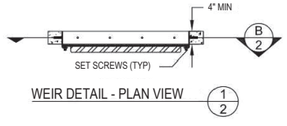
PLAN VIEW | LEFT END VIEW | ELEVATION VIEW | RIGHT END VIEW

TYPICAL BIOFILTRATION SYSTEM (WITHOUT INTERNAL BYPASS)

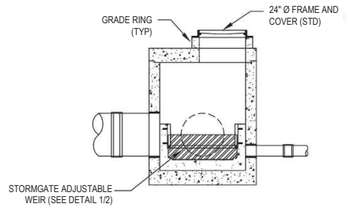
NOT TO SCALE



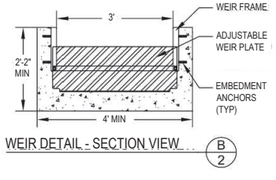
STORMGATE MANHOLE - PLAN VIEW 1/1



WEIR DETAIL - PLAN VIEW 1/2



STORMGATE MANHOLE - SECTION VIEW A/1



WEIR DETAIL - SECTION VIEW B/2

TYPICAL "STORMGATE" WEIR BYPASS DETAIL

NOT TO SCALE

SHEET: 4 OF 6 — CITY OF SAN MARCOS

GENERAL PLAN AMENDMENT NUMBER: GPA25-0001

OWNER: SANTA FE FLORES LP — CONTACT: PAUL MAYER — PHONE: 858-888-2488

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ADDRESS: 34270 PACIFIC COAST HIGHWAY SUITE B, DANA POINT, CA 92629

TYPE OF DEVELOPMENT: RESIDENTIAL, TOWNHOMES

ZONE: MULTIFAMILY RESIDENTIAL (R-3-6) — APN(S): 217-161-17, -18, -19

SITE DATA				DWELLING UNITS		OPEN SPACE DATA	
AREA (SQ. FT.)		COVERAGE %		STUDIO	-	COMMON (SF)	PRIVATE (SF)
LOT:	113,209	100%		1 BDRM	-	14,795	21,610
BUILDING:	38,672	34%		2 BDRM	18		
PARKING/PVMT:	35,778	32%		3 BDRM	28		
LOADING:	0	0%		4 BDRM	-		
LANDSCAPING:	38,759	34%		TOTAL UNITS	46		

PARKING		ORD. REQ.		DRIVEWAY (SIZE & SLOPE)	SETBACKS	
GARAGE	92	LOADING	0	ONE WAY: N/A	FRONT: 15'	REAR: 10'
GUEST	14	HANDICAP	1	TWO WAY: 24' MIN	L. SIDE: 10'	
OPEN	0	TOTAL	107	SLOPE: VARIES	R. SIDE: 10'	

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STRUCTURAL DESIGN LOADING CRITERIA

LIVE LOADING: AASHTO HS-20 HIGHWAY LOADING

GROUND WATER TABLE: BELOW INVERT OF SYSTEM

SOIL BEARING PRESSURE: 3000PSF

SOIL DENSITY: 120 PCF

EQUIVALENT UNSATURATED
LATERAL ACTIVE EARTH PRESSURE: 35 PSF / FT.

EQUIVALENT SATURATED
LATERAL ACTIVE EARTH PRESSURE: 80 PSF/FT. (IF WATER TABLE PRESENT)
APPLICABLE CODES: ASTM C857
ACI-318

BACKFILL TYPE: SEE SHEET 4.0 FOR BACKFILL OPTIONS

STORMTRAP SYSTEM INFORMATION

UNIT HEADROOM: 5'-2" SINGLETRAP
TOTAL STORAGE PROV: 10,850.22 CUBIC FEET

SITE SPECIFIC DESIGN CRITERIA

1. STORMTRAP UNITS SHALL BE MANUFACTURED AND INSTALLED ACCORDING TO SHOP DRAWINGS APPROVED BY THE INSTALLING CONTRACTOR AND ENGINEER OF RECORD. THE SHOP DRAWINGS SHALL INDICATE SIZE AND LOCATION OF ROOF OPENINGS AND INLET/ OUTLET PIPE TYPES, SIZES, INVERT ELEVATIONS AND SIZE OF OPENINGS.
2. COVER RANGE: MIN. 3.73" MAX. 9.73" CONSULT STORMTRAP FOR ADDITIONAL COVER OPTIONS.
3. ALL DIMENSIONS AND SOIL CONDITIONS, INCLUDING BUT NOT LIMITED TO GROUNDWATER AND SOIL BEARING CAPACITY ARE REQUIRED TO BE VERIFIED IN THE FIELD BY OTHERS PRIOR TO STORMTRAP INSTALLATION.
4. FOR STRUCTURAL CALCULATIONS THE GROUND WATER TABLE IS ASSUMED TO BE BELOW INVERT OF SYSTEM IF WATER TABLE IS DIFFERENT THAN ASSUMED, CONTACT STORMTRAP.
5. SYSTEM DESIGN MAY ALLOW FOR INCIDENTAL LEAKAGE AND WILL NOT BE SUBJECT TO LEAKAGE TESTING.

