



County of San Diego
Stormwater Quality Management Plan (SWQMP)
For Priority Development Projects (PDPs)

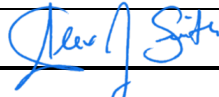
Use for all PDPs (see Storm Water Intake Form, Part 4)



Project Information		Development type ☐ New development ☒ Redevelopment	
Project Name	Colonnade Hotel		
Project Address	Main Street and Letton Street, Ramona, CA, 92065		
Assessor's Parcel # (APN)	282-141-32-00, 282-141-33-00, 282-141-34-00		
Permit # / Record ID	PDS2023-STP-23-021		
Project category (select one)	☒ Commercial ☐ Minor subdivision*		
	☐ Industrial ☐ Major subdivision*		
	☐ Single family residential lot ☐ Multi-family residential*		
*If residential, is a Homeowners Association (HOA) proposed? ☐ Yes ☐ No			

Project Applicant / Project Proponent			
Name	Steve Powell		
Address	2428 Montecito Road, Ramona, CA 92065		
Phone	(760) 789-5493	Email:	steve@woodcrestrev.com

SWQMP Preparer			
Name	Alex J. Smith		
Company (if applicable)	Tory R. Walker Engineering		
Address	122 Civic Center Drive, Suite 206, Vista, CA, 92084		
Phone	(760) 414-9212	Email:	alex@trwengineering.com
PE Number (if applicable)	RCE No. C90082		

Preparer's Certification	
I understand that the County of San Diego has adopted minimum requirements for managing urban runoff, including storm water, from land development activities, as described in the County of San Diego BMP Design Manual. The BMP Design Manual is a design manual for compliance with local County of San Diego Watershed Protection Ordinance (Sections 67.801 et seq.) and regional MS4 Permit (California Regional Water Quality Control Board San Diego Region Order No. R9-2013-0001, as amended by Order No. R9-2015-0001 and Order No. R9-2015-0100) requirements for storm water management. This SWQMP is intended to comply with applicable requirements of the BMP Design Manual. I certify that it has been completed to the best of my ability and accurately reflects the project being proposed and the applicable BMPs proposed to minimize the potentially negative impacts of this project's land development activities on water quality. I understand and acknowledge that the plan check review of this SWQMP by County staff is confined to a review and does not relieve me as the person in charge of overseeing the selection and design of storm water BMPs for this project, of my responsibilities for project design.	
Signature 	Date December 2, 2025

COUNTY ACCEPTED	
SWQMP Approved By:	Approval Date:
* NOTE* Approval does not constitute compliance with regulatory requirements.	

Scope of SWQMP Submittal (Required)

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

SWQMP Scope	Required Documentation
☒ a. SWQMP addresses the entire project	No additional documentation.
☐ b. SWQMP implements requirements of an earlier master SWQMP submittal	Include a copy of the previous submittal as Attachment 4 .
☐ c. First of multiple SWQMP submittals	Identify below the elements addressed in this submittal and in future submittals.
(1) Elements addressed in current submittal (streets, common areas, first project phase, etc.):	
(2) Elements to be addressed in future submittal(s) (individual lots, future project phases, etc.):	

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

No.	Date	Summary of Changes
Preliminary Design / Planning / CEQA		
1	8/11/2023	Initial Submittal
2	9/11/2024	Resubmittal #1
3	12/2/2025	Resubmittal #2
No.	Date	Summary of Change
Final Design		
1	Date	Initial Submittal
2	Date	Summary of Change
3	Date	Summary of Change
No.	Date	Summary of Change
Plan Changes		
1	Date	Initial Submittal
2	Date	Summary of Change
3	Date	Summary of Change
No.	Date	Summary of Change

PDP SWQMP Submittal Checklist

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

☒ Table 1: Baseline BMPs for Existing and Proposed Site Features	Page 2
☒ Table 2: Baseline BMPs for Pollutant-generating Sources	Page 3
☒ Table 3: Explanations and Justifications for Table 1 and 2 Baseline BMPs	Page 4
☒ Table 4: DMA Structural Compliance Strategies and Documentation	Page 5
☒ Table 5: Critical Coarse Sediment Yield Area (CCSYA) Requirements	Page 6
☒ Table 6: Minimum Construction Stormwater BMPs	Page 7
☒ Table 7: Explanations and Justifications for Construction Phase BMPs	Page 8

SWQMP Attachments¹: Use the checklist below to identify which attachments will be included with this submittal. Attachments with boxes already checked (☒) are required for all projects. The applicability of other attachments will be determined upon completing this form.

- ☒ Attachment 1: Storm Water Intake Form
- ☒ Attachment 2: DMA Exhibits and Construction Plan Sheets
- ☐ Attachment 3: Reserved for Future Use
- ☐ Attachment 4: Previous SWQMP Submittals
- ☒ Attachment 5: Existing Site and Drainage Description
- ☒ Attachment 6: Documentation of DMAs without Structural BMPs
- ☒ Attachment 7: Documentation of DMAs with Structural Pollutant Control BMPs
- ☒ Attachment 8: Documentation of DMAs with Structural Hydromodification Management BMPs
- ☒ Attachment 9: Management of Critical Coarse Sediment Yield Areas
- ☒ Attachment 10: BMP Installation Verification Form
- ☒ Attachment 11: BMP Maintenance Agreements and Plans
- ☐ Attachment 12: Documentation of Alternative Compliance Projects (ACPs)

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

¹ All SWQMP Attachments are available at www.sandiego.gov/stormwater under the Development Resources tab, Submittal Templates.

Table 1 – Baseline BMPs for Existing and Proposed Site Features

A. BMPs for Existing Natural Site Features (See Fact Sheet BL-1)			
1. Check the boxes below for each existing feature on the site.	2. Select the BMPs to be implemented for each identified feature. Explain why any BMP not selected is infeasible in Table 3.		
☐ Natural waterbodies	Conserve natural features (SD-G)	Provide buffers around waterbodies (SD-H)	☐
☐ Natural storage reservoirs & drainage corridors	☐	---	---
☐ Natural areas, soils, & vegetation (incl. trees)	☐	---	---
B. BMPs for Common Impervious Outdoor Site Features (See Fact Sheet BL-2)			
1. Check the boxes below for each proposed feature.	2. Select the BMPs to be implemented for each proposed feature. If neither BMP SD-B nor SD-I is selected for a feature, explain why both BMPs are infeasible in Table 3.		
	a. Direct runoff to pervious areas (SD-B)	b. Construct surfaces from permeable materials (SD-I)	c. Minimize the size of impervious areas
☐ Streets and roads	☐	☐	☒ Check this box to confirm that all impervious areas on the site will be minimized where feasible.
☒ Sidewalks & walkways	☒	☒	If this box is not checked, identify the surfaces that cannot be minimized in Table 3, and explain why it is infeasible to do so.
☒ Parking areas & lots	☐	☐	
☒ Driveways	☐	☐	
☒ Patios, decks, & courtyards	☒	☐	
☐ Hardcourt recreation areas	☐	☐	
☐ Other:	☐	☐	
C. ☒ BMPs for Rooftop Areas: Check this box if rooftop areas are proposed and select at least one BMP below. (See Fact Sheet BL-3)			
If no BMPs are selected, explain why they are infeasible in Table 3.			
1. Direct runoff to pervious areas (SD-B)	2. Install green roofs (SD-C)	3. Install rain barrels (SD-E)	
☒	☐	☐	
D. ☒ BMPs for Landscaped Areas: Check this box if landscaping is proposed and select at least one BMP below. (See Fact Sheet BL-4)			
If no BMPs are selected, explain why they are infeasible in Table 3.			
1. Sustainable Landscaping (SD-K)			
☒			

Note: All features and BMPs must be shown on applicable construction plans. See applicable Fact Sheets in Appendix C of the BMP Design Manual for additional information.

Note: Use Table 3 to explain BMP infeasibility or inapplicability, or to describe features or BMPs not listed in this table. Additional explanation may be required by the County.

Table 2 – Baseline BMPs for Pollutant-generating Sources

☐ If this is a **Small Residential Project**, check this box and skip the rest of this table.

A. Management of Stormwater Discharges

1. Identify all proposed outdoor work areas below (☐ Check here if none are proposed)	2. Which BMPs will be used to prevent materials from contacting rainfall or runoff? (See Fact Sheet BL-5) (Select all feasible BMPs for each work area ²)			3. Where will runoff from the work area be routed? (See Fact Sheet BL-6) (Select one or more option for each work area)			
	Overhead covering (rooftops, etc.) (SC-A)	Separation of flows from adjacent areas (berms, etc.) (SC-B)	Wind protection (screens, etc.) (SC-C)	Sanitary sewer ³ (SC-D)	Containment system (SC-E)	Stormwater S-BMP or SSD-BMP ⁴	Other ⁵
☒ Trash & Refuse Storage	☒	☒	☒	☐	☐	☒	☐
☐ Materials & Equipment Storage	☐	☐	☐	☐	☐	☐	☐
☐ Loading & Unloading	☐	☐	---	☐	☐	☐	☐
☐ Fueling	☐	☐	---	☐	☐	☐	☐
☐ Maintenance & Repair	☐	☐	---	☐	☐	☐	☐
☐ Vehicle & Equipment Cleaning	☐	☐	---	☐	☐	☐	☐
☐ Other:	☐	☐	---	☐	☐	☐	☐

B. Prevention of Non-stormwater Discharges (See Fact Sheet BL-7)

Select one option for each feature below:

• Storm drain inlets and catch basins ...	☐ are not proposed	☒ will be labeled with stenciling or signage to discourage dumping (SC-F)
• Educational BMP Signage ...	☒ are not proposed	☐ will be labeled with educational signage for BMP (SC-G)
• Interior work surfaces, floor drains, & sumps ...	☐ are not proposed	☒ will not discharge directly or indirectly to the MS4 or receiving waters
• Drain lines (e.g., air conditioning, boiler, etc.) ...	☐ are not proposed	☒ will not discharge directly or indirectly to the MS4 or receiving waters
• Fire sprinkler test water ...	☒ are not proposed	☐ will not discharge directly or indirectly to the MS4 or receiving waters

Note: All outdoor features and BMPs in this table must be shown on applicable construction plans. See applicable Fact Sheets in Appendix C of the BMP Design Manual for additional information.

Note: Use Table 3 to explain BMP infeasibility or inapplicability, or to describe features or BMPs not listed in this table. Additional explanation may be required by the County.

² Each BMP is required where feasible. If none are selected for any feature, explain why they are infeasible in Table 3.

³ Separate wastewater agency approvals may be required.

⁴ Structural Treatment Control BMPs (S-BMPs) and Significant Site Design BMPs (SSD-BMPs) may not receive discharges from work areas that concentrate pollutants in a manner that will impair their functioning. Discharges from the proposed work area must also be included in DCV calculations for the applicable BMP.

⁵ Describe other proposed options for managing stormwater discharges in Table 3.

Table 3 – Explanations and Justifications for Table 1 and 2 Baseline BMPs

☐ Check here if no explanations or justifications for Table 1 or 2 BMPs are required.		
• Required Justifications: Provide explanations of BMP inapplicability and/or infeasibility as indicated per Tables 1 and 2. • If Requested: Justify why specific BMPs will not be implemented or will only be partially implemented. • Additional Explanation: Describe any proposed features and/or BMPs not listed in Tables 1 or 2.		
BMP-Feature Combination		Explanation
Feature	All natural site features	Baseline BMPs for existing natural site features are not applicable because the existing site is developed and does not contain any natural site features to conserve.
BMP	SD-G & SD-H	
Feature	Parking areas & lots; driveways	The proposed imperviousness will be minimized by the construction of minimum driveway and drive aisle widths, minimum required parking spaces, and the multi-story structure with a high floor-to-area ratio (FAR). The drive aisles and driveways must incorporate a slope no greater than two percent to satisfy Americans with Disabilities Act (ADA) requirements and to minimize earthwork export. Due to the relatively flat surface gradient of the site, the need to meet to existing grades around the site perimeter, and to incorporate a shallow onsite storm drain system to maintain positive drainage to the onsite structural BMPs and the downstream offsite storm drain, the site will rely predominantly upon efficient surface flow across the proposed drive aisles and parking lots to the southern corner of the property. Furthermore, use of permeable materials for the site parking areas lots, and driveways is not advisable due to the restricted infiltration condition and presence of onsite underground utilities within the drive aisle limits. Therefore, inclusion of intermittent dispersion areas and/or use of permeable materials within parking areas, lots, and/or driveways poses conflicts considered to be technically infeasible for this project.
BMP	SD-B & SD-I	
Feature	Feature	Explanation
BMP	BMP	
Feature	Feature	Explanation
BMP	BMP	
Feature	Feature	Explanation
BMP	BMP	
Feature	Feature	Explanation
BMP	BMP	
Feature	Feature	Explanation

BMP	BMP	
Feature	Feature	Explanation
BMP	BMP	

Table 4: DMA Structural Compliance Strategies and Documentation

Part A – Selection and Application Structural Performance Standards							
1. Selection of Standards (select one; see BMPDM Section 6.1) ☒ a. Pollutant control + hydromodification ☐ b. Pollutant control only (project is exempt from hydromodification requirements)							
2. Application of Structural Performance Standards (select one; see BMPDM Section 1.7) ☐ New Development Projects: Standards apply to <u>all</u> impervious surfaces. ☒ Redevelopment Projects: Complete the calculations below. Select <u>the</u> applicable scenario based on the results.							
a. Existing impervious area (ft²)		b. Impervious area created / replaced (ft²)		c. % Impervious created / replaced [(b/a)*100]			
37,155		107,370		289%			
☒ <i>Scenario 1: c is 50% or more:</i> Performance standards apply to all impervious surfaces (a + b). ☐ <i>Scenario 2: c is less than 50%:</i> Performance standards apply only to created or replaced impervious surfaces (b only).							
Part B – Compliance Strategies and Required Attachments							
1. Complete and submit each of the applicable attachments on the right.	Att. 1	Att. 2	Att. 3	Att. 4	Att. 5		
	Storm Water Intake Form ☒	DMA Exhibits and Construction Plan Sheets ☒	N/A ☐	Previous SWQMP Submittals (see inside cover) ☐	Existing Site and Drainage Description ☒		
2. Indicate each compliance strategy below that will be used for one or more DMAs on the site.	Att. 6	Att. 7	Att. 8	Att. 9	Att. 10	Att. 11	Att. 12
	DMAs without Structural BMPs	DMAs w/ Structural Pollutant Control BMPs	DMAs w/ Structural Hydromod. BMPs	Critical Coarse Sediment Yield Areas	BMP Installation Verification Form	Maintenance Agreements/ Plans	Alternative Compliance Projects
	☐			☐			
	☐			☐			
	☒			☒	☒		
Structural BMPs (select all that apply)							
☒ Pollutant Control BMPs (BMPDM Section 5.4)		☒		☒	☒	☒	
☒ Hydromodification Control BMPs (BMPDM Chapter 6)			☒	☒	☒	☒	
☐ Alternative Compliance Project (BMPDM Section 1.8)				☐	☐	☐	☐
☒ Please check this box after you complete this list. Corresponding attachments will be automatically selected on the right.							

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

Table 5: Critical Coarse Sediment Yield Area (CCSYA) Requirements

○ Identify one applicable compliance pathway for the PDP below. ○ Document your selection in Attachment 9.
A. Hydromodification Management Exemption (BMPDM Sections 1.6 and 6.1)
☐ PDP is Exempt from Hydromodification Management Requirements Select if hydromodification management exemption was selected in Table 4 Part A.1.
B. Watershed Management Area (WMAA) Mapping (BMPDM Appendix H.1.1.2)
☒ WMAA mapping demonstrates the following: a. <5% of potential onsite CCYSAs will be impacted (built on or obstructed) b. All potential upstream offsite CCYSAs will be bypassed
C. Resource Protection Ordinance (RPO) Methods (BMPDM Appendix H.1.1.1)
☐ RPO Scenario 1: PDP is subject to and in compliance with RPO requirements a. Project requires one or more discretionary permits (RPO applicability is confirmed during discretionary review) b. Onsite AND upstream offsite CCSYAs will be avoided and/or bypassed
☐ RPO Scenario 2: PDP is entirely exempt/not subject to RPO requirements⁶ a. Project does not require discretionary permits b. Project will bypass all upstream offsite CCSYAs (no requirements for onsite CCSYAs)
D. No Net Impact Analysis (BMPDM Appendix H.4)
☐ Project demonstrates no net impact to receiving waters

⁶ Does not include PDPs utilizing exemption(s) via RPO Section 86.604(e)(2)(cc) or 86.604(e)(3).

Table 6 –Minimum Construction Stormwater BMPs

Minimum Required BMPs by Activity Type		References	
Select all applicable activities and at least one BMP for each.		Caltrans ⁷	County of San Diego
☐ Erosion Control for Disturbed Slopes (choose at least 1 per season)			
☐ Vegetation Stabilization Planting ⁸ (Summer)		SS-2, SS-4	
☐ Hydraulic Stabilization Hydroseeding (Summer)		SS-4	
☐ Bonded Fiber Matrix or Stabilized Fiber Matrix ⁹ (Winter)		SS-3	
☐ Physical Stabilization Erosion Control Blanket (Winter)		SS-7	
☒ Erosion control for disturbed flat areas (slope < 5%)			
☒ County Standard Lot Perimeter Protection Detail		SC-2	PDS 659 ¹⁰
☐ Use of Item A erosion control measures on flat areas		SS-3, SS-4, SS-7	
☐ County Standard Desilting Basin (must treat all site runoff)		SC-2	PDS 660 ¹¹
☐ Mulch, straw, wood chips, soil application		SS-6, SS-8	
☐ Energy dissipation (required to control velocity for concentrated runoff or dewatering discharge)			
☐ Energy Dissipater Outlet Protection		SS-10	RSD D-40 ¹²
☒ Sediment control for all disturbed areas			
☒ Silt Fence		SC-1	
☒ Fiber Rolls (Straw Wattles)		SC-5	
☐ Gravel & Sand Bags		SC-6, SC-8	
☐ Dewatering Filtration		NS-2	
☐ Storm Drain Inlet Protection		SC-10	
☐ Engineered Desilting Basin (sized for 10-year flow)		SC-2	
☒ Preventing offsite tracking of sediment			
☒ Stabilized Construction Entrance		TC-1	
☐ Construction Road Stabilization		TC-2	
☐ Entrance/Exit Tire Wash		TC-3	
☐ Entrance/Exit Inspection & Cleaning Facility		TC-1	
☒ Street Sweeping and Vacuuming		SC-7	
☒ Materials Management			
☒ Material Delivery & Storage		WM-1	
☒ Spill Prevention and Control		WM-4	
☒ Waste Management¹³			
☒ Waste Management Concrete Waste Management		WM-8	
☒ Solid Waste Management		WM-5	
☒ Sanitary Waste Management		WM-9	
☒ Hazardous Waste Management		WM-6	

⁷ See Caltrans 2017 Construction Site Best Management Practices (BMP) Manual available at:

<https://dot.ca.gov/programs/construction/storm-water-and-water-pollution-control/manuals-and-handbooks>

⁸ Planting or Hydroseeding may be installed between May 1st and August 15th. Slope irrigation must be in place and operable for slopes >3 feet. Vegetation must be watered and established prior to October 1st. A contingency physical BMP must be implemented by August 15th if vegetation is not established by that date. If landscaping is proposed, erosion control measures must also be used while landscaping is being established. Established vegetation must have a subsurface mat of intertwined mature roots with a uniform vegetative coverage of 70 percent of the natural vegetative coverage or more on all disturbed areas.