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ROMEOVILLE, IL 60446
P:815-941-4549 / F:331-318-5347

ENGINEER INFORMATION:
Pasco Laret Suiter & Associates
34270 Pacific Coast Hwy #B
Dana Point, CA 92629
949-661-6695

PROJECT INFORMATION:
South Santa Fe Townhomes-BMP 1B

San Marcos, CA

CURRENT ISSUE DATE:
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PRELIMINARY

REV.	DATE:	ISSUED FOR:	DWN BY:
1	01/10/2025	PRELIMINARY	DG

SCALE:
NTS

SHEET TITLE:
SINGLETRAP DESIGN CRITERIA

SHEET NUMBER:
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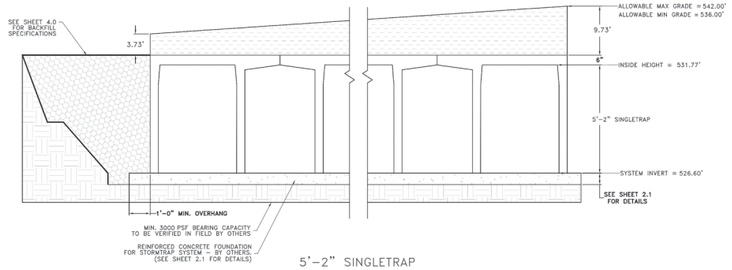

5'-2" SINGLETRAP

STRUCTURAL DESIGN LOADING CRITERIA

LIVE LOADING: AASHTO HS-20 HIGHWAY LOADING

GROUND WATER TABLE: BELOW INVERT OF SYSTEM

SOIL BEARING PRESSURE: 3000PSF

SOIL DENSITY: 120 PCF

EQUIVALENT UNSATURATED
LATERAL ACTIVE EARTH PRESSURE: 35 PSF / FT.

EQUIVALENT SATURATED
LATERAL ACTIVE EARTH PRESSURE: 80 PSF/FT. (IF WATER TABLE PRESENT)
APPLICABLE CODES: ASTM C857
ACI-318

BACKFILL TYPE: SEE SHEET 4.0 FOR BACKFILL OPTIONS

STORMTRAP SYSTEM INFORMATION

UNIT HEADROOM: 5'-8" SINGLETRAP
TOTAL STORAGE PROV: 6,750.74 CUBIC FEET

SITE SPECIFIC DESIGN CRITERIA

1. STORMTRAP UNITS SHALL BE MANUFACTURED AND INSTALLED ACCORDING TO SHOP DRAWINGS APPROVED BY THE INSTALLING CONTRACTOR AND ENGINEER OF RECORD. THE SHOP DRAWINGS SHALL INDICATE SIZE AND LOCATION OF ROOF OPENINGS AND INLET/ OUTLET PIPE TYPES, SIZES, INVERT ELEVATIONS AND SIZE OF OPENINGS.
2. COVER RANGE: MIN. 1.57" MAX. 3.57" CONSULT STORMTRAP FOR ADDITIONAL COVER OPTIONS.
3. ALL DIMENSIONS AND SOIL CONDITIONS, INCLUDING BUT NOT LIMITED TO GROUNDWATER AND SOIL BEARING CAPACITY ARE REQUIRED TO BE VERIFIED IN THE FIELD BY OTHERS PRIOR TO STORMTRAP INSTALLATION.
4. FOR STRUCTURAL CALCULATIONS THE GROUND WATER TABLE IS ASSUMED TO BE BELOW INVERT OF SYSTEM IF WATER TABLE IS DIFFERENT THAN ASSUMED, CONTACT STORMTRAP.
5. SYSTEM DESIGN MAY ALLOW FOR INCIDENTAL LEAKAGE AND WILL NOT BE SUBJECT TO LEAKAGE TESTING.

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1287 WINDHAM PARKWAY
ROMEOVILLE, IL 60446
P:815-941-4549 / F:331-318-5347

ENGINEER INFORMATION:
Pasco Laret Suiter & Associates
34270 Pacific Coast Hwy #B
Dana Point, CA 92629
949-661-6695

PROJECT INFORMATION:
South Santa Fe Townhomes-BMP 2B

San Marcos, CA

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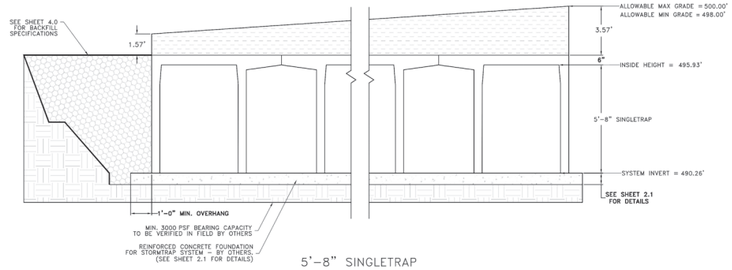
SCALE:
NTS

SHEET TITLE:
SINGLETRAP DESIGN CRITERIA

SHEET NUMBER:
1.1



5'-8" SINGLETRAP

BILL OF MATERIALS

QTY.	UNIT TYPE	DESCRIPTION	WEIGHT
2	I	5'-2" SINGLETRAP	15595
1	II	5'-2" SINGLETRAP	18120
6	III	5'-2" SINGLETRAP	15822
4	IV	5'-2" SINGLETRAP	16885
0	VII	5'-2" SINGLETRAP	-
0	VII-1	5'-2" SINGLETRAP	-
0	VII-2	5'-2" SINGLETRAP	-
8	VII-3	5'-2" SINGLETRAP	13289
4	VII-4	5'-2" SINGLETRAP	14552
0	SPIII	5'-2" SINGLETRAP	VARIES
1	SPIV	5'-2" SINGLETRAP	VARIES
1	T2 PANEL	6" THICK PANEL	3577
5	T4 PANEL	6" THICK PANEL	2816
4	T7 PANEL	6" THICK PANEL	2054
6	JOINTWRAP	150' PER ROLL	
52	JOINTTAPE	14.5' PER ROLL	
TOTAL PIECES = 26			
TOTAL PANELS = 10			
HEAVIEST PICK WEIGHT = 18120			

DESIGN CRITERIA
ALLOWABLE MAX GRADE = 542.00'
ALLOWABLE MIN GRADE = 536.00'
INSIDE HEIGHT ELEVATION = 531.77'
SYSTEM INVERT = 526.60'

NOTES:
1. DIMENSIONING OF STORMTRAP SYSTEM SHOWN BELOW ALLOW FOR A 3/4" GAP BETWEEN EACH MODULE.
2. ALL DIMENSIONS TO BE VERIFIED IN THE FIELD BY OTHERS.
3. SEE SHEET 3.0 FOR INSTALLATION SPECIFICATIONS.
4. SP - INDICATES A MODULE WITH MODIFICATIONS.
5. P - INDICATES A MODULE WITH A PANEL ATTACHMENT.
6. CONTRACTORS RESPONSIBILITY TO ENSURE CONSISTENCY/ACCURACY TO FINAL ENGINEER OF RECORD PLAN SET.
7. IN ORDER FOR STORMTRAP TO GENERATE APPROVAL DRAWINGS, CIVIL ENGINEERING DRAWINGS MUST BE PROVIDED TO STORMTRAP AND SHALL INCLUDE ALL PIPE SIZES, PIPE MATERIAL, PIPE INVERT ELEVATIONS, ACCESS OPENING SIZE AND SHAPE. IN ADDITION, FINAL GRADING PLANS SHALL ALSO INCLUDE MINIMUM AND MAXIMUM GRADES OVER THE TOP OF THE STORMTRAP SYSTEM.