⁹ All slopes over three feet must have established vegetative cover prior to final permit approval.

¹⁰ County PDS 659. Standard Lot Perimeter Protection Design System (Bldg. Division)

¹¹ County PDS 660. County Standard Desilting Basin for Disturbed Areas of 1 Acre or Less Bldg. Division

¹² Regional Standard Drawing D-40 – Rip Rap Energy Dissipater (also acceptable for velocity reduction)

¹³ Applicants are responsible to apply appropriate BMPs for specific wastes (e.g., BMP WM-8 for concrete).

Table 7 – Explanations and Justifications for Construction Phase BMPs

☐ Check here if no explanations or justifications for Table 6 BMPs are required.		
Justifications for Table 6 Temporary Construction Phase BMPs • Required Justifications: Justify all construction activity types for which NO BMPs were selected. • If Requested: Justify why specific individual BMPs were not selected. • Additional Explanation: Describe any proposed features and/or BMPs not listed in Table 6.		
Activity Type / BMP		Explanation
Activity Type	Construction	All applicable construction phase erosion and sediment control BMPs to be specified and included on the erosion control plans at the engineering phase.
BMP	All erosion and sediment controls	
Activity Type	Activity Type	Explanation
BMP	BMP	
Activity Type	Activity Type	Explanation
BMP	BMP	
Activity Type	Activity Type	Explanation
BMP	BMP	
Activity Type	Activity Type	Explanation
BMP	BMP	
Activity Type	Activity Type	Explanation
BMP	BMP	
Activity Type	Activity Type	Explanation
BMP	BMP	



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

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

Part 1. Project Information		
Project Name:	Colonnade Hotel	
Record ID (Permit) No(s):	PDS2023-STP-23-021	
Assessor's Parcel No(s):	282-141-32-00, 282-141-33-00, 282-141-34-00	
Street Address (or Intersection):	Main Street and Letton Street	
City, State, Zip:	Ramona, CA, 92065	

Part 2. Applicant / Project Proponent Information		
Name:	Steve Powell	
Company:	WoodCrest Real Estate Ventures	
Street Address:	2428 Montecito Road, Ramona, CA 92065	
City, State, Zip:	Ramona, CA, 92065	
Phone Number	(760) 789-5493	
Email:	steve@woodcrestrev.com	

Part 3. Required Information for All Development Projects			
(A)	1. Existing (pre-development) impervious surfaces (ft²)	2. Created or replaced impervious surfaces (ft²)	3. Total disturbed area (acres or ft²)
	37,155	107,370	119,300
(B)	☒ Check here and provide a WDID# if this project is subject to the California Construction General Permit (Order No. 2009-0009-DWQ) ¹		WDID # (if issued) TBD AT ENGINEERING PHASE

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

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

Part 4. Priority Classification & SWQMP Form Selection**(A) If your project is the following ... (select one)****(B) You must complete ...**☐ **Standard Project****→ Standard SWQMP Form**

- ☐ a. Project is East of the Pacific/Salton Sea Divide
- ☐ b. None of the PDP criteria below applies

☒ **Priority Development Project (PDP)****→ PDP SWQMP Form**

- ☐ 1. Project is part of an existing PDP, OR
- ☒ 2. Project does any of the following:
- ☒ a. Creates or replaces a total of 10,000 ft² or more of impervious surface
 - ☒ b. Creates or replaces a combined total of 5,000 ft² or more of impervious surface within one or more of the following uses: (1) parking lots; (2) streets, roads, highways, freeways, and/or driveways; (3) restaurants; and (4) hillsides
 - ☐ c. Creates or replaces a combined total of 5,000 ft² or more of impervious surface within one or more of the following uses: (1) automotive repair shops; and (2) retail gasoline outlets
 - ☐ d. Discharges directly to an Environmentally Sensitive Area (ESA) AND creates or replaces 2,500 ft² or more of impervious surface
 - ☒ e. Disturbs one or more acres of land (43,560 ft²) and is expected to generate pollutants post-construction
 - ☒ f. Is a redevelopment project that creates or replaces 5,000 ft² or more of impervious surface on a site already having at least 10,000 ft² of impervious surface

☐ **Green Streets PDP Exemption²****→ Green Streets PDP Exemption SWQMP Form****Part 5. Applicant Signature***I have reviewed the information in this form, and it is true and correct to the best of my knowledge.*

Applicant / Project Proponent Signature:



Date: 08/11/2023

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

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



County of San Diego
Stormwater Quality Management Plan (SWQMP)
Attachment 2: DMA Exhibits and Construction Plans

2.0 General Requirements

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

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

2.1 DMA Exhibits

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

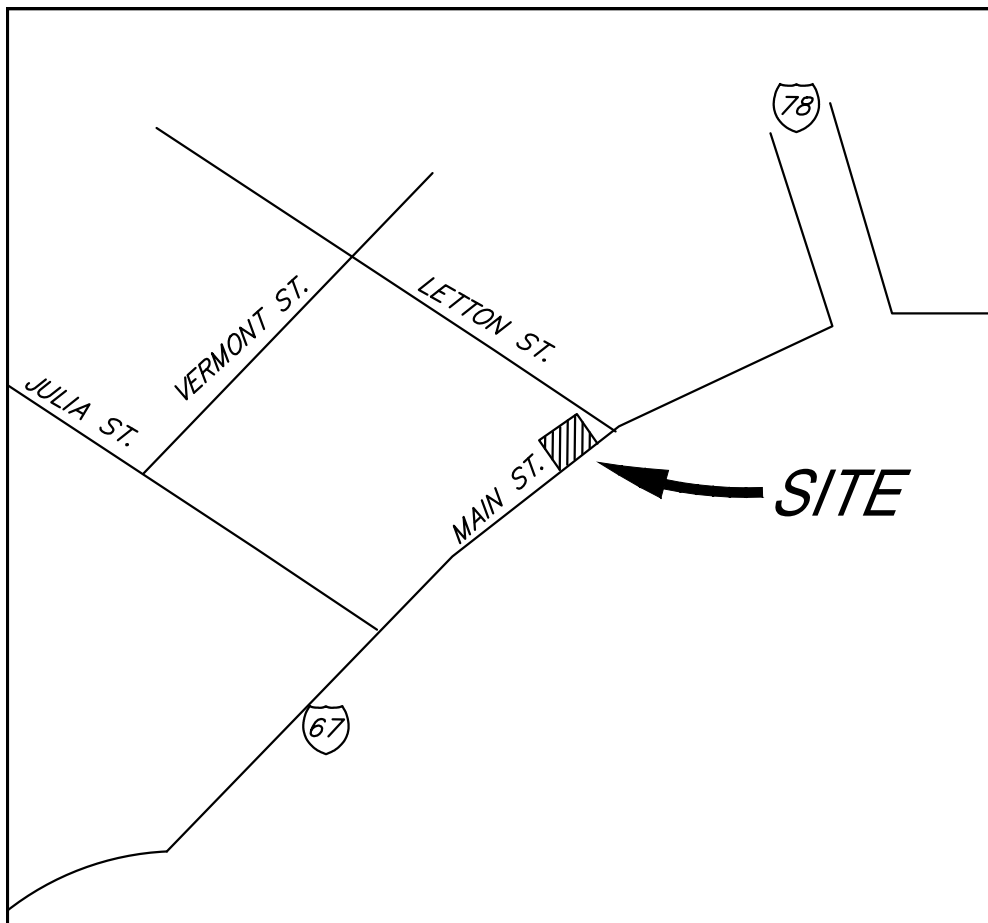
DMA Exhibit ID #:	Preliminary DMA/HMP Exhibit	
A. Features required for all exhibits		
1. Existing Site Features		
☒ Underlying hydrologic soil group (A, B, C, D)	☒ Topography and impervious areas	
☒ Approximate depth to groundwater	☒ Existing drainage network, directions, and offsite connections	
☐ Natural hydrologic features		
2. Drainage Management Area (DMA) Information		
☒ Proposed drainage network, directions, and offsite connections	☒ DMA boundaries, ID numbers, areas, and type (structural BMP, de minimis, etc.)	
3. Proposed Site Changes, Features, and BMPs		
☒ Proposed demolition and grading	☐ Construction BMPs ²	
☒ Group 1, 2, and 3 Features ¹	☒ Baseline source control BMPs	
☒ Group 4 Features	☒ Baseline source control BMPs	
B. Proposed Features and BMPs Specific to Individual SWQMP Attachments³		
☒ Attachment 6	☐ SSD-BMP impervious dispersion areas	
	☒ SSD-BMP tree wells	
☒ Attachment 7	☒ Structural pollutant control BMPs	
☒ Attachment 8	☒ Structural hydromodification management BMPs	
	☒ Point(s) of Compliance (POC) for hydromodification management	
	☒ Proposed drainage boundary and drainage area to each POC	
☒ Attachment 9	☐ Onsite CCSYAs	☐ Bypass of onsite CCSYAs
		☐ Bypass of upstream offsite CCSYAs

¹ Group 1-4 features and baseline BMPs from PDP SWQMP Tables 2 and 3.

² Minimum Construction Stormwater BMPs from PDP SWQMP Table 7.

³ Identify the location, ID numbers, type, and size/detail of BMPs.

PRELIMINARY DMA/HMP EXHIBIT
COLONNADE HOTEL
RAMONA, CA



VICINITY MAP
NOT TO SCALE

APPLICANT

STEVE POWELL
2428 MONTECITO ROAD
RAMONA, CA 92065
(760) 789-5493

CIVIL ENGINEER

PROJECTION ENGINEERING
1230 CEDAR STREET
RAMONA, CA 92065
(760) 443-6504

DMA PREPARER

TORY R. WALKER ENGINEERING, INC.
122 CIVIC CENTER DRIVE, STE. 206
VISTA, CA 92084
(760) 414-9212

EXHIBIT LEGEND AND SYMBOLOLOGY

	DRAINAGE MANAGEMENT AREA (DMA) BOUNDARY		CREATED/DISTURBED LANDSCAPE/PERVIOUS AREA
	SELF-RETAINING DMA BOUNDARY		CREATED/DISTURBED DECOMPOSED GRANITE AREA
	BMP FOOTPRINT		CREATED/DISTURBED CONCRETE/IMPERVIOUS AREA
	PROPOSED PRIVATE STORM DRAIN		CREATED/DISTURBED ROOF AREA
	EXISTING PUBLIC STORM DRAIN		SSD BMP TREE WELL
	EXISTING CONTOUR LINE		ROOF DOWNSPOUT
	SURFACE FLOW ARROW		POINT OF COMPLIANCE (POC)
	SUBSURFACE FLOW ARROW		GEOTECHNICAL BORING LOCATION

DMA SUMMARY TABLE

DMA ID	DMA Type	Area (Ac)	% Impervious	% Pervious	Associated BMP
DMA 1	Drains to BMP	2.74	90	10	BMP-1 (Proprietary Biofiltration) & BMP-2 (Underground Detention)
DMA 1A	Self-Retaining	0.02	100	0	BMP-1A (Tree Well)

GENERAL NOTES

- BMP TRIBUTARY AREA HAS BEEN CONSERVATIVELY ASSUMED TO BE 90% IMPERVIOUS
- PROJECT FOOTPRINT HAS BEEN CONSERVATIVELY ASSUMED TO BE EQUIVALENT TO THE CUMULATIVE PROPOSED CONDITION DMA BOUNDARIES
- EXISTING CONDITION HYDROMODIFICATION MANAGEMENT DRAINAGE BOUNDARY IS EQUIVALENT TO THE PROPOSED CONDITION DMA 1 BOUNDARY
- ALL PROPOSED LANDSCAPING HAS BEEN CONSERVATIVELY CLASSIFIED AS HYDROLOGIC SOIL GROUP TYPE "D"
- PARCEL WILL SUPPORT COMMERCIAL ACTIVITY
- BUILDING WILL BE USED EXCLUSIVELY AS A HOTEL
- DEPTH TO GROUNDWATER FROM FACILITY BOTTOM IS GREATER THAN SIX FEET BELOW EXISTING GROUND SURFACE
- THERE ARE NO NATURAL HYDROLOGIC FEATURES
- THE QUANTITY OF ROOF AREA SHOWN WITHIN DMA 1A IS CONCEPTUAL AND WILL BE QUANTIFIED IN GREATER DETAIL AT THE ENGINEERING PHASE

SITE DESIGN BMPs

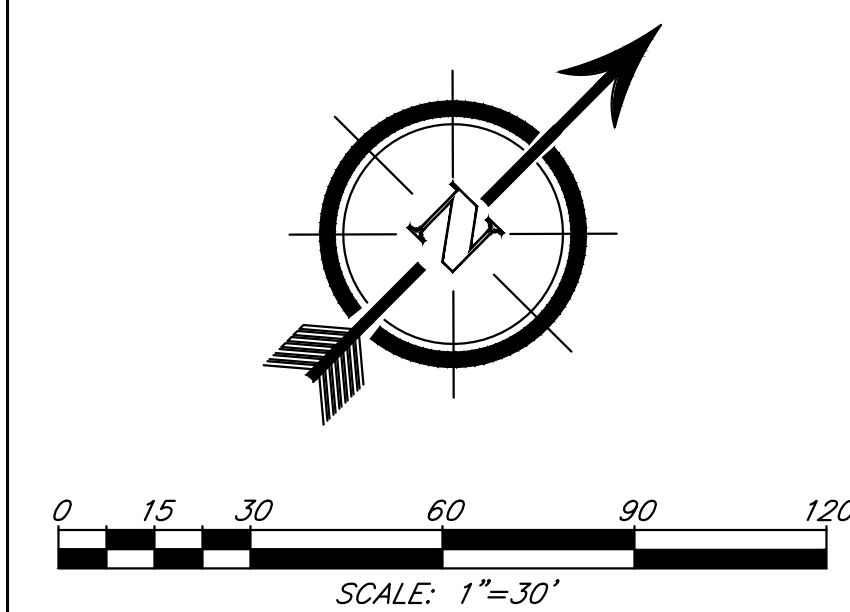
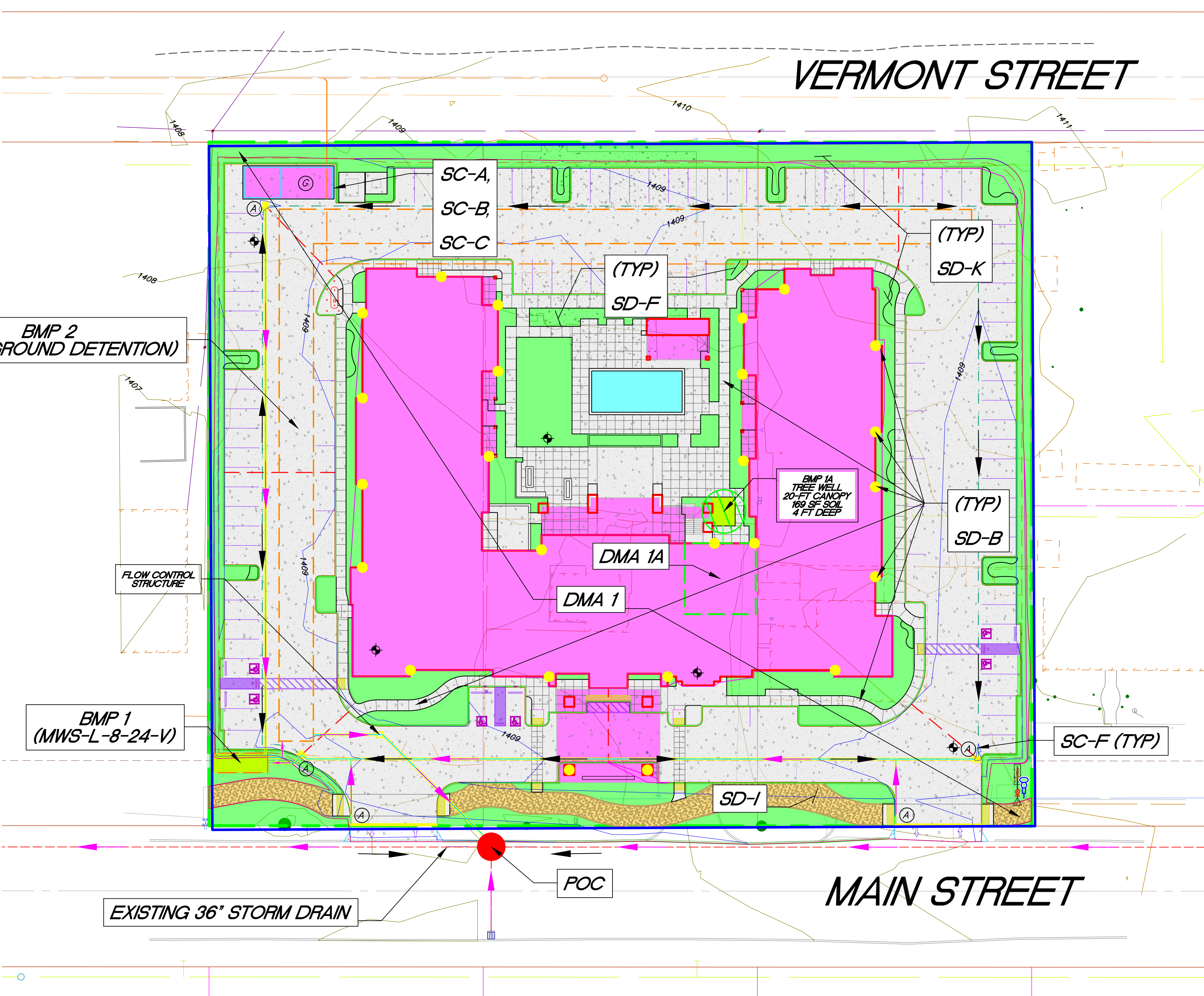
- BUILDING IS MULTIPLE STORIES HIGH, MINIMIZING AMOUNT OF IMPERVIOUS AREA, WHERE FEASIBLE (PARKING AREAS & LOTS, DRIVEWAYS)
- HARDSCAPE WILL DRAIN INTO ADJACENT PERVIOUS AREAS
- A PORTION OF SIDEWALKS & WALKWAYS WILL BE CONSTRUCTED FROM PERMEABLE MATERIALS
- LANDSCAPING FEATURES NATIVE AND DROUGHT-TOLERANT SPECIES
- ROOFTOP AND HARDSCAPE RUNOFF DISPERSED TO ADJACENT LANDSCAPE FEATURES
- A 20-FOOT DIAMETER SIGNIFICANT SITE DESIGN BMP IS PROPOSED TO PROVIDE THE REQUISITE ONSITE RETENTION VOLUME FOR THE PROJECT

SOURCE CONTROL BMP NOTES

- (A) LOCATION OF STORM DRAIN INLET
(G) REFUSE AREA

PERMANENT SOURCE CONTROL BMPs

- MARK ALL INLETS WITH THE WORDS "ONLY RAIN DOWN THE STORM DRAIN" OR SIMILAR
- REFUSE AREAS WILL BE COVERED, GRADED, AND PAVED TO PREVENT RUN-ON AND WIND DISPERSAL
- SITE REFUSE WILL BE HANDLED BY A PROFESSIONAL WASTE MANAGEMENT COMPANY
- ROOF DOWNSPOUTS SHALL BE POSITIONED TO DIRECT STORM WATER TO LANDSCAPED AREAS WHERE FEASIBLE
- DRAIN LINES MAY DISCHARGE TO LANDSCAPED AREAS IF THE FLOW IS SMALL ENOUGH THAT RUNOFF WILL NOT OCCUR
- DRAIN LINES MAY NOT DISCHARGE TO THE OFFSITE STORM DRAIN SYSTEM
- AVOID ROOFING, GUTTERS, AND TRIM MADE OF COPPER OR OTHER UNPROTECTED METALS THAT MAY LEACH INTO RUNOFF
- INTERIOR WORK SURFACES, FLOOR DRAINS, & SUMPS MAY NOT DISCHARGE TO THE OFFSITE STORM DRAIN SYSTEM

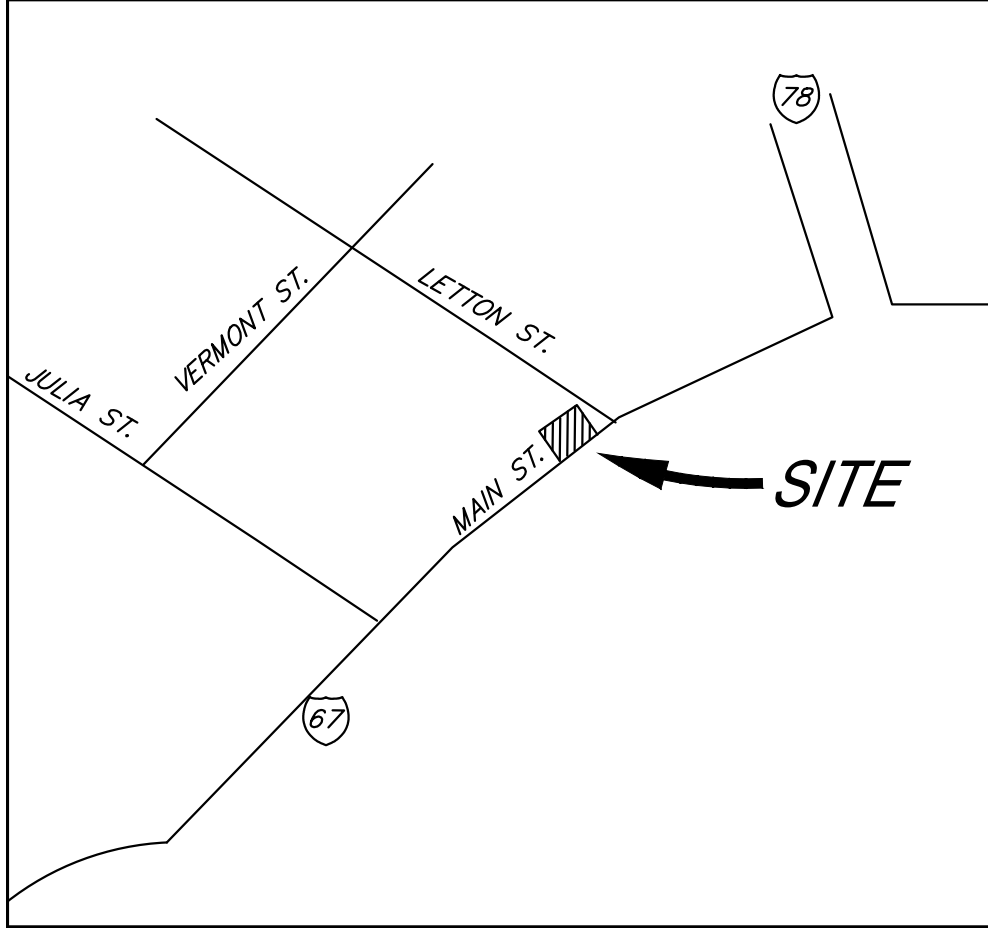


RAMONA, CA

PRELIMINARY DMA/HMP EXHIBIT
COLONNADE HOTEL

1
OF
2
SHEETS

PRE-PROJECT HMP EXHIBIT
COLONNADE HOTEL
RAMONA, CA



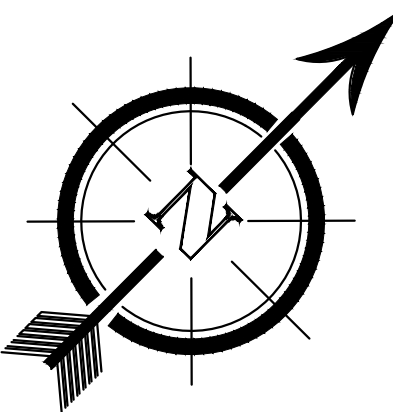
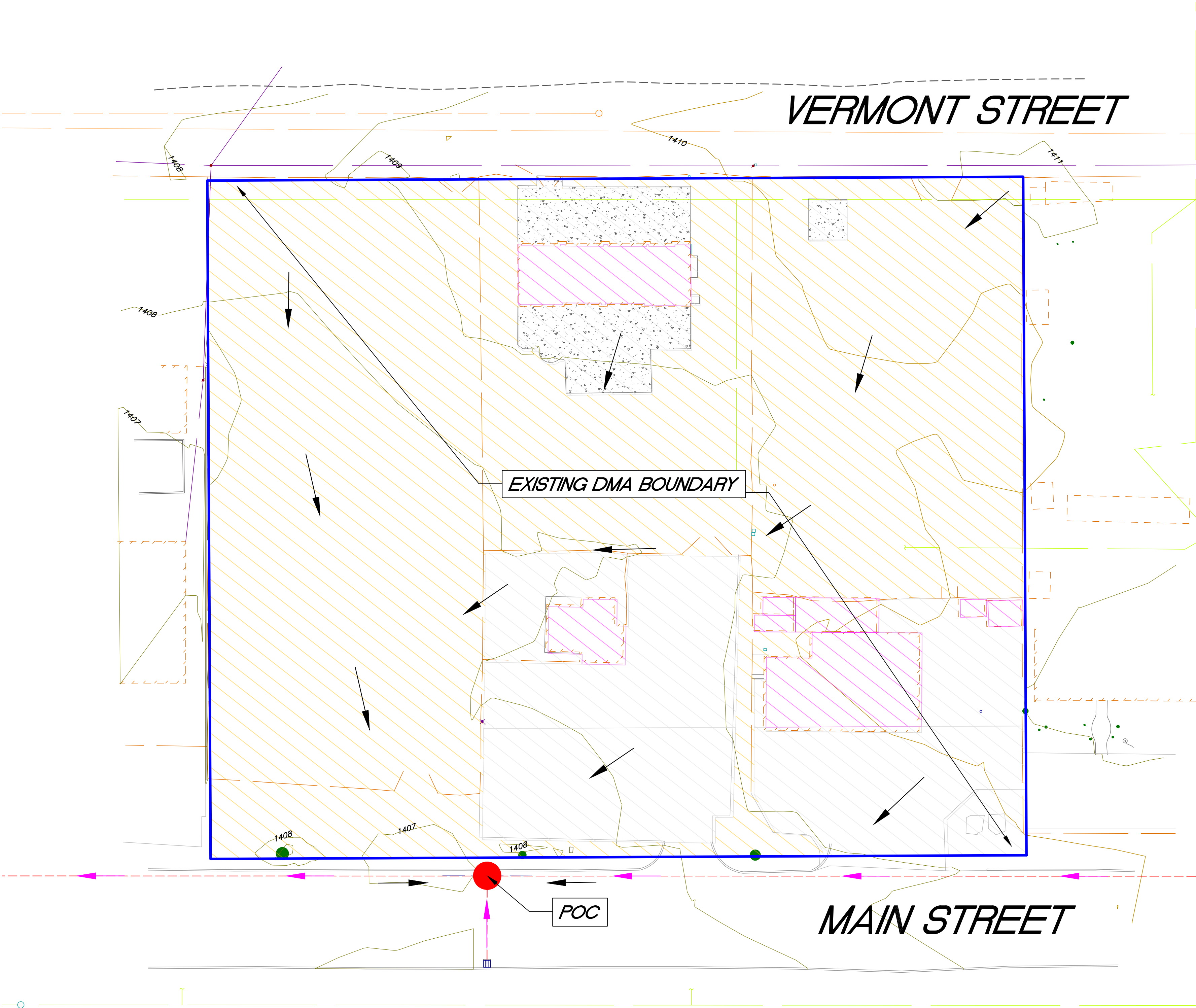
VICINITY MAP
NOT TO SCALE

EXHIBIT LEGEND AND SYMBOLOGY

	DRAINAGE MANAGEMENT AREA (DMA) BOUNDARY		EXISTING COMPACTED DIRT AREA
	EXISTING PUBLIC STORM DRAIN		EXISTING CONCRETE/IMPERVIOUS AREA
	EXISTING CONTOUR LINE		EXISTING ROOFTOP/STRUCTURE AREA
	SURFACE FLOW ARROW		POINT OF COMPLIANCE (POC)
	SUBSURFACE FLOW ARROW		

GENERAL NOTES

1. EXISTING DRAINAGE AREA HAS BEEN CONSERVATIVELY ASSUMED TO BE 0% IMPERVIOUS



RAMONA, CA

PRE-PROJECT HMP EXHIBIT
COLONNADE HOTEL

2
OF
2
SHEETS

2.2 Individual Structural BMP DMA Mapbook

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

☐	<u>All Mapbooks are attached</u>
☐	<u>All Mapbooks are in Attachment 11</u>

**STRUCTURAL BMP DMA MAPBOOK
TO BE PROVIDED WITH FINAL
SWQMP AT ENGINEERING PHASE**

2.3 Construction Plan Sets

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

Plan Type	Preliminary Grading Plan
Required Information⁴	
☒ Structural BMP(s) and Significant Site Design BMPs (if applicable) with ID numbers. ☒ The grading and drainage design shown on the plans must be consistent with the delineation of DMAs shown on the DMA exhibit. ☒ Details and specifications for construction of Structural BMP(s) and Significant Site Design BMPs (if applicable). ☐ Signage indicating the location and boundary of structural BMP(s) as required by County staff. ☐ How to access the structural BMP(s) to inspect and perform maintenance. ☐ Features that are provided to facilitate inspection (e.g., observation ports, cleanouts, silt posts, or other features that allow the inspector to view necessary components of the structural BMP and compare to maintenance thresholds). ☐ Maintenance thresholds specific to the structural BMP(s), with a location-specific frame of reference (e.g., level of accumulated materials that triggers removal of the materials, to be identified based on viewing marks on silt posts or measured with a survey rod with respect to a fixed benchmark within the BMP). ☐ 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 (if available) 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 manufacturer model number must be provided. Photocopies of general brochures are not acceptable. ☐ Include all source control and site design measures described in the SWQMP. ☐ Include all construction BMPs described in the SWQMP.	

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

The preliminary grading plan provides supporting structural BMP information with the intended purpose of demonstrating the feasibility of the proposed stormwater and drainage facility concept. Complete design-level details will be provided on the precise grading plan at the engineering phase.

WORK TO BE DONE

GRADING AND DRAINAGE WORK CONSIST OF THE FOLLOWING WORK TO BE DONE ACCORDING TO THESE PLANS, THE CURRENT SAN DIEGO AREA REGIONAL STANDARD DRAWINGS AND THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, AND PER SAN DIEGO COUNTY GRADING ORDINANCE.

APPLICANT

STEVE POWELL
WOODCREST REV
2428 MONTECITO ROAD
RAMONA, CA 92065
PHONE: 760-789-5493
EMAIL: STEVE@WOODCRESTREV.COM

CIVIL ENGINEER

PAUL FISHER, PE
PROJECTION ENGINEERING, INC.
1230 CEDAR STREET
RAMONA, CA 92065
PHONE: 760-443-6504

LEGAL DESCRIPTION

LOTS 17, 18, AND 19 TOWN OF RAMONA, IN THE COUNTY OF SAN DIEGO, STATE OF CALIFORNIA, ACCORDING TO MAP THEREOF NO. 372, FILED IN THE OFFICE OF THE COUNTY RECORDER, 282-141-32, 33, & 34 (SAN DIEGO COUNTY)

SOURCE OF TOPOGRAPHY & MAPPING

TOPOGRAPHIC AND MAPPING DATA SHOWN HEREON WAS OBTAINED THROUGH A PRECISE FIELD SURVEY BY KIER + WRIGHT CONDUCTED APRIL, 2023

EARTHWORK QUANTITIES

EXCAVATION/CUT: 3,000 CY
EMBANKMENT/FILL: 1,900 CY
IMPORT/EXPORT: 1,100 CY

PRELIMINARY GRADING NOTE

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

DISTURBED AREA CALCS

PAD + SLOPES: 72,175 SF
DRIVEWAY: 47,125 SF
PRIMARY SEPTIC: 0 SF
FIRE CLEARING: 0 SF
TOTAL: 119,300 SF
IF ≥ 1 AC. PROVIDE WIDTH IN FINAL ENGINEERING: 2.74 AC. > 1.0 AC.
ALL REQUIRED FIRE CLEARING WILL NOT CREATE A LAND DISTURBANCE ACTIVITY AS DEFINED BY COUNTY CODE."

GRADING LEGEND

ITEM	SYMBOL	ITEM	SYMBOL
CUT SLOPE:		CUT/FILL LINE:	
FILL SLOPE:		PROPERTY LINE:	
WATERCOURSE:		EASEMENT LINE:	
EXISTING CONTOUR:		RETAINING WALL:	
PROPOSED CONTOUR:		FUEL MODIFICATION ZONE:	
STORM DRAIN:			

STORMWATER IMPERVIOUS AREA PLAN

CONSTRUCTED IMPERVIOUS SURFACE AREA TABLE

SITE ID	IMPERVIOUS ITEM	DIMENSIONS	NEW OR REPLACED AREA (SF)	EXISTING AREA (SF)
1	ROOF AREA	---	(N) 29,973	0
2	PCC CONCRETE	---	(N) 59,312	0
TOTALS =			(N) 89,285 SF	0

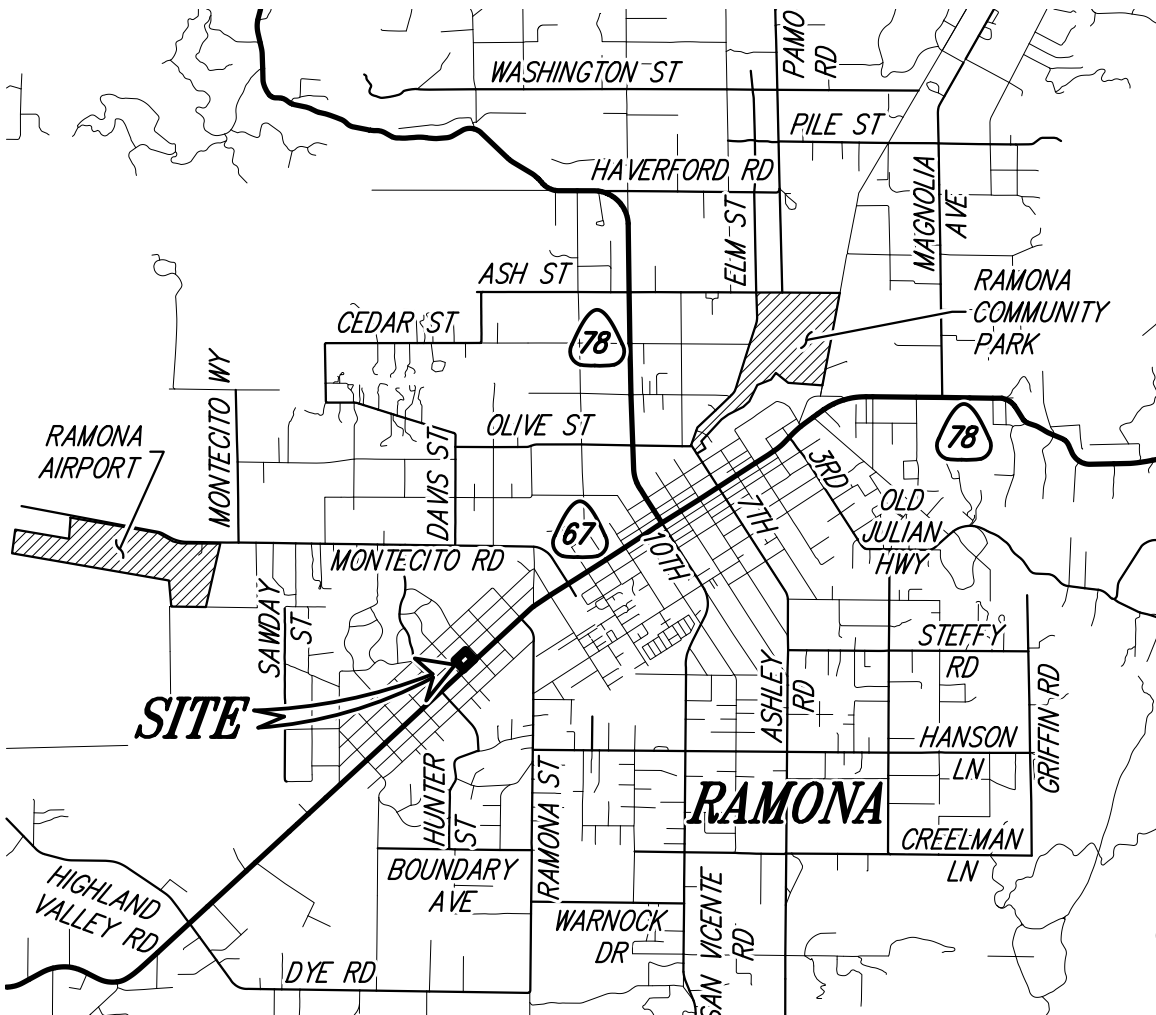
* NOTE: A CONSERVATIVE 90% IMPERVIOUS AREA ASSUMPTION HAS BEEN MADE FOR PRELIMINARY DESIGN PURPOSES PER SWAMP & DRAINAGE STUDY.