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ENGINEER INFORMATION:
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949-661-6695

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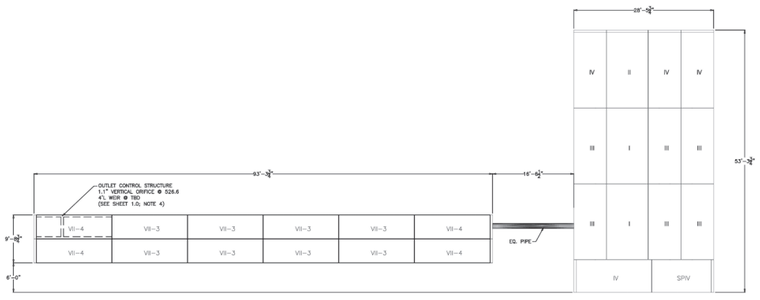
SCALE:
NTS

SHEET TITLE:
SINGLETRAP SYSTEM LAYOUT

SHEET NUMBER:
2.0



"STORMTRAP" DETENTION VAULT - BMP 1B

BILL OF MATERIALS

QTY.	UNIT TYPE	DESCRIPTION	WEIGHT
3	I	5'-8" SINGLETRAP	15900
2	II	5'-8" SINGLETRAP	18762
2	III	5'-8" SINGLETRAP	16254
4	IV	5'-8" SINGLETRAP	17885
0	VII	5'-8" SINGLETRAP	-
0	VII-1	5'-8" SINGLETRAP	-
0	VII-2	5'-8" SINGLETRAP	-
0	VII-3	5'-8" SINGLETRAP	-
0	VII-4	5'-8" SINGLETRAP	-
0	SPIII	5'-8" SINGLETRAP	VARIES
1	SPIV	5'-8" SINGLETRAP	VARIES
3	T2 PANEL	6" THICK PANEL	3893
4	T4 PANEL	6" THICK PANEL	5064
0	T7 PANEL	6" THICK PANEL	-
3	JOINTWRAP	150' PER ROLL	
16	JOINTTAPE	14.5' PER ROLL	
TOTAL PIECES = 12			
TOTAL PANELS = 7			
HEAVIEST PICK WEIGHT = 18762			

DESIGN CRITERIA
ALLOWABLE MAX GRADE = 500.00'
ALLOWABLE MIN GRADE = 498.00'
INSIDE HEIGHT ELEVATION = 495.93'
SYSTEM INVERT = 490.26'

NOTES:
1. DIMENSIONING OF STORMTRAP SYSTEM SHOWN BELOW ALLOW FOR A 3/4" GAP BETWEEN EACH MODULE.
2. ALL DIMENSIONS TO BE VERIFIED IN THE FIELD BY OTHERS.
3. SEE SHEET 3.0 FOR INSTALLATION SPECIFICATIONS.
4. SP - INDICATES A MODULE WITH MODIFICATIONS.
5. P - INDICATES A MODULE WITH A PANEL ATTACHMENT.
6. CONTRACTORS RESPONSIBILITY TO ENSURE CONSISTENCY/ACCURACY TO FINAL ENGINEER OF RECORD PLAN SET.
7. IN ORDER FOR STORMTRAP TO GENERATE APPROVAL DRAWINGS, CIVIL ENGINEERING DRAWINGS MUST BE PROVIDED TO STORMTRAP AND SHALL INCLUDE ALL PIPE SIZES, PIPE MATERIAL, PIPE INVERT ELEVATIONS, ACCESS OPENING SIZE AND SHAPE. IN ADDITION, FINAL GRADING PLANS SHALL ALSO INCLUDE MINIMUM AND MAXIMUM GRADES OVER THE TOP OF THE STORMTRAP SYSTEM.

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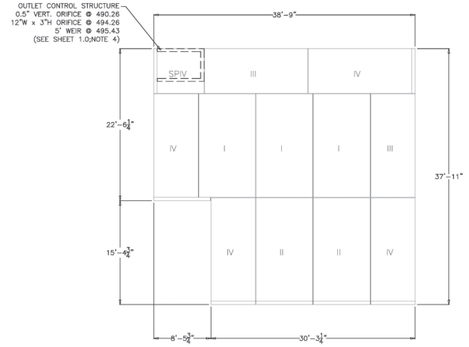
SCALE:
NTS