CONSTRUCTED PERVIOUS SURFACE AREA TABLE

SITE ID	IMPERVIOUS ITEM	DIMENSIONS	NEW OR REPLACED AREA (SF)	EXISTING AREA (SF)
3	LANDSCAPING	---	(N) 30,015	0
TOTALS =			(N) 30,015 SF	0

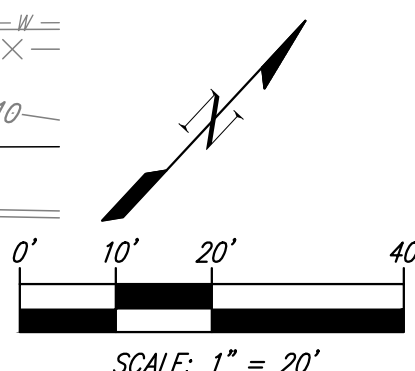
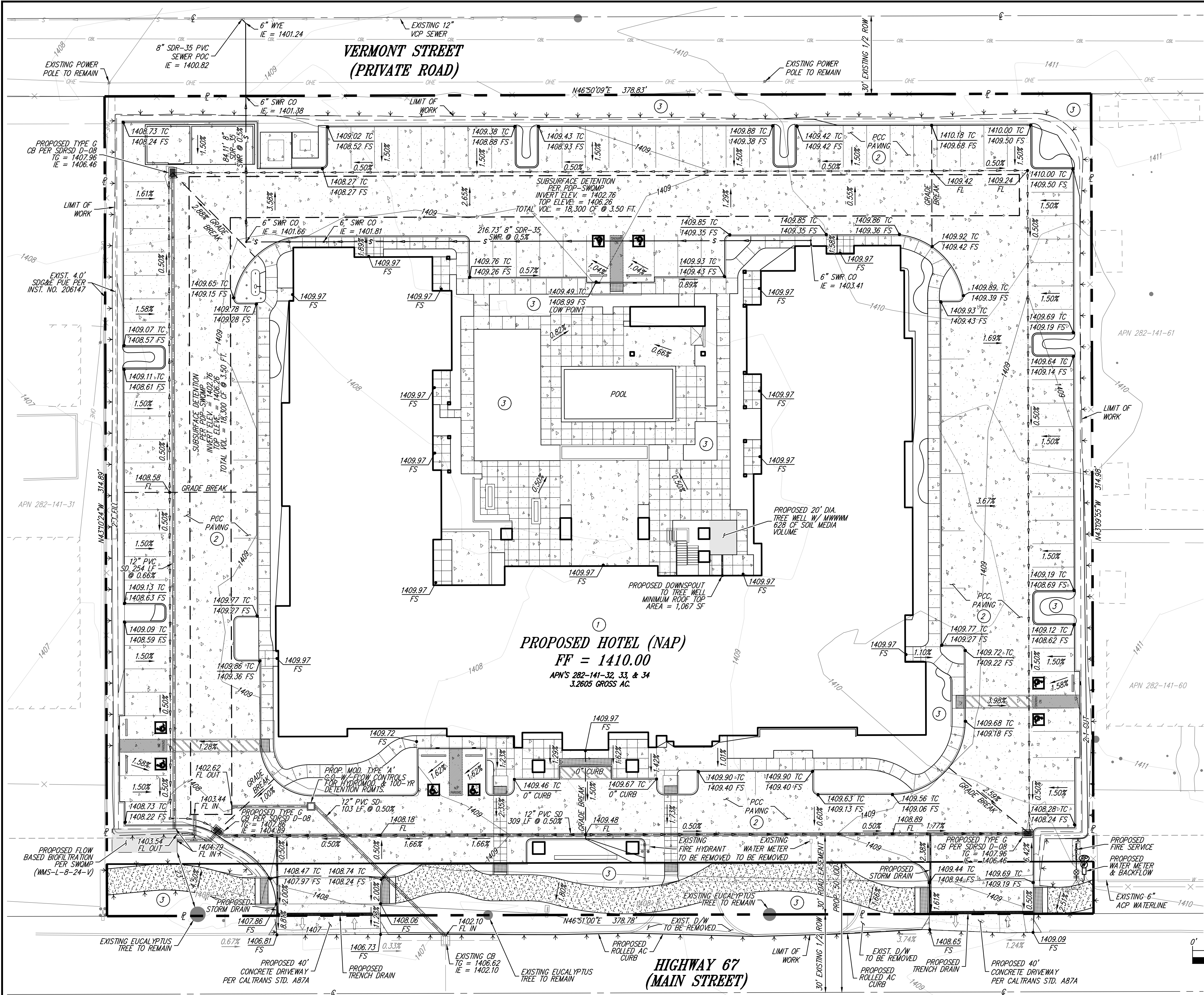
DEMOLITION NOTE

THE CURRENT PARCELS CONTAIN EXISTING STRUCTURES AND MISCELLANEOUS HARDSCAPE. ALL CURRENT SITE SURFACE IMPROVEMENTS AND STRUCTURES WILL BE DEMOLISHED AND REMOVED DURING THE DEVELOPMENT OF THIS PROJECT.



VICINITY MAP

SCALE: 1" = 5,000'



OWNER'S / PERMITTEE'S

NAME: PROGRESSIVE PROPERTIES, INC.
ADDRESS: 850 MAIN STREET, SUITE 200
RAMONA, CA 92065
TELEPHONE NO: 760-788-6710
SHORT LEGAL DESCRIPTION: LOTS 17, 18, AND 19 TOWN OF RAMONA, IN THE COUNTY OF SAN DIEGO, STATE OF CALIFORNIA, ACCORDING TO MAP THEREOF NO. 372, FILED IN THE OFFICE OF THE COUNTY RECORDER, 282-141-32, 33, & 34 (SAN DIEGO COUNTY)
A.P.N. NO: 282-141-32, 33, & 34 (SAN DIEGO COUNTY)
SITE ADDRESS: 2037 MAIN STREET, RAMONA, CA 92065

FIRE DEPARTMENT APPROVAL

FIRE DEPT. / DISTRICT: _____
APPROVED BY: _____
DATE: _____

DECLARATION OF RESPONSIBLE CHARGE

I HEREBY DECLARE THAT I AM THE ENGINEER OF WORK FOR THIS PROJECT, THAT I HAVE EXERCISED RESPONSIBLE CHARGE OVER THE DESIGN OF THE PROJECT AS DEFINED IN SECTION 6103 OF THE BUSINESS AND PROFESSIONS CODE, AND THAT THE DESIGN IS CONSISTENT WITH CURRENT STANDARDS.
I UNDERSTAND THAT THE CHECK OF PROJECT DRAWINGS AND SPECIFICATIONS BY THE COUNTY OF SAN DIEGO IS CONFINED TO REVIEW ONLY AND DOES NOT RELIEVE ME, AS ENGINEER OF WORK, OF MY RESPONSIBILITIES FOR PROJECT DESIGN
BY: PAUL E. FISHER, PE DATE: 8/30/2024
RCE NO: 71549 EXPIRES: 12-31-23

PDS ENVIRONMENTAL REVIEW

APPROVED FOR COMPLIANCE WITH THE ENVIRONMENTAL REVIEW.
APPROVED BY: _____
DATE: _____

NOTICE: THE ISSUANCE OF THIS PERMIT/APPROVAL BY THE COUNTY OF SAN DIEGO DOES NOT AUTHORIZE THE APPLICANT FOR SAID PERMIT/APPROVAL TO VIOLATE ANY FEDERAL, STATE, OR COUNTY LAWS, ORDINANCES, REGULATIONS, OR POLICIES INCLUDING, BUT NOT LIMITED TO, THE FEDERAL ENDANGERED SPECIES ACT AND ANY AMENDMENTS THERETO.

COUNTY APPROVED CHANGES

NO.	DESCRIPTION:	APPROVED BY:	DATE:

PERMITS

LANDSCAPE PERMIT NO. PROCESSED WITH BUILDING PERMIT
WQID/NOI NO. TBD IN FINAL ENG. SWPPP RISK LEVEL N/A
SITE PLAN NO. STP 23-0XX
IMPROVEMENT PLAN NO. N/A
BENCH MARK
DESCRIPTION: BEING A BRASS DISC, STAMPED RA 154 1970
LOCATION: SET IN THE TOP CENTER OF A 30 FOOT BY 12 INCH WIDE HEADWALL OF DOUBLE 8 FOOT BOX CULVERT.
RECORD FROM: PER SAN DIEGO COUNTY OF RAMONA SURVEY CONTROL NETWORK POINT NO. R 154
ELEVATION: 1377.025' DATUM: NAVD88

PRIVATE CONTRACT

SHEET 1 COUNTY OF SAN DIEGO DEPARTMENT OF PUBLIC WORKS 1 SHEET
PRELIMINARY GRADING PLAN FOR:
2037 MAIN STREET
RAMONA, CA 92065
CALIFORNIA COORDINATE INDEX 314-1803
APPROVED FOR WILLIAM P. MORGAN, COUNTY ENGINEER ENGINEER OF WORK R.E. 71549
BY: _____ DATE: _____ GRADING PERMIT NO: N/A

PROJECTION ENGINEERING, INC.
MOBILE: 760-443-6504
EMAIL: paulfisher@projectionengineering.com



Vicinity Map

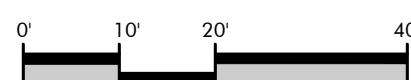
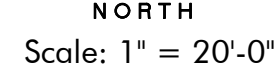
Not to scale

Landscape Concept

The landscape design concept for the Ramona Boutique Hotel is to provide an enjoyable and aesthetic space for guests and employees that fits within the landscape framework of the existing neighborhood and the surrounding area, as well as the requirements of the County. Plant material has been selected that performs well in the special conditions of eastern San Diego County (Sunset Zone #20).

High water use areas are limited to special use landscape areas. Low and medium water use hardy trees, shrubs and groundcover are proposed for the landscape around the site. The landscape (and associated irrigation) has been designed to be compliant with San Diego County's Water Efficient Landscape Ordinance (WEL0).

Special considerations have been provided in selection of plant material that respect the needs of the facility as well as the customers. Clear and secure view corridors have been provided to ensure safety of the customers entering and moving around the site.



Preliminary Planting Palette

Trees

Spreading Focal-Point Trees - 24" box min.

- Cercidium 'Desert Museum
- Geijera parviflora
- Olea europaea 'Fruitless'
- Schinus molle

Parking Lot Shade Trees - 24" box min.

- Pistacia chinensis 'Keith Davey'
- Platanus x acerfolia
- Quercus cocinea
- Ulmus parvifolia

Perimeter Screen Trees - 24" box min.

- Laurus nobilis 'Saratoga'
- Magnolia grandiflora 'Sam Somers'
- Podocarpus gracilior
- Quercus wislizenii
- Tristanopsis laurina

Small Accent Trees - 24" box min.

- Chilopsis linearis 'Art's Seedless'
- Lagerstroemia indica
- Magnolia soulangiana
- Malus 'Prairie Fire'

Upright Accent Trees - 24" box min.

- Brachychiton populneus
- Hymenosporum flavum
- Lophostemon confertus
- Quercus robur x alba 'Skinny Genes'

Conifer Screen Trees - 24" box min.

- Cedrus deodara
- Pinus canariensis
- Thuja plicata 'Spring Grove'

Shrubs

Screen / Buffer Perimeter Shrubs - 5 gal.

- Echium candicans
- Lantana hybridus 'Radiation'
- Leonotis leonurus
- Leucadendron 'Safari Sunset'
- Leucophyllum frutescens 'Green Cloud'
- Rhamnus alternus 'John Edwards'

Hedges - 5 gal.

- Ligustrum japonicum 'Texanum'
- Myrtus communis 'Compacta'
- Olea europaea 'Little Ollie'
- Raphiolepis umbellata 'Minor'

Narrow Upright Shrubs - Architectural - 5 gal.

- Cupressus sempervirens 'Totem'
- Dodonaea viscosa
- Euonymus japonicus 'Green Spire'
- Thuja occidentalis 'Emerald'

Middle-Ground In-fill Planting - 5 gal.

- Callistemon viminalis 'Better John'
- Eremophila maculata 'Valetine'
- Lantana hybridus 'Gold Rush'
- Raphiolepis indica 'Ballarina'

Flowering and Accent Plants - 1 and 5 gal.

- Agave weberi
- Anigozanthos hybridus 'Bush Ranger'
- Chondropetalum tectorum
- Dasyliroa wheeleri
- Euphorbia species
- Kniphofia uvaria 'Flamenco'
- Phormium spp.

Small Accent Plants - 1 an 5 gal.

- Agave 'Blue Glow'
- Dianella variegata
- Lantana montevidensis
- Lomandra confertifolius 'Olive Green'
- Mulenbergia dubia
- Salvia spp.

Groundcovers

Low Accent Plants - 1 gal.

- Achillea millefolium 'Paprika'
- Antennaria dioica
- Baccharis pilularis 'Twin Peaks II'
- Carrisa macrocarpa
- Euphorbia species
- Senecio mandraliscae
- Teucrium cossonii majoricum

Spreading Infill Groundcover - 1 and 5 gal.

- Baccharis pilularis 'Twin Peaks II'
- Carrisa macrocarpa
- Ceanothus griseus horizontalis
- Cistus pulverulentus 'Sunset'
- Eremophila glabra 'Murchison River'

Spreading Low Groundcovers - 1 gal

- Arctostaphylos 'Emerald Carpet'
- Evergreen Euonymus
- Grevillea lanigera 'Coastal Gem'
- Juniperus sabina 'Moor-Dense'
- Lampranthus spectabilis
- Trachelospermum asiaticum
- Westringia 'Low Horizon'

Special Planting Zone - 1 and 5 gal

This zone is for focal point garden location and is comprised of a curated blend of special plant species for high visual impact. These areas are envisioned as blends of Agave, Aloe, succulents, ice plants, Sedums, etc., in a mixing to create a tapestry of form, color, and texture.

Grasses and Grass-Like Plantings - 1 and 5 gal

- Carex tumulicola
- Deschampsia cespitosa
- Dianella revoluta 'Little Rev'
- Festuca idahoensis
- Hesperaloe parviflora 'Brakelights'
- Juncus patens
- Lomandra confertifolius 'Olive Green'
- Muhlenbergia capillaris

Natural Lawn - sod

- Tifgreen hybrid bermuda sodded lawn.

Note - Lawn may be substituted with synthetic lawn such as SynLawn (www.synlawn.com) SynAugustine X47 or approved equal

Yarrow

Red Apple

Desert Marigold

Ice Plant

Spurge

Blue Chalk Sticks

Germander

Coyote Bush

Natal Plum

Carmel Creeper

Sunset Rockrose

Common Emu Bush

Trailing Manzanita

Bearberry

Woolly Grevillea

Juniper

Trailing Ice Plant

Asian Jasmine

Prostrate Coast Rosemary

Foothill Sedge

Tufted hairgrass

Little Rev Flax Lily

Idaho Fescue

Red Yucca

California Gray Rush

Mat Rush

Pink Muhly

Misc. Landscape Materials

All shrub and groundcover areas shall be top-dressed with a 3" layer of mulch derived from recycled wood chips or arbor chips from tree trimming. Mulch shall be 2" minus in length and not greater than 3/8" in thickness, and shall be dark brown in color. Contractor shall provide sample for approval prior to installation. Shredded redwood or cedar bark ("Gorilla-Hair") is not acceptable.

This plan represents the design style and theme of the landscape design and planting. These plants are preliminary and may change through the design process. The final planting plan may not contain all of the above plants in the sizes as shown. Additionally some new plant species may be used in the final design. This plan does however indicate the quantity of trees and the overall level of landscape development that will be carried through with the final design.

WELO Water Use Calculations

The following calculations represent the intended hydrozones and water usage as designed with this Preliminary Landscape Plan. As we move through the design process we anticipate minor adjustments/revisions of these calculations. However, compliance with WELO code requirements will always remain.

ETO for Ramona 51.6		Water Use	Plant Factor	Hydrozone Area	%	Type of Irrigation	Irrigation Efficiency	ETHL
Hydrozone	Type of Plants							
1	Lawn	High	0.7	1,447 sf	5.5%	MP Rotator	.75	43206.26
2	Shrubs	Medium	0.4	3,350 sf	12.7%	Bubblers/Drip	.81	52925.04
3	Shrubs	Low	0.3	15,262 sf	57.9%	Bubblers/Drip	.81	180837.74
4	Euc. Duff	None	0	4,783 sf	18.2%	None	1	0
5	Cobble/Aggregate	None	0	1,495 sf	5.7%	None	1	0
TOTAL				26,337 sf				276,969.04 Gallons
Maximum Applied Water Allowance (MAWA)			379,158 gallon/year					
Estimated Total Water Usage (ETWU)			276,969 gallon/year					
Average Irrigation Efficiency			.80					
ETWU is less than MAWA, therefore water usage as designed exceeds code requirements								

Irrigation

The irrigation design for the project will be designed to be in compliance with the County's Water Efficient Landscape Ordinance (WELO). The entire site will be irrigated using a fully automatic system. The irrigation system will be predominately low volume emission devices such as drip or bubbler with the possibility of some use of pop-up rotary nozzles at storm water filtration planting and in the small recreation lawns. The system will include in-line valves, quick couplers, and gate valves, as well as backflow prevention to meet all local and CBC codes. The automatic controller will be a "smart" controller to meet WELO and will include a weather sensor.

Tree Root Barriers

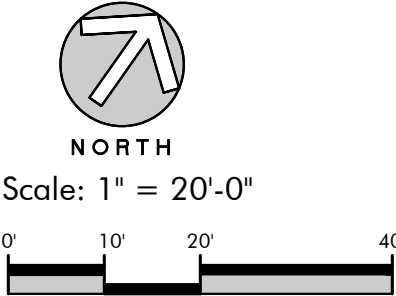
All trees within 5' of curbs or sidewalk paving shall have DeepRoot Model #UB 18-2 root barriers installed during tree installation.

Landscape Maintenance

The maintenance of all landscape as shown on these plans and inclusive of landscape on the private property of this project as well as the off-site land within the adjoining public right-of-way are to be maintained in perpetuity by the private property land-owner. Maintenance is inclusive of all typical site and landscape maintenance such as irrigation repairs, weeding, pruning, clean-up, replacement of damaged items, and on-going upgrades as needed to keep the property and project in a quality and aesthetically pleasing manner and per County and community codes and expectations.

Landscape Areas

Lawn Area	1,447 sf	6.7%
Shrub and Groundcover Area	16,796 sf	78.0%
Eucalyptus Duff	1,258 sf	6.8%
Cobble / Aggregate	1,844 sf	8.6%
Total Landscape Area	21,545 sf	100%
Size of Parcel	119,300 sf	(2.74 acres)
Percentage of Site in Landscape	18.1%	
Plus:		
Off-Site Eucalyptus Duff - Hwy 67	3,273 sf	
Percent of Site in Landscape with Off-Site	20.8%	



RAMONA BOUTIQUE HOTEL

WOODCREST REAL ESTATE VENTURES

PRELIMINARY PLANTING PLAN

RAMONA, CA

LO.2

SITE PLAN SUBMITTAL
SITE RESPONSE #2
Project No. 23104 / KLA 23-2498



Proposed Trees



Agonis flexuosa



Koelreuteria bipinnata



Lophostemon confertus



Pistacia chinensis 'Keith Davey'



Quercus agrifolia



Hymenosporum flavum



Lagerstroemia indica 'Muskogee'



Magnolia grandiflora 'Little Gem'



Platanus racemosa



Schinus molle

Proposed Shrubs



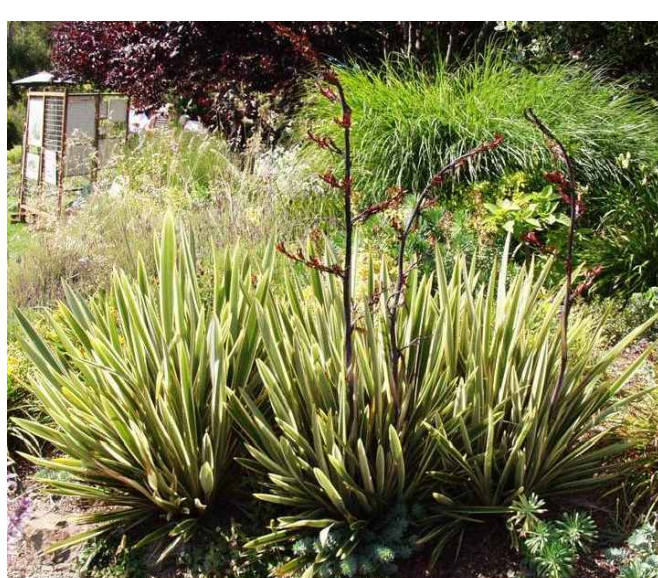
Anigozanthos hybridus 'Bush Ranger'



Ceanothus 'Julia Phelps'



Lantana camara 'Radiation'



Phormium 'Tony Tiger'



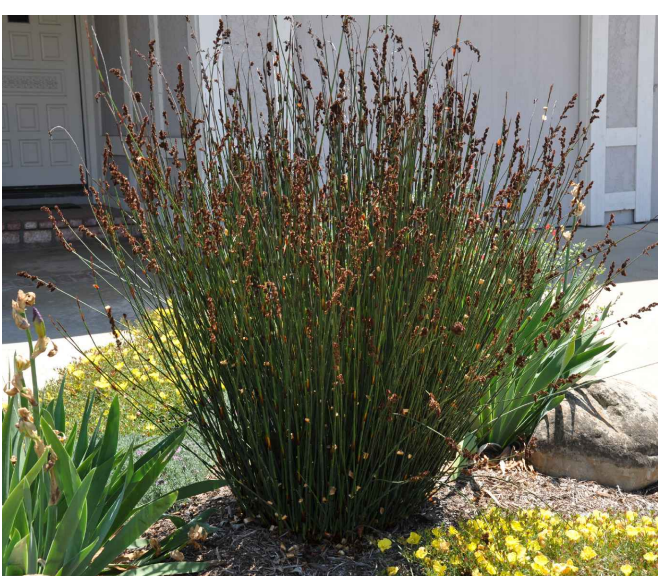
Salvia greggii



Clematis armandii



Arctostaphylos densiflora 'Howard McMinn'



Chondropetalum tectorum



Leucophyllum frutescens 'Green Cloud'



Rhamnus alternus 'John Edwards'



Jasminum polyanthum



Callistemon viminalis 'Better John'



Hesperaloe parvifolia 'Brakelights'



Olea europea 'Little Ollie'



Rosmarinus officinalis 'Miss Jessup Upright'



Bougainvillea 'San Diego Red'

Proposed Groundcovers



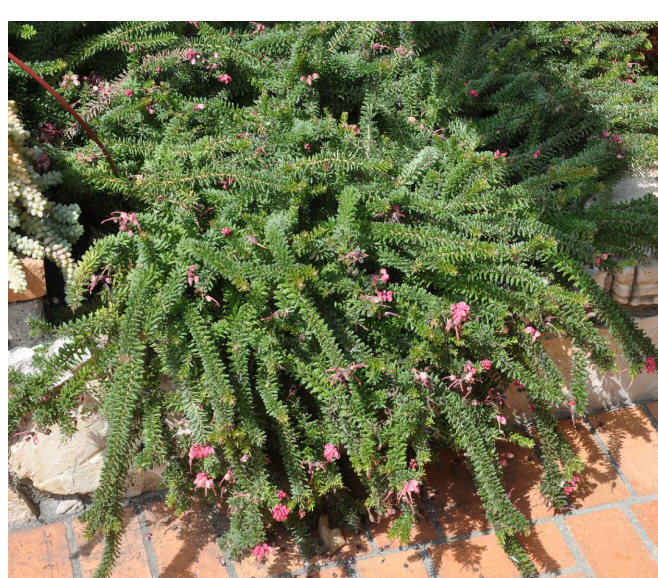
Acacia redolens 'Low Boy'



Bulbine frutescens



Dianella revoluta 'Variegata'



Grevillea lanigera 'Coastal Gem'



Juniperus conferta



Muhlenbergia dubia



Baccharis pilularis 'Twin Peaks'



Calamagrostis acutiflora 'Karl Foerster'



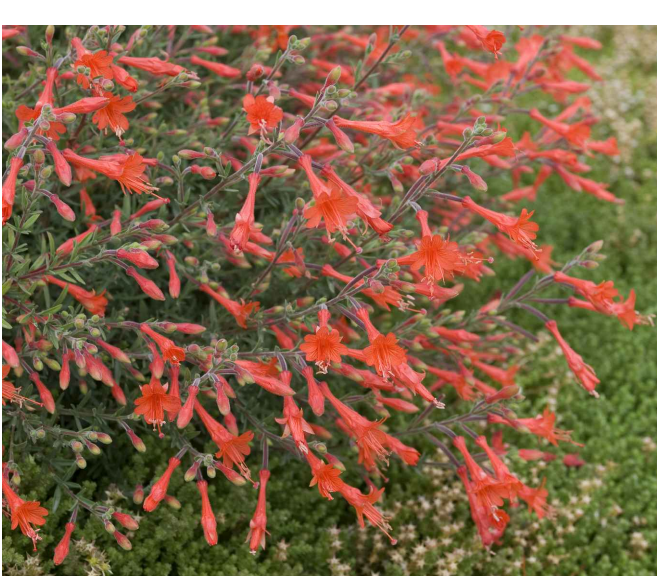
Festuca mairei



Hemerocallis hybridus 'Evergreen Yellow'



Lomandra longifolia 'Breeze'



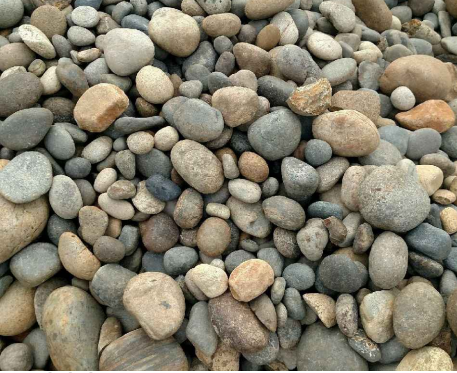
Zauschneria californica 'Route 66'

Non-Living Groundcover

Cobble, Decomposed Granite (DG), etc. designed with the landscape planting to lessen the amount of irrigated landscape while keep a high-level aesthetic.

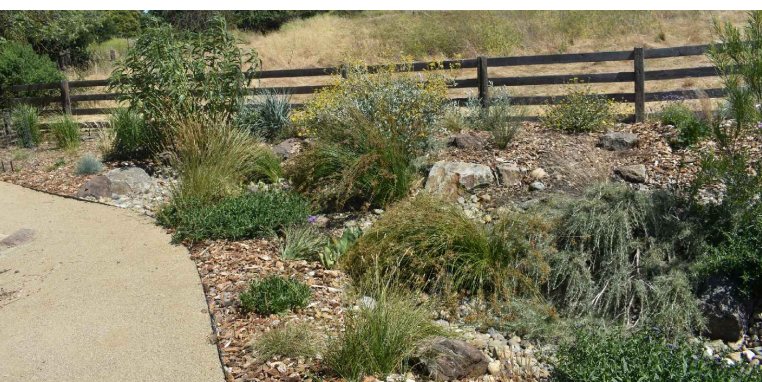
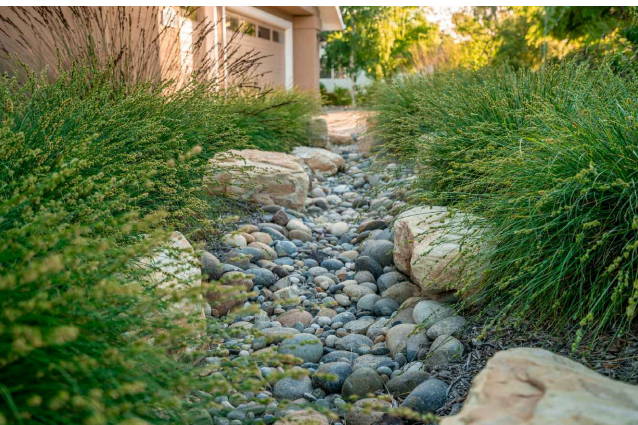


Tan/Gold DG



Cobble

Conceptual Landscape Images



Lawn



Tifgreen Bermuda

The Preliminary Plant Palette represents a sampling of the types of trees, shrubs, groundcovers, and vines that we anticipate to be appropriate for the location as well as the design style and overall theme. This is the list from which plant selection will be drawn from. Not all plants listed within this plant palette will be used in the final design and some plants not listed may be introduced. However, the planting design intent will remain consistent with this plan and plant palette.



County of San Diego
Stormwater Quality Management Plan (SWQMP)
Attachment 5: Site and Drainage Description

5.0 General Requirements

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

☒ **Yes**

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

Title: Preliminary Drainage Report – Colonnade Hotel

Prepared By: Tory R. Walker Engineering (TRWE)

Date: 12/2/2025

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

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



County of San Diego
Stormwater Quality Management Plan (SWQMP)
Attachment 6: Documentation of DMAs without Structural BMPs

6.0 General Requirements

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

DMA Compliance Option	Required Sub-attachments or Printouts	BMPDM Design Resources
☐ Self-mitigating	Sub-attachment 6.1	BMPDM Section 5.2.1
☐ De minimis	Sub-attachment 6.2	BMPDM Section 5.2.2
☒ Self-retaining ¹ <u>SSD-BMP Type(s)</u> ☐ Impervious Area Dispersion ☒ Tree Wells	- Sub-attachment 6.3 - DCV calculations from SSD-BMP tool - Dispersion Areas calculations from SSD-BMP tool - DCV calculations from SSD-BMP tool - Tree Well calculations from SSD-BMP tool	- BMPDM Section 5.2.3 (all options) - Fact Sheet SD-B (Appendix E.8) - Appendix I - Fact Sheet SD-A (Appendix E.7) - Appendix I

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

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

6.3 Self-retaining DMAs using Significant Site Design BMPs

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

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

DMA #	DMA Area (ft ²)	BMP Type (choose one per DMA)		Permit # and Sheet #
		Dispersion Area (Att. 6.3.1)	Tree Wells (Att. 6.3.2)	
1A	1,087	☐	☒	PDS2023-STP-23-021 Preliminary Grading Plan, Sheet 1 Conceptual Landscape Plan, Sheet L0.1 Preliminary Planting Plan, Sheet L0.2
		☐	☐	
		☐	☐	
		☐	☐	
		☐	☐	
		☐	☐	
		☐	☐	
		☐	☐	
		☐	☐	
		☐	☐	
		☐	☐	
		☐	☐	
		☐	☐	
		☐	☐	
		☐	☐	
		☐	☐	

Copy and Paste table here for additional DMAs

- “DMA #”, “DMA Area”, and “Permit # and Sheet #” are required.
- Select one BMP Type per DMA. Provide detailed documentation for each DMA in Attachments 6.3.1 (Impervious Dispersion Areas) and/or 6.3.2 (Tree Wells) below.
- Each self-retaining DMA must fully satisfy all design requirements and restrictions described in BMPDM Section 5.2.3, applicable BMPDM Appendix E Fact Sheets, BMPDM Appendix I, and any other guidance or instruction identified by the County.

6.3.2 Self-retaining DMAs with Tree Wells

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

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

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

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

Summary Sheet for Self-retaining DMAs with Tree Wells

Attach Printouts from SSD-BMP tool below

- DCV calculations from SSD-BMP tool
- Tree Wells calculations from SSD-BMP tool

SSD-BMP Automated Worksheet I-1: Step 1. Calculation of Design Capture Volume (V1.0)

Category	#	Description	i	ii	iii	iv	v	vi	vii	viii	ix	x	Units
Standard Drainage Basin Inputs	1	Drainage Basin ID or Name	1A										unitless
	2	85th Percentile 24-hr Storm Depth	0.62										inches
	3	Is Hydromodification Control Applicable?	No										yes/no
	4	Impervious Surfaces Not Directed to Dispersion Area (C=0.90)	1,087										sq-ft
	5	Semi-Pervious Surfaces Not Serving as Dispersion Area (C=0.30)											sq-ft
	6	Engineered Pervious Surfaces Not Serving as Dispersion Area (C=0.10)											sq-ft
	7	Natural Type A Soil Not Serving as Dispersion Area (C=0.10)											sq-ft
	8	Natural Type B Soil Not Serving as Dispersion Area (C=0.14)											sq-ft
	9	Natural Type C Soil Not Serving as Dispersion Area (C=0.23)											sq-ft
	10	Natural Type D Soil Not Serving as Dispersion Area (C=0.30)											sq-ft
SSD-BMPs Proposed	11	Does Tributary Incorporate Dispersion and/or Rain Barrels?											yes/no
	12	Does Tributary Incorporate Tree Wells?	Yes										yes/no
Dispersion Area & Rain Barrel Inputs (Optional)	13	Impervious Surfaces Directed to Dispersion Area per SD-B (Gi=0.90)											sq-ft
	14	Semi-Pervious Surfaces Serving as Dispersion Area per SD-B (Gi=0.30)											sq-ft
	15	Engineered Pervious Surfaces Serving as Dispersion Area per SD-B (Gi=0.10)											sq-ft
	16	Natural Type A Soil Serving as Dispersion Area per SD-B (Gi=0.10)											sq-ft
	17	Natural Type B Soil Serving as Dispersion Area per SD-B (Gi=0.14)											sq-ft
	18	Natural Type C Soil Serving as Dispersion Area per SD-B (Gi=0.23)											sq-ft
	19	Natural Type D Soil Serving as Dispersion Area per SD-B (Gi=0.30)											sq-ft
	20	Number of Rain Barrels Proposed per SD-E											#
	21	Average Rain Barrel Size											gal
Initial Runoff Factor Calculation	22	Total Tributary Area	1,087	0	0	0	0	0	0	0	0	0	sq-ft
	23	Initial Runoff Factor for Standard Drainage Areas	0.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	unitless
	24	Initial Runoff Factor for Dispersed & Dispersion Areas	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	unitless
	25	Initial Weighted Runoff Factor	0.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	unitless
Dispersion Area Adjustment & Rain Barrel Adjustment	26	Initial Design Capture Volume	51	0	0	0	0	0	0	0	0	0	cubic-feet
	27	Total Impervious Area Dispersed to Pervious Surface	0	0	0	0	0	0	0	0	0	0	sq-ft
	28	Total Pervious Dispersion Area	0	0	0	0	0	0	0	0	0	0	sq-ft
	29	Ratio of Dispersed Impervious Area to Pervious Dispersion Area for DCV Reduction	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	ratio
	30	Adjustment Factor for Dispersed & Dispersion Areas	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	ratio
	31	Runoff Factor After Dispersion Techniques	0.90	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	unitless
	32	Design Capture Volume After Dispersion Techniques	51	0	0	0	0	0	0	0	0	0	cubic-feet
	33	Total Rain Barrel Volume Reduction	0	0	0	0	0	0	0	0	0	0	cubic-feet
Results	34	Final Adjusted Runoff Factor	0.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	unitless
	35	Final Effective Tributary Area	978	0	0	0	0	0	0	0	0	0	sq-ft
	36	Initial Design Capture Volume Retained by Dispersion Area and Rain Barrel(s)	0	0	0	0	0	0	0	0	0	0	cubic-feet
	37	Remaining Design Capture Volume Tributary to Tree Well(s)	51	0	0	0	0	0	0	0	0	0	cubic-feet
No Warning Messages													

SSD-BMP Automated Worksheet I-3: Step 3. Tree Well Sizing (V1.0)													
Category	#	Description	i	ii	iii	iv	v	vi	vii	viii	ix	x	Units
Standard Tree Well Inputs	1	Drainage Basin ID or Name	1A	-	-	-	-	-	-	-	-	-	unitless
	2	Design Capture Volume Tributary to BMP	51	-	-	-	-	-	-	-	-	-	cubic-feet
	3	Is Hydromodification Control Applicable?	No	-	-	-	-	-	-	-	-	-	yes/no
	4	Predominant NRCS Soil Type Within Tree Well(s) Location	D										unitless
	5	Select a Tree Species for the Tree Well(s) Consistent with SD-A Tree Palette Table Note: Numbers shown in list are Tree Species Mature Canopy Diameters	20' - Other										unitless
	6	Tree Well(s) Soil Depth (Installation Depth) Must be 30, 36, 42, or 48 Inches; Select from Standard Depths**	48										inches
	7	Number of Identical* Tree Wells Proposed for this DMA	1										trees
	8	Proposed Width of Tree Well(s) Soil Installation for One (1) Tree	13.0										feet
	9	Proposed Length of Tree Well(s) Soil Installation for One (1) Tree	13.0										feet
Tree Data	10	Botanical Name of Tree Species	Provide in PDP SWQMP	-	-	-	-	-	-	-	-	-	unitless
	11	Tree Species Mature Height per SD-A	Provide in PDP SWQMP	-	-	-	-	-	-	-	-	-	feet
	12	Tree Species Mature Canopy Diameter per SD-A	20	-	-	-	-	-	-	-	-	-	feet
	13	Minimum Soil Volume Required In Tree Well (2 Cubic Feet Per Square Foot of Mature Tree Canopy Projection Area)	628	-	-	-	-	-	-	-	-	-	cubic-feet
Tree Well Sizing Calculations	14	Credit Volume Per Tree	180	-	-	-	-	-	-	-	-	-	cubic-feet
	15	DCV Multiplier To Meet Flow Control Requirements	n/a	-	-	-	-	-	-	-	-	-	unitless
	16	Required Retention Volume (RRV) To Meet Flow Control Requirements	n/a	-	-	-	-	-	-	-	-	-	cubic-feet
	17	Number of Trees Required	1	-	-	-	-	-	-	-	-	-	trees
	18	Total Area of Tree Well Soil Required for Each Tree	157	-	-	-	-	-	-	-	-	-	sq-ft
	19	Approximate Required Width of Tree Well Soil Area for Each Tree	13	-	-	-	-	-	-	-	-	-	feet
	20	Approximate Required Length of Tree Well Soil Area for Each Tree	13	-	-	-	-	-	-	-	-	-	feet
	21	Number of Trees Proposed for this DMA	1	-	-	-	-	-	-	-	-	-	trees
	22	Total Area of Tree Well Soil Proposed for Each Tree	169	-	-	-	-	-	-	-	-	-	sq-ft
Results	23	Minimum Spacing Between Multiple Trees To Meet Soil Area Requirements (when applicable)***	n/a	-	-	-	-	-	-	-	-	-	feet
	24	Are Tree Well Soil Installation Requirements Met?	Yes	-	-	-	-	-	-	-	-	-	yes/no
	25	Is Remaining DCV Requirement Fully Satisfied by Tree Well(s)?	Yes	-	-	-	-	-	-	-	-	-	yes/no
	26	Is Hydromodification Control Requirement Satisfied by Tree Well(s)?	n/a	-	-	-	-	-	-	-	-	-	yes/no
Attention! -[Line 12] Applicant to provide supporting documentation for tree species in PDP SWQMP.													