SHEET TITLE:
SINGLETRAP SYSTEM LAYOUT

SHEET NUMBER:
2.0



"STORMTRAP" DETENTION VAULT - BMP 2B

SHEET: 5 OF 6	CITY OF SAN MARCOS						
GENERAL PLAN AMENDMENT NUMBER: GPA25-0001							
OWNER: SANTA FE FLORES LP	CONTACT: PAUL MAYER				PHONE: 858-888-2488		
ADDRESS: PO BOX 903, RANCHO SANTA FE, CA 92067							
ARCHITECT, ENGINEER, DESIGNER: PLSA					PHONE: 949-661-6695		
ADDRESS: 34270 PACIFIC COAST HIGHWAY SUITE B, DANA POINT, CA 92629							
TYPE OF DEVELOPMENT: RESIDENTIAL, TOWNHOMES							
ZONE: MULTIFAMILY RESIDENTIAL (R-3-6)				APN(S): 217-161-17, -18, -19			
SITE DATA				DWELLING UNITS		OPEN SPACE DATA	
AREA (SQ. FT.)		COVERAGE %		STUDIO	-	COMMON (SF)	PRIVATE (SF)
LOT:	113,209	100%		1 BDRM	-	14,795	21,610
BUILDING:	38,672	34%		2 BDRM	18		
PARKING/PVMT:	35,778	32%		3 BDRM	28		
LOADING:	0	0%		4 BDRM	-		
LANDSCAPING:	38,759	34%		TOTAL UNITS	46		
PARKING		ORD. REQ.		DRIVEWAY (SIZE & SLOPE)	SETBACKS		
GARAGE	92	LOADING	0	ONE WAY: N/A	FRONT: 15'	REAR: 10'	
GUEST	14	HANDICAP	1	TWO WAY: 24' MIN	L. SIDE: 10'		
OPEN	0	TOTAL	107	SLOPE: VARIES	R. SIDE: 10'		

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STRUCTURAL DESIGN LOADING CRITERIA

LIVE LOADING: AASHTO HS-20 HIGHWAY LOADING

GROUND WATER TABLE: BELOW INVERT OF SYSTEM

SOIL BEARING PRESSURE: 3000PSF

SOIL DENSITY: 120 PCF

EQUIVALENT UNSATURATED
LATERAL ACTIVE EARTH PRESSURE: 35 PSF / FT.

EQUIVALENT SATURATED
LATERAL ACTIVE EARTH PRESSURE: 80 PSF/FT. (IF WATER TABLE PRESENT)

APPLICABLE CODES: ASTM C857
ACI-318

BACKFILL TYPE: SEE SHEET 4.0 FOR BACKFILL OPTIONS

STORMTRAP SYSTEM INFORMATION

UNIT HEADROOM: 7'-0" SINGLETRAP

TOTAL STORAGE PROV: 8,728.67 CUBIC FEET

SITE SPECIFIC DESIGN CRITERIA

1. STORMTRAP UNITS SHALL BE MANUFACTURED AND INSTALLED ACCORDING TO SHOP DRAWINGS APPROVED BY THE INSTALLING CONTRACTOR AND ENGINEER OF RECORD. THE SHOP DRAWINGS SHALL INDICATE SIZE AND LOCATION OF ROOF OPENINGS AND INLET/ OUTLET PIPE TYPES, SIZES, INVERT ELEVATIONS AND SIZE OF OPENINGS.
2. COVER RANGE: MIN. 2.79' MAX. 4.44' CONSULT STORMTRAP FOR ADDITIONAL COVER OPTIONS.
3. ALL DIMENSIONS AND SOIL CONDITIONS, INCLUDING BUT NOT LIMITED TO GROUNDWATER AND SOIL BEARING CAPACITY ARE REQUIRED TO BE VERIFIED IN THE FIELD BY OTHERS PRIOR TO STORMTRAP INSTALLATION.
4. FOR STRUCTURAL CALCULATIONS THE GROUND WATER TABLE IS ASSUMED TO BE BELOW INVERT OF SYSTEM IF WATER TABLE IS DIFFERENT THAN ASSUMED, CONTACT STORMTRAP.
5. SYSTEM DESIGN MAY ALLOW FOR INCIDENTAL LEAKAGE AND WILL NOT BE SUBJECT TO LEAKAGE TESTING.

StormTrap
PATENTS LISTED AT: [HTTPS://STORMTRAP.COM/PATENTS](https://stormtrap.com/patents)
1287 WINDHAM PARKWAY
ROMEOVILLE, IL 60446
P:815-941-4549 / F:331-318-5347

ENGINEER INFORMATION:

Pasco Laret Suiter
& Associates
34270 Pacific Coast Hwy #B
Dana Point, CA 92629
949-661-6695

PROJECT INFORMATION:

South Santa Fe
Townhomes-BMP 3B

San Marcos, CA

CURRENT ISSUE DATE:

01/10/2025

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PRELIMINARY

REV.	DATE:	ISSUED FOR:	DWN BY:
1	01/10/2025	PRELIMINARY	DG

SCALE:

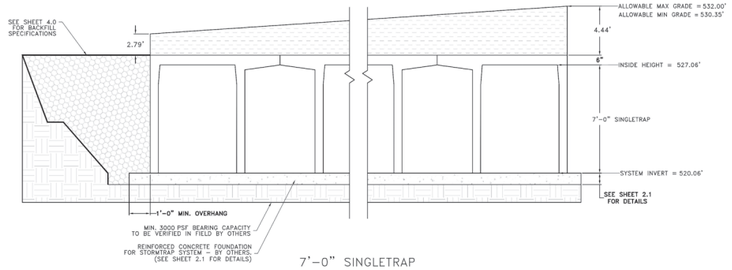
NTS

SHEET TITLE:

SINGLETRAP DESIGN CRITERIA

SHEET NUMBER:

1.1



7'-0" SINGLETRAP

STRUCTURAL DESIGN LOADING CRITERIA

LIVE LOADING: AASHTO HS-20 HIGHWAY LOADING

GROUND WATER TABLE: BELOW INVERT OF SYSTEM

SOIL BEARING PRESSURE: 3000PSF

SOIL DENSITY: 120 PCF

EQUIVALENT UNSATURATED
LATERAL ACTIVE EARTH PRESSURE: 35 PSF / FT.

EQUIVALENT SATURATED
LATERAL ACTIVE EARTH PRESSURE: 80 PSF/FT. (IF WATER TABLE PRESENT)

APPLICABLE CODES: ASTM C857
ACI-318

BACKFILL TYPE: SEE SHEET 4.0 FOR BACKFILL OPTIONS

STORMTRAP SYSTEM INFORMATION

UNIT HEADROOM: 5'-8" SINGLETRAP

TOTAL STORAGE PROV: 5,099.43 CUBIC FEET

SITE SPECIFIC DESIGN CRITERIA

1. STORMTRAP UNITS SHALL BE MANUFACTURED AND INSTALLED ACCORDING TO SHOP DRAWINGS APPROVED BY THE INSTALLING CONTRACTOR AND ENGINEER OF RECORD. THE SHOP DRAWINGS SHALL INDICATE SIZE AND LOCATION OF ROOF OPENINGS AND INLET/ OUTLET PIPE TYPES, SIZES, INVERT ELEVATIONS AND SIZE OF OPENINGS.
2. COVER RANGE: MIN. 1.17' MAX. 1.17' CONSULT STORMTRAP FOR ADDITIONAL COVER OPTIONS.
3. ALL DIMENSIONS AND SOIL CONDITIONS, INCLUDING BUT NOT LIMITED TO GROUNDWATER AND SOIL BEARING CAPACITY ARE REQUIRED TO BE VERIFIED IN THE FIELD BY OTHERS PRIOR TO STORMTRAP INSTALLATION.
4. FOR STRUCTURAL CALCULATIONS THE GROUND WATER TABLE IS ASSUMED TO BE BELOW INVERT OF SYSTEM IF WATER TABLE IS DIFFERENT THAN ASSUMED, CONTACT STORMTRAP.
5. SYSTEM DESIGN MAY ALLOW FOR INCIDENTAL LEAKAGE AND WILL NOT BE SUBJECT TO LEAKAGE TESTING.

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& Associates
34270 Pacific Coast Hwy #B
Dana Point, CA 92629
949-661-6695

PROJECT INFORMATION:

South Santa Fe
Townhomes-BMP 4B

San Marcos, CA

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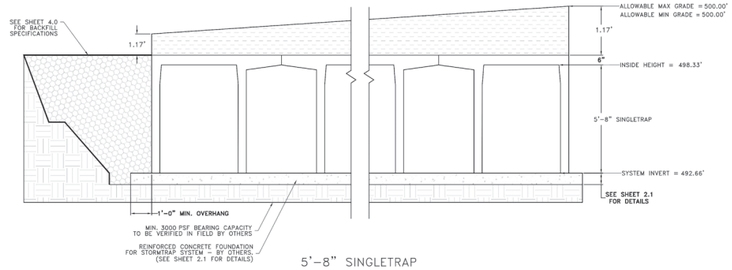
NTS

SHEET TITLE:

SINGLETRAP DESIGN CRITERIA

SHEET NUMBER:

1.1



5'-8" SINGLETRAP

BILL OF MATERIALS

QTY.	UNIT TYPE	DESCRIPTION	WEIGHT
3	I	7'-0" SINGLETRAP	18690
1	II	7'-0" SINGLETRAP	22754
3	III	7'-0" SINGLETRAP	20234
4	IV	7'-0" SINGLETRAP	22267
0	VII	7'-0" SINGLETRAP	--
0	VII-1	7'-0" SINGLETRAP	--
0	VII-2	7'-0" SINGLETRAP	--
0	VII-3	7'-0" SINGLETRAP	--
0	VII-4	7'-0" SINGLETRAP	--
0	SPIII	7'-0" SINGLETRAP	VARIES
2	SPIV	7'-0" SINGLETRAP	VARIES
2	T2 PANEL	6" THICK PANEL	6419
4	T4 PANEL	6" THICK PANEL	5478
0	T7 PANEL	6" THICK PANEL	--
4	JOINTWRAP	150' PER ROLL	
16	JOINTTAPE	4.5' PER ROLL	
TOTAL PIECES = 13			
TOTAL PANELS = 6			
HEAVIEST PICK WEIGHT = 22754			

DESIGN CRITERIA
ALLOWABLE MAX GRADE = 532.00'
ALLOWABLE MIN GRADE = 530.35'
INSIDE HEIGHT ELEVATION = 527.06'
SYSTEM INVERT = 520.06'

NOTES:
1. DIMENSIONING OF STORMTRAP SYSTEM SHOWN BELOW ALLOW FOR A 3/4" GAP BETWEEN EACH MODULE.
2. ALL DIMENSIONS TO BE VERIFIED IN THE FIELD BY OTHERS.
3. SEE SHEET 3.0 FOR INSTALLATION SPECIFICATIONS.
4. SP - INDICATES A MODULE WITH MODIFICATIONS.
5. P - INDICATES A MODULE WITH A PANEL ATTACHMENT.
6. CONTRACTORS RESPONSIBILITY TO ENSURE CONSISTENCY/ACCURACY TO FINAL ENGINEER OF RECORD PLAN SET.
7. IN ORDER FOR STORMTRAP TO GENERATE APPROVAL DRAWINGS, CIVIL ENGINEERING DRAWINGS MUST BE PROVIDED TO STORMTRAP AND SHALL INCLUDE ALL PIPE SIZES, PIPE MATERIAL, PIPE INVERT ELEVATIONS, ACCESS OPENING SIZE AND SHAPE. IN ADDITION, FINAL GRADING PLANS SHALL ALSO INCLUDE MINIMUM AND MAXIMUM GRADES OVER THE TOP OF THE STORMTRAP SYSTEM.

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ENGINEER INFORMATION:

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& Associates
34270 Pacific Coast Hwy #B
Dana Point, CA 92629
949-661-6695

PROJECT INFORMATION:

South Santa Fe
Townhomes-BMP 3B

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SCALE:

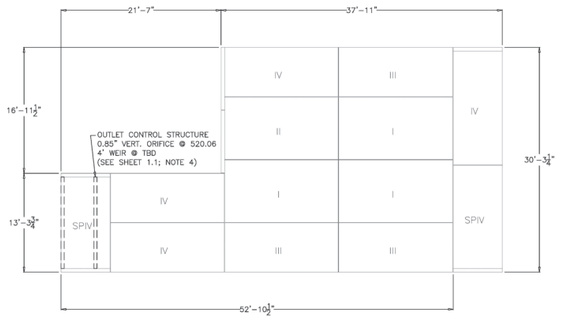
NTS

SHEET TITLE:

SINGLETRAP SYSTEM LAYOUT

SHEET NUMBER:

2.0



"STORMTRAP" DETENTION VAULT - BMP 3B

BILL OF MATERIALS

QTY.	UNIT TYPE	DESCRIPTION	WEIGHT
1	I	5'-8" SINGLETRAP	15900
0	II	5'-8" SINGLETRAP	--
2	III	5'-8" SINGLETRAP	16254
0	IV	5'-8" SINGLETRAP	--
0	VII	5'-8" SINGLETRAP	--
0	VII-1	5'-8" SINGLETRAP	--
0	VII-2	5'-8" SINGLETRAP	--
0	VII-3	5'-8" SINGLETRAP	--
0	VII-4	5'-8" SINGLETRAP	--
0	SPIII	5'-8" SINGLETRAP	VARIES
4	SPIV	5'-8" SINGLETRAP	VARIES
0	T2 PANEL	6" THICK PANEL	--
4	T4 PANEL	6" THICK PANEL	5064
0	T7 PANEL	6" THICK PANEL	--
2	JOINTWRAP	150' PER ROLL	
8	JOINTTAPE	4.5' PER ROLL	
TOTAL PIECES = 7			
TOTAL PANELS = 4			
HEAVIEST PICK WEIGHT = 16254			