Notes:
 *If using more than one mature canopy diameter within the same DMA, only the smallest mature canopy diameter should be entered. Alternatively, if more than one mature canopy diameter is proposed and/or the dimensions of multiple tree well installations will vary, separate DMAs may be delineated.
 **If the actual proposed installation depth is not available in the table of standard depths, select the next lower depth.
 ***Tree Canopy or Agency Requirements May Also Influence the Minimum Spacing of Trees.



County of San Diego
Stormwater Quality Management Plan (SWQMP)
Attachment 7: Documentation of DMAs with Structural Pollutant Control BMPs

7.0 General Requirements

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

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

7.1 Engineer of Work Certification for Structural BMPs

Project Name Colonnade Hotel
Permit Application Number PDS2023-STP-23-021

CERTIFICATION

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

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

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



RCE No. 71549

12-31-2025

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

Paul E. Fisher

Print Name

Projection Engineering, Inc.

Company

June 5, 2025

Date

Engineer's Seal:



7.2 Structural BMP Strategy

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

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

Step 1: DCV

- A) 85th percentile rainfall depth determined to be 0.62 inches per the [County of San Diego GIS Viewer](#)
- B) The entire parcel limits were conservatively assumed to generate runoff. A portion of the proposed rooftop has been conceptually selected to drain to a tree well and function as a self-retaining DMA (DMA 1A). The remainder of the site (including the pool area) was assumed to generate runoff requiring mitigation (DMA 1).
- C) The site (DMA 1) was conservatively assumed to be 90% impervious (the actual imperviousness will be no greater than 85%).
- D) The DCV associated with DMA 1 is conservative, per the above explanation. DMA 1A is expected to reduce runoff by approximately 50 cubic feet. This runoff reduction has not been considered when determining the minimum required size of the downstream structural BMP.

Step 2: Retention Requirement

- A) Capture and use is not required due to the proposed habitable structure being less than 9 stories in height.
- B) Infiltration has been determined to be “restricted” due to the predominance of Type “D” Hydrologic Soil Group within the project limits.
- C) The design infiltration rate was determined to be 0.00 inches per hour.
- D) The project-scale retention requirement was calculated to 51 cubic feet.

Step 3: BMP Performance

- A) A proprietary biofiltration BMP was selected to satisfy the project’s PDP pollutant removal performance standard (BMP 1).
- B) The retention processes within the proprietary biofiltration unit were conservatively neglected. The tree well discussed under Step 1 will provide the minimum required retention for the project (external to the structural BMP).
- C) The biofiltration process is provided by the proprietary media loading rate, as detailed in the Washington State Technology Assessment Protocol – Ecology (TAPE) certification for General Use Level Designation (GULD) Basic, Phosphorus, and Enhanced treatment. The proprietary media meets the standards specified in BMP Design Manual Appendix F.
- D) The proprietary biofiltration BMP is configured to provide flow-based biofiltration, which is defined as 1.5 times the water quality flowrate from a 0.2 inch per hour storm.
- E) The minimum retention requirements are satisfied by the tree well specified in Steps 1D and 2D

HMP Flow Control

An underground detention chamber system with flow control structure is located downstream of the flow-based proprietary biofiltration system. The downstream hydromodification flow control facility is separate from the upstream pollutant removal BMP.

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

¹ Hydromodification Management BMPs must be accompanied by BMPs that provide pollutant control.

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

Structural BMP ID #	1	Permit # and Sheet #	PDS2023-STP-23-021, Preliminary Grading Plan, Sheet 1		
BMP Type					
Infiltration ☐ Infiltration basin (INF-1) ☐ Bioretention (INF-2) ☐ Permeable pavement (INF-3)		Harvest and Use ☐ Cistern (HU-1) Flow-thru Treatment (describe below) ☐ With prior lawful approval to meet earlier PDP requirements ☐ Pre-treatment/forebay for an onsite retention or biofiltration BMP ² ☐ With alternative compliance			
Unlined Biofiltration ☐ Biofiltration with partial retention (PR-1)		Hydromodification Management ³ ☐ Detention pond or vault ☐ Other (describe below)			
Lined Biofiltration ☐ Biofiltration (BF-1) ☐ Nutrient Sensitive Media Design (BF-2) ☒ Proprietary Biofiltration (BF-3)					
BMP Purpose					
☒ Pollutant control only ☐ Hydromodification control only ☐ Combined pollutant control and hydromodification		☐ Pre-treatment/forebay for another BMP ☐ Other (describe below)			
BMP Verification (See BMPDM Section 8.3)					
Provide name and contact information for the party responsible to sign BMP verification forms		Paul E. Fisher Projection Engineering, Inc. (760) 443-6504 paulfisher@projectionengineering.com			
BMP Ownership and Maintenance (See BMPDM Section 7.3 and Attachment 11)					
BMP Maintenance Category	Cat. 1	Cat. 2	Cat. 3	Cat. 4	
	☒	☐	☐	☐	
Final owner of BMP	☐ HOA ☐ Other (describe):		☒ Property Owner ☐ County		
Maintenance of BMP into perpetuity	☐ HOA ☐ Other (describe):		☒ Property Owner ☐ County		
Discussion (As needed; Continue on subsequent pages as necessary)					
One (1) flow-based proprietary biofiltration BMP with a treatment flowrate greater than or equal to 0.693 cfs (MWS-L-8-24-V) with internal bypass to convey flows greater than the water quality flowrate					

² Indicate which onsite retention or biofiltration BMP the pre-treatment/forebay serves.

³ Hydromodification Management BMPs must be accompanied by BMPs that provide pollutant control.

Structural BMP ID # 2	Permit # and Sheet # PDS2023-STP-23-021, Preliminary Grading Plan, Sheet 1			
BMP Type				
Infiltration ☐ Infiltration basin (INF-1) ☐ Bioretention (INF-2) ☐ Permeable pavement (INF-3)		Harvest and Use ☐ Cistern (HU-1)		
Unlined Biofiltration ☐ Biofiltration with partial retention (PR-1)		Flow-thru Treatment (describe below) ☐ With prior lawful approval to meet earlier PDP requirements ☐ Pre-treatment/forebay for an onsite retention or biofiltration BMP ² ☐ With alternative compliance		
Lined Biofiltration ☐ Biofiltration (BF-1) ☐ Nutrient Sensitive Media Design (BF-2) ☐ Proprietary Biofiltration (BF-3)		Hydromodification Management ³ ☒ Detention pond or vault ☐ Other (describe below)		
BMP Purpose				
☐ Pollutant control only ☒ Hydromodification control only ☐ Combined pollutant control and hydromodification		☐ Pre-treatment/forebay for another BMP ☐ Other (describe below)		
BMP Verification (See BMPDM Section 8.3)				
Provide name and contact information for the party responsible to sign BMP verification forms		Paul E. Fisher Projection Engineering, Inc. (760) 443-6504 paulfisher@projectionengineering.com		
BMP Ownership and Maintenance (See BMPDM Section 7.3 and Attachment 11)				
BMP Maintenance Category	Cat. 1	Cat. 2	Cat. 3	Cat. 4
	☒	☐	☐	☐
Final owner of BMP	☐ HOA ☒ Property Owner ☐ Other (describe):			
Maintenance of BMP into perpetuity	☐ HOA ☒ Property Owner ☐ Other (describe):			
Discussion (As needed; Continue on subsequent pages as necessary)				
One (1) underground detention system with a total static storage volume equal to or greater than 13,381 cubic feet at 2.33 feet of ponded depth draining through a single 1.75-inch diameter orifice at the system invert. The system has additional flow controls above this stage-storage level for integrated 100-year storm detention.				

² Indicate which onsite retention or biofiltration BMP the pre-treatment/forebay serves.

³ Hydromodification Management BMPs must be accompanied by BMPs that provide pollutant control.

7.4 Storm Water Pollutant Control Worksheet Calculations

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

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

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

Category	#	Description	<i>i</i>	Units
Standard Drainage Basin Inputs	1	Drainage Basin ID or Name	DMA 1	unitless
	2	85th Percentile 24-hr Storm Depth	0.62	inches
	3	Impervious Surfaces <u>Not Directed to Dispersion Area</u> (C=0.90)	107,370	sq-ft
	4	Semi-Pervious Surfaces <u>Not Serving as Dispersion Area</u> (C=0.30)		sq-ft
	5	Engineered Pervious Surfaces <u>Not Serving as Dispersion Area</u> (C=0.10)	11,930	sq-ft
	6	Natural Type A Soil <u>Not Serving as Dispersion Area</u> (C=0.10)		sq-ft
	7	Natural Type B Soil <u>Not Serving as Dispersion Area</u> (C=0.14)		sq-ft
	8	Natural Type C Soil <u>Not Serving as Dispersion Area</u> (C=0.23)		sq-ft
	9	Natural Type D Soil <u>Not Serving as Dispersion Area</u> (C=0.30)		sq-ft
Dispersion Area, Tree Well & Rain Barrel Inputs (Optional)	10	Does Tributary Incorporate Dispersion, Tree Wells, and/or Rain Barrels?	Yes	yes/no
	11	Impervious Surfaces Directed to Dispersion Area per SD-B (Ci=0.90)		sq-ft
	12	Semi-Pervious Surfaces Serving as Dispersion Area per SD-B (Ci=0.30)		sq-ft
	13	Engineered Pervious Surfaces Serving as Dispersion Area per SD-B (Ci=0.10)		sq-ft
	14	Natural Type A Soil Serving as Dispersion Area per SD-B (Ci=0.10)		sq-ft
	15	Natural Type B Soil Serving as Dispersion Area per SD-B (Ci=0.14)		sq-ft
	16	Natural Type C Soil Serving as Dispersion Area per SD-B (Ci=0.23)		sq-ft
	17	Natural Type D Soil Serving as Dispersion Area per SD-B (Ci=0.30)		sq-ft
	18	Number of Tree Wells Proposed per SD-A	1	#
	19	Average Mature Tree Canopy Diameter		ft
	20	Number of Rain Barrels Proposed per SD-E		#
Initial Runoff Factor Calculation	21	Average Rain Barrel Size		gal
	22	Total Tributary Area	119,300	sq-ft
	23	Initial Runoff Factor for Standard Drainage Areas	0.82	unitless
	24	Initial Runoff Factor for Dispersed & Dispersion Areas	0.00	unitless
	25	Initial Weighted Runoff Factor	0.82	unitless
	26	Initial Design Capture Volume	5,054	cubic-feet
Dispersion Area Adjustments	27	Total Impervious Area Dispersed to Pervious Surface	0	sq-ft
	28	Total Pervious Dispersion Area	0	sq-ft
	29	Ratio of Dispersed Impervious Area to Pervious Dispersion Area	n/a	ratio
	30	Adjustment Factor for Dispersed & Dispersion Areas	1.00	ratio
	31	Runoff Factor After Dispersion Techniques	0.82	unitless
	32	Design Capture Volume After Dispersion Techniques	5,054	cubic-feet
Tree & Barrel Adjustments	33	Total Tree Well Volume Reduction	0	cubic-feet
	34	Total Rain Barrel Volume Reduction	0	cubic-feet
Results	35	Final Adjusted Runoff Factor	0.82	unitless
	36	Final Effective Tributary Area	97,826	sq-ft
	37	Initial Design Capture Volume Retained by Site Design Elements	0	cubic-feet
	38	Final Design Capture Volume Tributary to BMP	5,054	cubic-feet
<u>No Warning Messages</u>				

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

Category	#	Description	<i>i</i>	Units
Basic Analysis	1	Drainage Basin ID or Name	DMA 1	unitless
	2	85th Percentile Rainfall Depth	0.62	inches
	3	Predominant NRCS Soil Type Within BMP Location	D	unitless
	4	Is proposed BMP location Restricted or Unrestricted for Infiltration Activities?	Restricted	unitless
	5	Nature of Restriction	Soil Type	unitless
	6	Do Minimum Retention Requirements Apply to this Project?	Yes	yes/no
	7	Are Habitable Structures Greater than 9 Stories Proposed?	No	yes/no
Advanced Analysis	8	Has Geotechnical Engineer Performed an Infiltration Analysis?	No	yes/no
	9	Design Infiltration Rate Recommended by Geotechnical Engineer		in/hr
Result	10	Design Infiltration Rate Used To Determine Retention Requirements	0.000	in/hr
	11	Percent of Average Annual Runoff that Must be Retained within DMA	1.5%	percentage
	12	Fraction of DCV Requiring Retention	0.01	ratio
	13	Required Retention Volume	51	cubic-feet
<u>No Warning Messages</u>				

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

Category	#	Description	<i>i</i>	Units
BMP Inputs	1	Drainage Basin ID or Name	DMA 1	sq-ft
	2	Design Infiltration Rate Recommended	0.000	in/hr
	3	Design Capture Volume Tributary to BMP	5,054	cubic-feet
	4	Is BMP Vegetated or Unvegetated?	Vegetated	unitless
	5	Is BMP Impermeably Lined or Unlined?	Lined	unitless
	6	Does BMP Have an Underdrain?	Underdrain	unitless
	7	Does BMP Utilize Standard or Specialized Media?		unitless
	8	Provided Surface Area		sq-ft
	9	Provided Surface Ponding Depth		inches
	10	Provided Soil Media Thickness		inches
	11	Provided Gravel Thickness (Total Thickness)		inches
	12	Underdrain Offset		inches
	13	Diameter of Underdrain or Hydromod Orifice (Select Smallest)		inches
	14	Specialized Soil Media Filtration Rate		in/hr
	15	Specialized Soil Media Pore Space for Retention		unitless
	16	Specialized Soil Media Pore Space for Biofiltration		unitless
	17	Specialized Gravel Media Pore Space		unitless
Retention Calculations	18	Volume Infiltrated Over 6 Hour Storm		cubic-feet
	19	Ponding Pore Space Available for Retention		unitless
	20	Soil Media Pore Space Available for Retention		unitless
	21	Gravel Pore Space Available for Retention (Above Underdrain)		unitless
	22	Gravel Pore Space Available for Retention (Below Underdrain)		unitless
	23	Effective Retention Depth		inches
	24	Fraction of DCV Retained (Independent of Drawdown Time)		ratio
	25	Calculated Retention Storage Drawdown Time		hours
	26	Efficacy of Retention Processes		ratio
	27	Volume Retained by BMP (Considering Drawdown Time)		cubic-feet
	28	Design Capture Volume Remaining for Biofiltration		cubic-feet
Biofiltration Calculations	29	Max Hydromod Flow Rate through Underdrain		cfs
	30	Max Soil Filtration Rate Allowed by Underdrain Orifice		in/hr
	31	Soil Media Filtration Rate per Specifications		in/hr
	32	Soil Media Filtration Rate to be used for Sizing		in/hr
	33	Depth Biofiltered Over 6 Hour Storm		inches
	34	Ponding Pore Space Available for Biofiltration		unitless
	35	Soil Media Pore Space Available for Biofiltration		unitless
	36	Gravel Pore Space Available for Biofiltration (Above Underdrain)		unitless
	37	Effective Depth of Biofiltration Storage		inches
	38	Drawdown Time for Surface Ponding		hours
	39	Drawdown Time for Effective Biofiltration Depth		hours
	40	Total Depth Biofiltered		inches
	41	Option 1 - Biofilter 1.50 DCV: Target Volume		cubic-feet
	42	Option 1 - Provided Biofiltration Volume		cubic-feet
	43	Option 2 - Store 0.75 DCV: Target Volume		cubic-feet
	44	Option 2 - Provided Storage Volume		cubic-feet
	45	Portion of Biofiltration Performance Standard Satisfied		ratio
Result	46	Do Site Design Elements and BMPs Satisfy Annual Retention Requirements?	Yes	yes/no
	47	Overall Portion of Performance Standard Satisfied (BMP Efficacy Factor)	1.00	ratio
	48	Deficit of Effectively Treated Stormwater	0	cubic-feet

Attention!

- BMPs sized at <3% of the effective tributary areas must be accompanied by Reduced Size BMP Maintenance calculations (see last tab).

-Use of specialized or proprietary media requires submittal of supplemental information outlined in Appendix F of the BMPDM.

SEE
WORKSHEET
J.5-1 ON
FOLLOWING
PAGE

Worksheet J.5-1: Flow-Based Proprietary Biofiltration Design Flows

Category	#	Description	<i>i</i>	Units
Flow-Based BMP Inputs	0	Drainage Basin ID or Name	DMA 1	unitless
	1	Total Tributary Area	119,300	sq-ft
	2	Final Adjusted Runoff Factor	0.82	unitless
	3	Design Capture Volume	5,054	cubic-feet
	4	Volume Effectively Retained and/or Biofiltered	0	cubic-feet
	5	Deficit of Effectively Treated Stormwater Requireing Flow-Based Biotreatment	5,054	cubic-feet
Flow Rate Calculations	6	Maximum Rated Water Quality Flow Rate of Proposed BMP	0.693	CFS
	7	Adjustment Factor	1.00	unitless
	8	Design Rainfall Intensity for Flow-Based BMPs	0.20	in/hr
Result	9	Water Quality Flow Rate Requiring Flow-Based Biotreatment	0.674	CFS
	10	Is Flow-Based BMP Adequately Sized?	Yes	unitless

Notes

The required water quality flowrate has been multiplied by 1.5 to satisfy the flow-based biofiltration performance standard for flow-based proprietary biofiltration BMPs.

SITE SPECIFIC DATA			
PROJECT NUMBER			
PROJECT NAME		COLONNADE HOTEL	
PROJECT LOCATION		RAMONA, CA	
STRUCTURE ID		BMP 1	
TREATMENT REQUIRED			
VOLUME BASED (CF)		FLOW BASED (CFS)	
N/A		0.693	
PEAK BYPASS REQUIRED (CFS) – IF APPLICABLE			USER FILL (CFS)
PIPE DATA	I.E.	MATERIAL	DIAMETER
INLET PIPE 1	1404.79	HDPE	12"
INLET PIPE 2	1404.79	HDPE	12"
OUTLET PIPE	1403.54	HDPE	12"
	PRETREATMENT	BIOFILTRATION	DISCHARGE
RIM ELEVATION	~1408		
SURFACE LOAD	INDIRECT TRAFFIC		
FRAME & COVER	3EA Ø30"	OPEN PLANTER	2EA Ø24"
NOTES:			

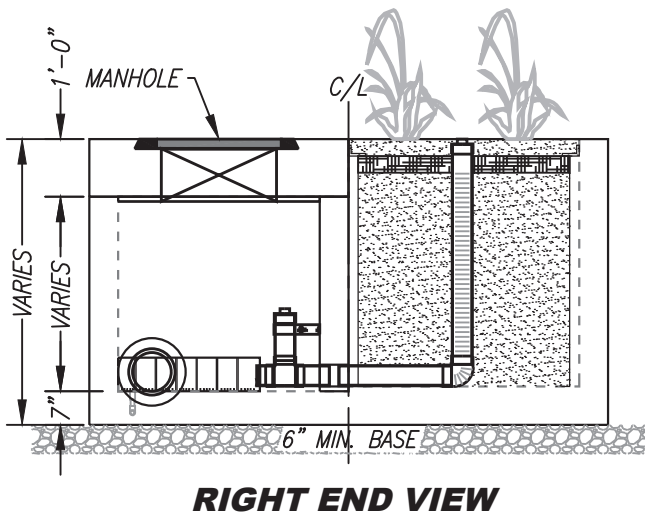
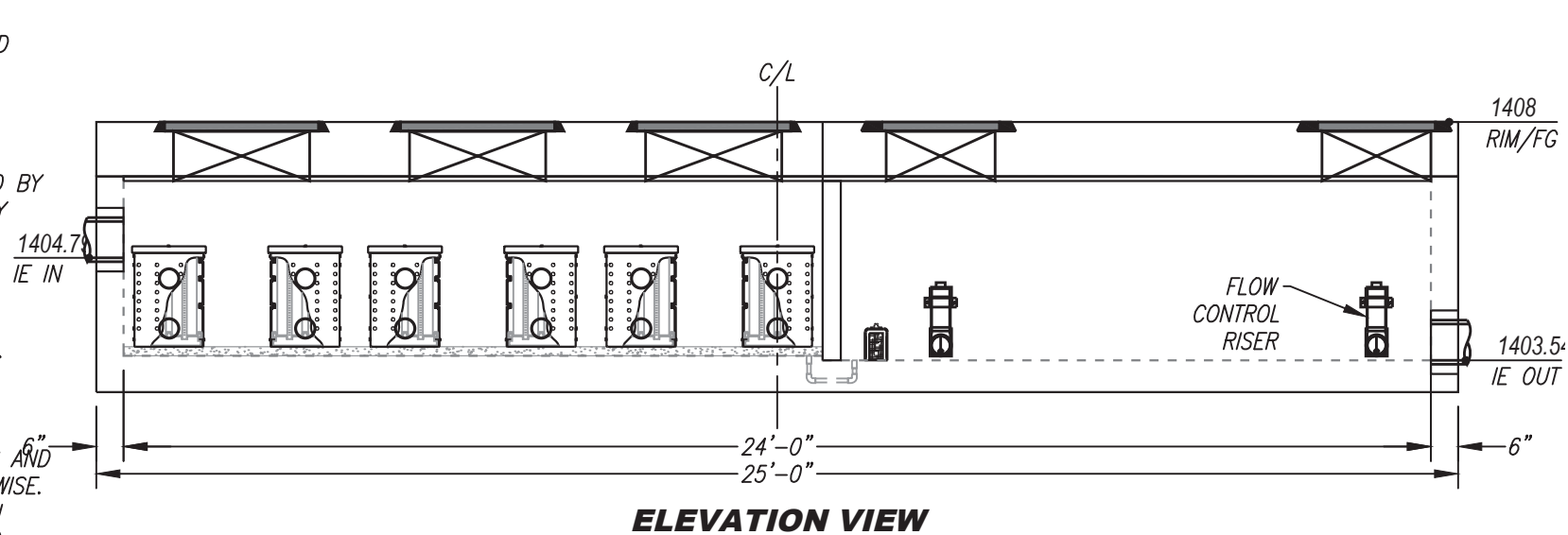
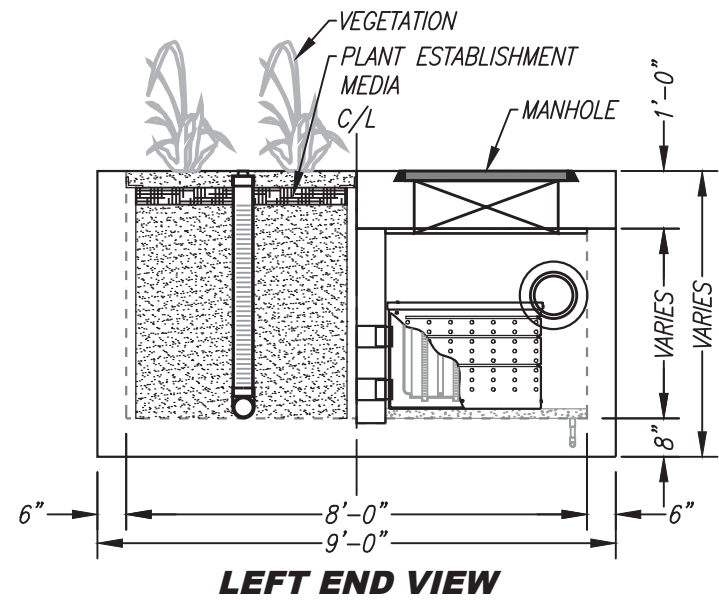
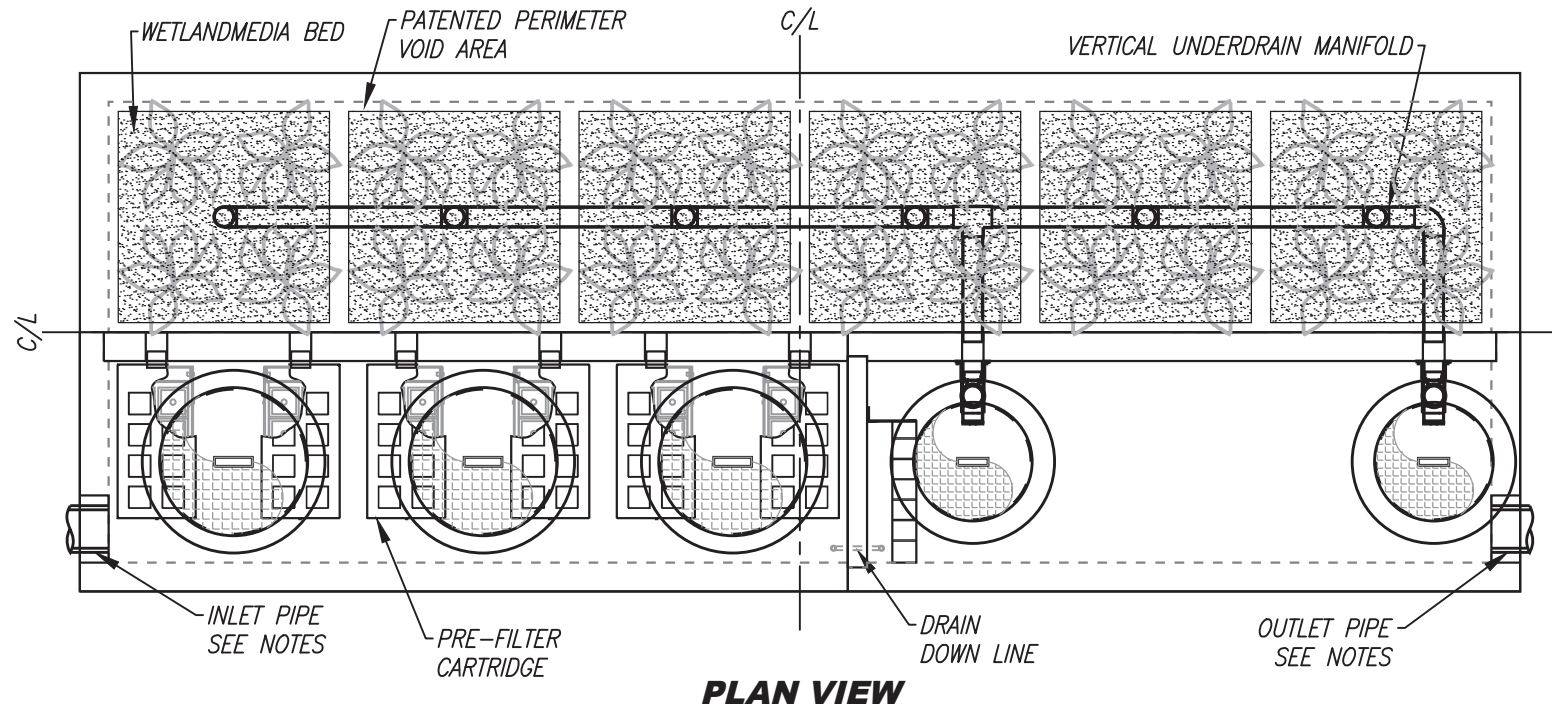
* PRELIMINARY NOT FOR CONSTRUCTION

INSTALLATION NOTES

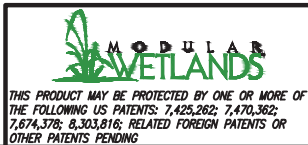
1. CONTRACTOR TO PROVIDE ALL LABOR, EQUIPMENT, MATERIALS AND INCIDENTALS REQUIRED TO OFFLOAD AND INSTALL THE SYSTEM AND APPURTENANCES IN ACCORDANCE WITH THIS DRAWING AND THE MANUFACTURERS SPECIFICATIONS, UNLESS OTHERWISE STATED IN MANUFACTURERS CONTRACT.
2. UNIT MUST BE INSTALLED ON LEVEL BASE. MANUFACTURER RECOMMENDS A MINIMUM 6" LEVEL ROCK BASE UNLESS SPECIFIED BY THE PROJECT ENGINEER. CONTRACTOR IS RESPONSIBLE TO VERIFY PROJECT ENGINEERS RECOMMENDED BASE SPECIFICATIONS.
4. CONTRACTOR TO SUPPLY AND INSTALL ALL EXTERNAL CONNECTING PIPES. ALL PIPES MUST BE FLUSH WITH INSIDE SURFACE OF CONCRETE. (PIPES CANNOT INTRUDE BEYOND FLUSH). INVERT OF OUTFLOW PIPE MUST BE FLUSH WITH DISCHARGE CHAMBER FLOOR. ALL PIPES SHALL BE SEALED WATER TIGHT PER MANUFACTURERS STANDARD CONNECTION DETAIL.
5. CONTRACTOR RESPONSIBLE FOR INSTALLATION OF ALL RISERS, MANHOLES, AND HATCHES. CONTRACTOR TO GROUT ALL MANHOLES AND HATCHES TO MATCH FINISHED SURFACE UNLESS SPECIFIED OTHERWISE.
6. VEGETATION SUPPLIED AND INSTALLED BY OTHERS. ALL UNITS WITH VEGETATION MUST HAVE DRIP OR SPRAY IRRIGATION SUPPLIED AND INSTALLED BY OTHERS.
7. CONTRACTOR RESPONSIBLE FOR CONTACTING BIO CLEAN FOR ACTIVATION OF UNIT. MANUFACTURERS WARRANTY IS VOID WITH OUT PROPER ACTIVATION BY A BIO CLEAN REPRESENTATIVE.

GENERAL NOTES

1. MANUFACTURER TO PROVIDE ALL MATERIALS UNLESS OTHERWISE NOTED.
2. ALL DIMENSIONS, ELEVATIONS, SPECIFICATIONS AND CAPACITIES ARE SUBJECT TO CHANGE. FOR PROJECT SPECIFIC DRAWINGS DETAILING EXACT DIMENSIONS, WEIGHTS AND ACCESSORIES PLEASE CONTACT BIO CLEAN.



TREATMENT FLOW (CFS)	0.693
OPERATING HEAD (FT)	3.4
PRETREATMENT LOADING RATE (GPM/SF)	2.0
WETLAND MEDIA LOADING RATE (GPM/SF)	1.0



PROPRIETARY AND CONFIDENTIAL:
THE INFORMATION CONTAINED IN THIS DOCUMENT IS THE SOLE PROPERTY OF FORTERRA AND ITS COMPANIES. THIS DOCUMENT, NOR ANY PART THEREOF, MAY BE USED, REPRODUCED OR MODIFIED IN ANY MANNER WITH OUT THE WRITTEN CONSENT OF FORTERRA.

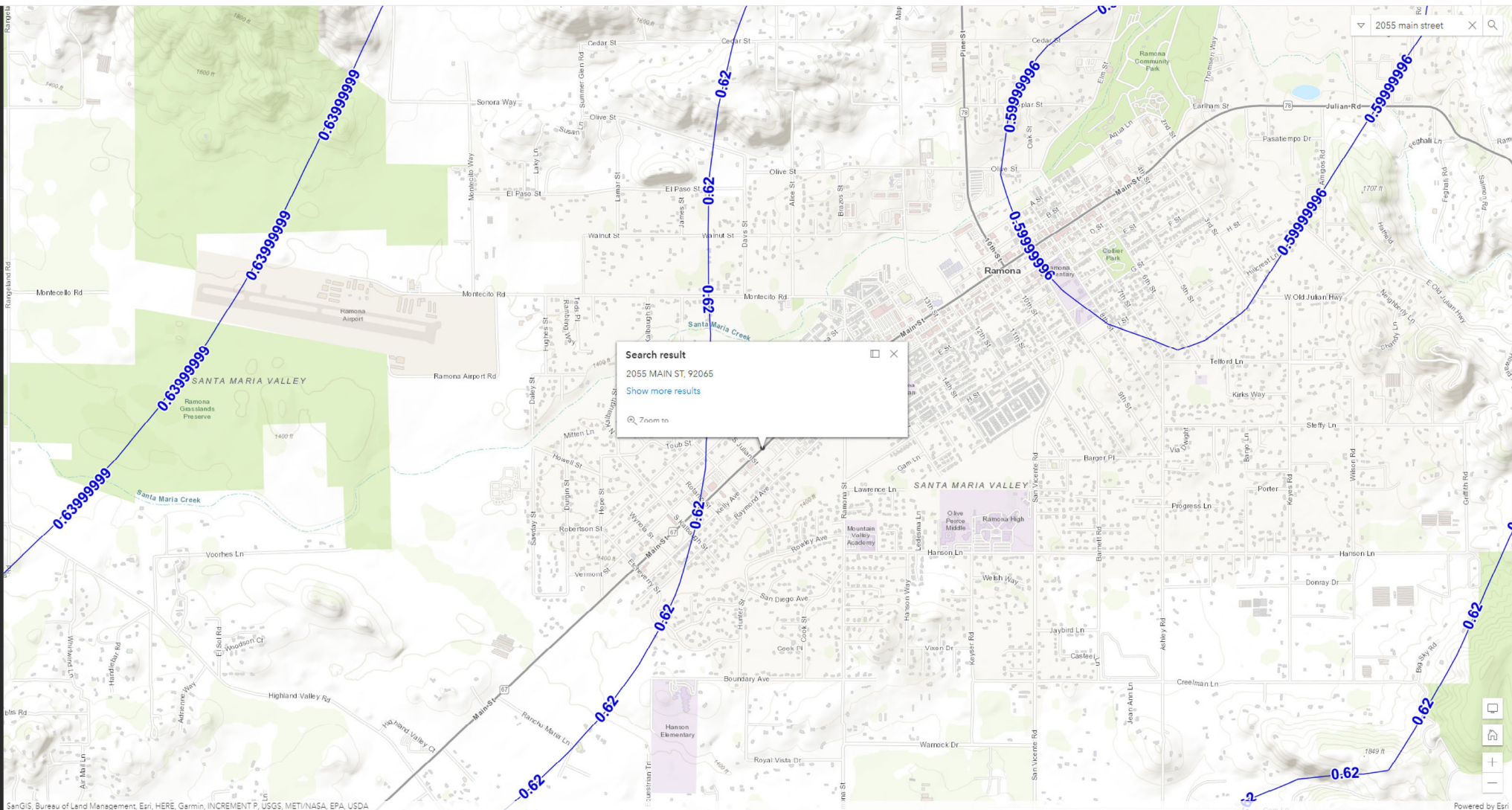


MWS-L-8-24-V
STORMWATER BIOFILTRATION SYSTEM
STANDARD DETAIL

Automated Worksheet B.4: Reduced Size BMP Maintenance Interval (V2.0)

Category	#	Description	<i>i</i>	Units
Drainage Basin Info	1	Drainage Basin ID or Name	DMA 1	unitless
	2	Final Effective Tributary Area	97,826	sq-ft
	3	Provided BMP Surface Area	532	sq-ft
Biofiltration Clogging Inputs	4	Average Annual Precipitation	18.0	inches
	5	Load to Clog (default =2.0)	3.0	lb/sq-ft
	6	TSS Pretreatment Efficacy	0.25	yes/no
	7	Percentage "Commercial"		percentage
	8	Percentage "Education"		percentage
	9	Percentage "Industrial"		percentage
	10	Percentage "Low Traffic Areas"	50%	percentage
	11	Percentage "Multi-Family Residential"		percentage
	12	Percentage "Roof Areas"	29%	percentage
	13	Percentage "Single Family Residential"		percentage
	14	Percentage "Transportation"		percentage
	15	Percentage "Vacant/Open Space"	21%	percentage
	16	Percentage "Steep Hillslopes"		percentage
Result	17	Total Percentage of Above Land Uses	100%	percentage
	18	Average TSS Concentration for Tributary After Pretreatment	16	mg/L
	19	Average Annual Runoff Volume	146,739	cubic-feet
	20	Average Annual TSS Load	147	lb/yr
	21	Available Sediment Storage within BMP	1,595	lb
	22	Anticipated Major Maintenance Frequency	10.9	years
No Warning Messages				

SEE TAPE
CERTIFICATION IN SUB-
ATTACHMENT 7.4



Appendix D Geotechnical Engineer Analysis

D.1 Analysis of Infiltration Restrictions

This section is only applicable if the analysis of infiltration restrictions is performed by a licensed engineer practicing in geotechnical engineering. The SWQMP Preparer and Geotechnical Engineer must work collaboratively to identify any infiltration restrictions identified in Table D.1-1 below. Upon completion of this section, the Geotechnical Engineer must characterize each DMA as Restricted or Unrestricted for infiltration and provide adequate support/discussion in the geotechnical report. A DMA is considered restricted when one or more restrictions exist which cannot be reasonably resolved through site design changes.