DESIGN CRITERIA
ALLOWABLE MAX GRADE = 500.00'
ALLOWABLE MIN GRADE = 500.00'
INSIDE HEIGHT ELEVATION = 498.33'
SYSTEM INVERT = 492.66'

NOTES:
1. DIMENSIONING OF STORMTRAP SYSTEM SHOWN BELOW ALLOW FOR A 3/4" GAP BETWEEN EACH MODULE.
2. ALL DIMENSIONS TO BE VERIFIED IN THE FIELD BY OTHERS.
3. SEE SHEET 3.0 FOR INSTALLATION SPECIFICATIONS.
4. SP - INDICATES A MODULE WITH MODIFICATIONS.
5. P - INDICATES A MODULE WITH A PANEL ATTACHMENT.
6. CONTRACTORS RESPONSIBILITY TO ENSURE CONSISTENCY/ACCURACY TO FINAL ENGINEER OF RECORD PLAN SET.
7. IN ORDER FOR STORMTRAP TO GENERATE APPROVAL DRAWINGS, CIVIL ENGINEERING DRAWINGS MUST BE PROVIDED TO STORMTRAP AND SHALL INCLUDE ALL PIPE SIZES, PIPE MATERIAL, PIPE INVERT ELEVATIONS, ACCESS OPENING SIZE AND SHAPE. IN ADDITION, FINAL GRADING PLANS SHALL ALSO INCLUDE MINIMUM AND MAXIMUM GRADES OVER THE TOP OF THE STORMTRAP SYSTEM.

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ROMEOVILLE, IL 60446
P:815-941-4549 / F:331-318-5347

ENGINEER INFORMATION:

Pasco Laret Suiter
& Associates
34270 Pacific Coast Hwy #B
Dana Point, CA 92629
949-661-6695

PROJECT INFORMATION:

South Santa Fe
Townhomes-BMP 4B

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SCALE:

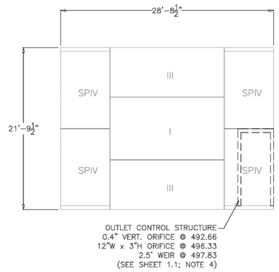
NTS

SHEET TITLE:

SINGLETRAP SYSTEM LAYOUT

SHEET NUMBER:

2.0



"STORMTRAP" DETENTION VAULT - BMP 4B

SHEET: 6 OF 6

CITY OF SAN MARCOS

GENERAL PLAN AMENDMENT NUMBER: GPA25-0001

OWNER: SANTA FE FLORES LP CONTACT: PAUL MAYER PHONE: 858-888-2488

ADDRESS: PO BOX 903, RANCHO SANTA FE, CA 92067

ARCHITECT, ENGINEER, DESIGNER: PLSA PHONE: 949-661-6695

ADDRESS: 34270 PACIFIC COAST HIGHWAY SUITE B, DANA POINT, CA 92629

TYPE OF DEVELOPMENT: RESIDENTIAL, TOWNHOMES

ZONE: MULTIFAMILY RESIDENTIAL (R-3-6) APN(S): 217-161-17, -18, -19

SITE DATA			DWELLING UNITS		OPEN SPACE DATA	
AREA (SQ. FT.)		COVERAGE %			COMMON (SF)	PRIVATE (SF)
LOT:	113,209	100%	1 BDRM	-	14,795	21,610
BUILDING:	38,672	34%	2 BDRM	18		
PARKING/PVMT:	35,778	32%	3 BDRM	28		
LOADING:	0	0%	4 BDRM	-		
LANDSCAPING:	38,759	34%	TOTAL UNITS	46		
PARKING		ORD. REQ.	DRIVEWAY (SIZE & SLOPE)	SETBACKS		
GARAGE	92	LOADING 0	ONE WAY: N/A	FRONT: 15'	REAR: 10'	
GUEST	14	HANDICAP 1	TWO WAY: 24' MIN	L. SIDE: 10'		
OPEN	0	TOTAL 107	SLOPE: VARIES	R. SIDE: 10'		

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