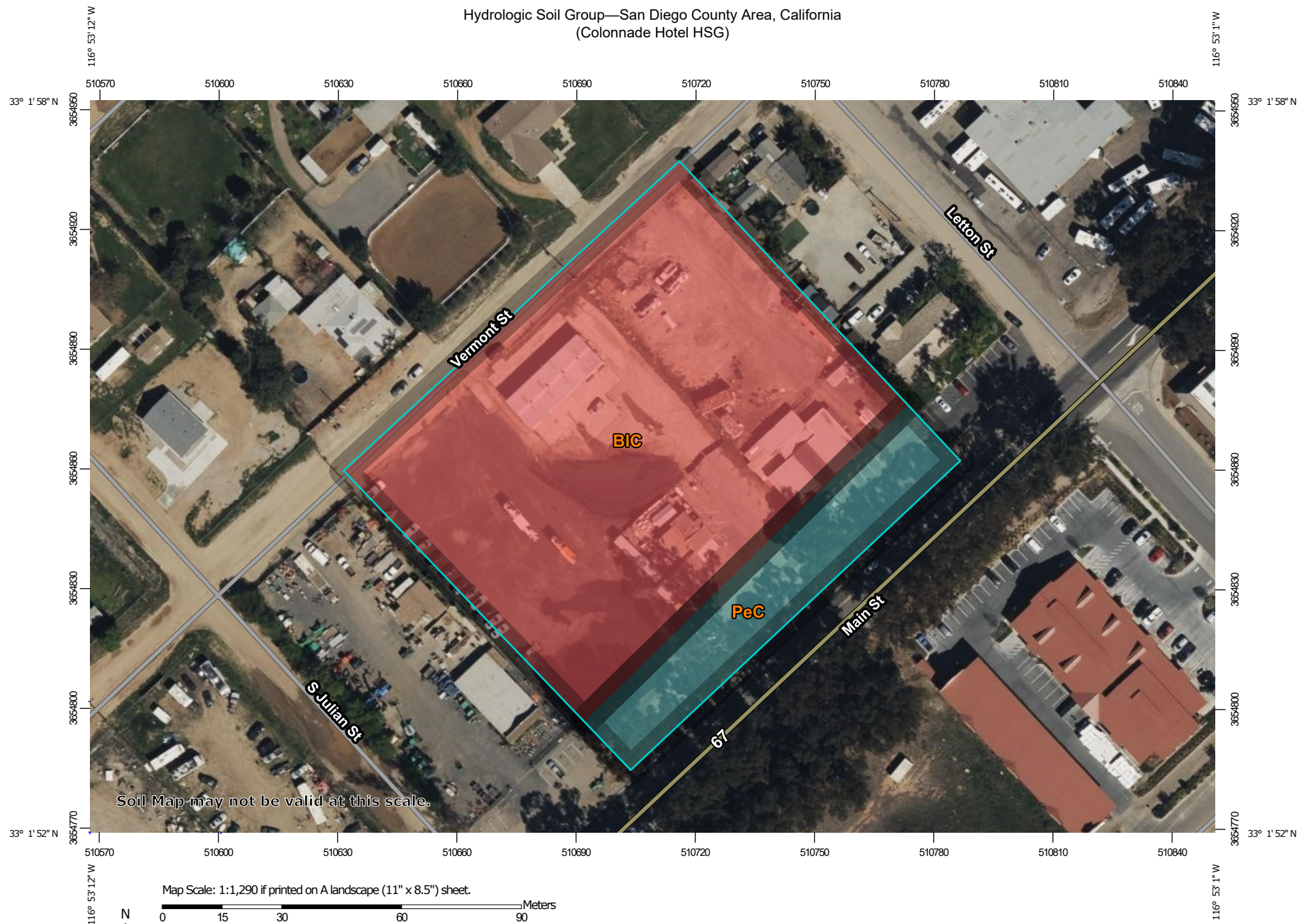
Table D.1-1: Considerations for Geotechnical Analysis of Infiltration Restrictions

Restriction Element		Is Element Applicable? (Yes/No)
Mandatory Considerations	BMP is within 100' of Contaminated Soils	
	BMP is within 100' of Industrial Activities Lacking Source Control	
	BMP is within 100' of Well/Groundwater Basin	
	BMP is within 50' of Septic Tanks/Leach Fields	
	BMP is within 10' of Structures/Tanks/Walls	
	BMP is within 10' of Sewer Utilities	
	BMP is within 10' of Groundwater Table	
	BMP is within Hydric Soils	
	BMP is within Highly Liquefiable Soils and has Connectivity to Structures	
	BMP is within 1.5 Times the Height of Adjacent Steep Slopes ($\geq 25\%$)	
	County Staff has Assigned "Restricted" Infiltration Category	
Optional Considerations	BMP is within Predominantly Type D Soil	YES
	BMP is within 10' of Property Line	
	BMP is within Fill Depths of $\geq 5'$ (Existing or Proposed)	
	BMP is within 10' of Underground Utilities	
	BMP is within 250' of Ephemeral Stream	
	Other (Provide detailed geotechnical support)	
Result	Based on examination of the best available information, I have <u>not identified any restrictions</u> above.	☐ Unrestricted
	Based on examination of the best available information, I have <u>identified one or more restrictions</u> above.	☒ Restricted

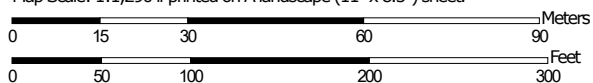
Table D.1-1 is divided into Mandatory Considerations and Optional Considerations. Mandatory Considerations include elements that may pose a significant risk to human health and safety and must always be evaluated. Optional Considerations include elements that are not necessarily associated with human health and safety, so analysis is not mandated through this guidance document. All elements presented in this table are subject to the discretion of the Geotechnical Engineer if adequate supporting information is provided.

Applicants must evaluate infiltration restrictions through use of the best available data. A list of resources available for evaluation is provided in Section B.2

Hydrologic Soil Group—San Diego County Area, California (Colonnade Hotel HSG)



Map Scale: 1:1,290 if printed on A landscape (11" x 8.5") sheet.



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



**Natural Resources
Conservation Service**

Web Soil Survey
National Cooperative Soil Survey

8/11/2023
Page 1 of 4

Hydrologic Soil Group—San Diego County Area, California
(Colonnade Hotel HSG)

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 18, Sep 14, 2022

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

Date(s) aerial images were photographed: Mar 15, 2022—May 28, 2022

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.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
BIC	Bonsall sandy loam, 2 to 9 percent slopes	D	2.4	82.6%
PeC	Placentia sandy loam, 2 to 9 percent slopes, warm MAAT, MLRA 19	C	0.5	17.4%
Totals for Area of Interest			2.9	100.0%

Description

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.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher



March 2025

**GENERAL USE LEVEL DESIGNATION FOR BASIC (TSS)
METALS AND PHOSPHORUS TREATMENT**

For

**Contech Engineered Solutions, LLC (Contech) Modular Wetlands
Linear**

Ecology's Decision

Based on Modular Wetland Systems, Inc, application submissions, including the Technical Evaluation Report, dated April 1, 2014, Ecology hereby issues the following use level designation:

1. General Use Level Designation (GULD) for the Modular Wetlands Linear Stormwater Treatment System for Basic, Phosphorus, and Metals treatment
 - Sized at a hydraulic loading rate of:
 - 1 gallon per minute (gpm) per square foot (sq ft) of Wetland Cell Surface Area
 - Prefilter box (approved at either 22 inches or 33 inches tall)
 - 3.0 gpm/sq ft of prefilter box surface area for moderate pollutant loading rates (low to medium density residential basins).
 - 2.1 gpm/sq ft of prefilter box surface area for high pollutant loading rates (commercial and industrial basins).
2. Maintenance data collected during the initial TAPE GULD testing and the post GULD maintenance assessment demonstrated the system as able to treat the following percentage of a water year before needing maintenance:

	Site Location	Land Use	Average TSS (mg/L)	D ₅₀ PSD (µm)	Maintenance Cycle ¹ (% water year)
GULD Testing	Portland, OR	Commercial	87	<62.5 ²	21
Maintenance ³ Assessment					

¹ Ecology recommends considering maintenance cycle information when sizing the system. Sizing may need to be

increased to meet the project, permit, or jurisdiction maintenance cycle.

² D₅₀ PSD was not reported. PSD samples were analyzed by two different labs using two different size categories. On average 67.8% of the particles were less than 62.5 µm and 59.4% of the particles were less than 50 µm. A D₅₀ of less than 62.5 µm (meaning greater than 50% of particles are less than 62.5 µm) is considered representative of Pacific Northwest stormwater.

³ Maintenance assessment data are collected after issuing of the GULD. Maintenance assessment must be completed by February 28, 2028.

3. Ecology approves the Modular Wetlands Linear Stormwater Treatment System units for Basic, Phosphorus, and Metals treatment at the hydraulic loading rate listed above. Designers shall calculate the water quality design flow rates using the following procedures:
 - Western Washington: For treatment installed upstream of detention or retention, the water quality design flow rate is the peak 15-minute water quality treatment design flow rate as calculated using the latest version of the Western Washington Hydrology Model or other Ecology- approved continuous runoff model and as described in Chapter III-2.6 of the 2024 Stormwater Management Manual for Western Washington (SWMMWW).
 - Eastern Washington: For treatment installed upstream of detention or retention, the water quality design flow rate is the peak 15-minute water quality treatment design flow rate as calculated using one of the three methods described in Chapter 6.5.1 of the 2024 Stormwater Management Manual for Eastern Washington (SWMMEW) or local manual.
 - Entire State: For treatment installed downstream of detention, the water quality treatment design flow rate is the full 2-year release rate of the detention facility.
4. These use level designations have no expiration date but may be amended or revoked by Ecology, and are subject to the conditions specified below.

Ecology's Conditions of Use

Applicants shall comply with the following conditions:

- 1) Design, assemble, install, operate, and maintain the Modular Wetlands Linear Stormwater Treatment System units, in accordance with Contech's applicable manuals and documents and the Ecology Decision.
- 2) Each site plan must undergo Contech review and approval before site installation. This ensures that site grading and slope are appropriate for use of a Modular Wetlands Linear Stormwater Treatment System unit.
- 3) Modular Wetlands Linear Stormwater Treatment System media shall conform to the specifications submitted to and approved by Ecology.
- 4) The applicant tested the Modular Wetlands Linear Stormwater Treatment System with an external bypass weir. This weir limited the depth of water flowing through the media, and therefore the active treatment area, to below the root zone of the plants. This GULD applies to Modular Wetlands Linear Stormwater Treatment Systems whether plants are included in

the final product or not.

- 5) Maintenance: The required maintenance interval for stormwater treatment devices is often dependent upon the degree of pollutant loading from a particular drainage basin. Therefore, Ecology does not endorse or recommend a “one size fits all” maintenance cycle for a particular model/size of stormwater treatment technology.
- Typically, Contech designs Modular Wetland systems for a target prefilter media life of 6 to 12 months.
 - Indications of the need for maintenance include effluent flow decreasing to below the design flow rate or decrease in treatment below required levels.
 - Owners/operators must inspect Modular Wetland systems for a minimum of twelve months from the start of post-construction operation to determine site-specific maintenance schedules and requirements. You must conduct inspections monthly during the wet season, and every other month during the dry season (According to the SWMMWW, the wet season in western Washington is October 1 to April 30. According to the SWMMEW, the wet season in eastern Washington is October 1 to June 30). After the first year of operation, owners/operators must conduct inspections based on the findings during the first year of inspections.
 - Conduct inspections by qualified personnel, follow manufacturer’s guidelines, and use methods capable of determining either a decrease in treated effluent flowrate and/or a decrease in pollutant removal ability.
 - When inspections are performed, the following findings typically serve as maintenance triggers:
 - Standing water remains in the vault between rain events, or
 - Bypass occurs during storms smaller than the design storm.
 - If excessive floatables (trash and debris) are present (but no standing water or excessive sedimentation), perform a minor maintenance consisting of gross solids removal, not prefilter media replacement.
 - Additional data collection will be used to create a correlation between pretreatment chamber sediment depth and pre-filter clogging (see *Issues to be Addressed by the Company* section below)
- 6) Discharges from the Modular Wetlands Linear Stormwater Treatment System units shall not cause or contribute to water quality standards violations in receiving waters.

Applicant:

Contech Engineered Solutions, LLC

Applicant’s Address:

11815 NE Glenn Widing Dr.
Portland, OR 97220

Application Documents:

Original Application for Conditional Use Level Designation, Modular Wetland System, Linear Stormwater Filtration System Modular Wetland Systems, Inc., January 2011

Quality Assurance Project Plan: Modular Wetland System – Linear Treatment System Performance Monitoring Project, draft, January 2011

Revised Application for Conditional Use Level Designation, Modular Wetland System, Linear Stormwater Filtration System Modular Wetland Systems, Inc., May 2011

Memorandum: Modular Wetland System-Linear GULD Application Supplementary Data, April 2014

Technical Evaluation Report: Modular Wetland System Stormwater Treatment System Performance Monitoring, April 2014

Applicant's Use Level Request:

- General Use Level Designation as a Basic, Metals, and Phosphorus treatment device in accordance with Ecology's Guidance for Evaluating Emerging Stormwater Treatment Technologies Technology Assessment Protocol – Ecology (TAPE) January 2011 Revision.

Applicant's Performance Claims:

- The Modular Wetlands Linear is capable of removing a minimum of 80-percent of TSS from stormwater with influent concentrations between 100 and 200 mg/L.
- The Modular Wetlands Linear is capable of removing a minimum of 50-percent of total phosphorus from stormwater with influent concentrations between 0.1 and 0.5 mg/L.
- The Modular Wetlands Linear is capable of removing a minimum 30-percent of dissolved copper from stormwater with influent concentrations between 0.005 and 0.020 mg/L.
- The Modular Wetlands Linear is capable of removing a minimum 60-percent of dissolved zinc from stormwater with influent concentrations between 0.02 and 0.30 mg/L.

Ecology's Recommendations:

- Contech has shown Ecology, through laboratory and field-testing, that the Modular Wetlands Linear Stormwater Treatment System filter system is capable of attaining Ecology's Basic, Phosphorus, and Metals treatment goals.

Findings of Fact:

Laboratory Testing

The Modular Wetlands Linear Stormwater Treatment System has the:

- Capability to remove 99 percent of total suspended solids (using Sil-Co-Sil 106) in a quarter-scale model with influent concentrations of 270 mg/L.
- Capability to remove 91 percent of total suspended solids (using Sil-Co-Sil 106) in laboratory conditions with influent concentrations of 84.6 mg/L at a flow rate of 3.0 gpm per square foot of media.
- Capability to remove 93 percent of dissolved Copper in a quarter-scale model with influent concentrations of 0.757 mg/L.
- Capability to remove 79 percent of dissolved Copper in laboratory conditions with influent concentrations of 0.567 mg/L at a flow rate of 3.0 gpm per square foot of media.
- Capability to remove 80.5-percent of dissolved Zinc in a quarter-scale model with influent concentrations of 0.95 mg/L at a flow rate of 3.0 gpm per square foot of media.
- Capability to remove 78-percent of dissolved Zinc in laboratory conditions with influent concentrations of 0.75 mg/L at a flow rate of 3.0 gpm per square foot of media.

Field Testing

- Modular Wetland Systems, Inc. conducted monitoring of an MWS-Linear (Model # MWS-L-4-13) from April 2012 through May 2013, at a transportation maintenance facility in Portland, Oregon. The manufacturer collected flow-weighted composite samples of the system's influent and effluent during 28 separate storm events. The system treated approximately 75 percent of the runoff from 53.5 inches of rainfall during the monitoring period. The applicant sized the system at 1 gpm/sq ft. (wetland media) and 3gpm/sq ft. (prefilter).
- Influent TSS concentrations for qualifying sampled storm events ranged from 20 to 339 mg/L. Average TSS removal for influent concentrations greater than 100 mg/L (n=7) averaged 85 percent. For influent concentrations in the range of 20-100 mg/L (n=18), the upper 95 percent confidence interval about the mean effluent concentration was 12.8 mg/L.
- Total phosphorus removal for 17 events with influent TP concentrations in the range of 0.1 to 0.5 mg/L averaged 65 percent. A bootstrap estimate of the lower 95 percent confidence limit (LCL95) of the mean total phosphorus reduction was 58 percent.
- The lower 95 percent confidence limit of the mean percent removal was 60.5 percent for dissolved zinc for influent concentrations in the range of 0.02 to 0.3 mg/L (n=11). The lower 95 percent confidence limit of the mean percent removal was 32.5 percent for dissolved copper for influent concentrations in the range of 0.005 to 0.02 mg/L (n=14) at flow rates up to 28 gpm (design flow rate 41 gpm). Laboratory test data augmented the

data set, showing dissolved copper removal at the design flow rate of 41 gpm (93 percent reduction in influent dissolved copper of 0.757 mg/L).

- Several configurations of the BioMediaGREEN pre-filter were tested during the monitoring period. The final approved configuration is the cubed BioMediaGREEN Pre-Filter.
- On average during the monitoring period the system treated 21 percent of a water year before being maintained. When looking at only the monitoring that occurred while using the cubed BioMediaGREEN Pre-Filter on average the system treated 35 percent of a water year before being maintained.
- Required maintenance included vactoring and power washing the pre-treatment chamber and replacing the BioMediaGREEN in the media cartridge pre-filters.

Issues to be addressed by the Company:

1. Conduct hydraulic testing at three sites as outlined in the 2024 TAPE Guidance Document to obtain information about the maintenance longevity and requirements. Complete testing by February 28, 2028.

2.

Technology Description:

Download at <https://www.conteches.com/modular-wetlands>

Contact Information:

Applicant: Jeremiah Lehman
Contech Engineered Solutions, LLC
11815 NE Glenn Widing Dr.
Portland, OR 97220
Jeremiah.Lehman@ContechES.com

Applicant website: <http://www.conteches.com>

Ecology web link: <http://www.ecy.wa.gov/programs/wg/stormwater/newtech/index.html>

Ecology: Douglas C. Howie, P.E.
Department of Ecology
Water Quality Program
(360) 870-0983
douglas.howie@ecy.wa.gov

Revision History

Date	Revision
June 2011	Original use-level-designation document
September 2012	Revised dates for TER and expiration
January 2013	Modified Design Storm Description, added Revision Table, added maintenance discussion, modified format in accordance with Ecology standard

December 2013	Updated name of Applicant
April 2014	Approved GULD designation for Basic, Phosphorus, and Enhanced treatment
December 2015	Updated GULD to document the acceptance of MWS – Linear Modular Wetland installations with or without the inclusion of plants
July 2017	Revised Manufacturer Contact Information (name, address, and email)
December 2019	Revised Manufacturer Contact Address
July 2021	Added additional prefilter sized at 33 inches
August 2021	Changed “Prefilter” to “Prefilter box”
November 2022	Changed Contacts to Contech ES
January 2024	Revised Dissolved Metals (Enhanced) to Metals
March 2025	Added requirement for maintenance assessment



8.0 General Requirements

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

Sub-attachments (check all that are completed)
☒ 8.1: Flow Control Facility Design (required) ¹ Submit using ☒ the Sub-attachment 8.1 cover sheet provided, or ☐ as a separate stand-alone document labeled Sub-attachment 8.1.
☒ 8.2: Hydromodification Management Points of Compliance (required) Complete the table provided in Sub-attachment 8.2.
8.3: Geomorphic Assessment of Receiving Channels 1. Has a geomorphic assessment been performed for the receiving channel(s)? ☒ No, the low flow threshold is 0.1Q ₂ (default low flow threshold) ☐ Yes (provide the information below): Low flow threshold: ☐ 0.1Q ₂ ☐ 0.3Q ₂ ☐ 0.5Q ₂ Title: Date: Preparer:
Submit using ☐ the Sub-attachment 8.3 cover sheet provided, or ☐ as a separate stand-alone document labeled Sub-attachment 8.3.
8.4: Vector Control Plan (required if BMPs will not drain in less than 96 hours) ☐ Included with this attachment ☒ Not required

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

8.1 Flow Control Facility Design

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

One (1) underground detention system with a total static storage volume equal to or greater than 13,381 cubic feet at 2.33 feet of ponded depth draining through a single 1.75-inch diameter orifice at the system invert. The system has additional flow controls above this stage-storage level for integrated 100-year storm detention.

See following attachments used to support the minimum detention facility size, maximum orifice diameter, and drawdown time. Additional supporting attachments include the manufacturer sizing information and conceptual flow control facility details.

BMP Sizing Spreadsheet V3.1

Project Name:	Colonnade Hotel
Project Applicant:	Steve Powell
Jurisdiction:	County of San Diego
Parcel (APN):	282-141-32-00, 33-00 & 34-00
Hydrologic Unit:	905.41
Rain Gauge:	Lake Wohlford
Total Project Area (sf):	119,300
Channel Susceptibility:	High

BMP Sizing Spreadsheet V3.1			
Project Name:	Colonnade Hotel	Hydrologic Unit:	905.41
Project Applicant:	Steve Powell	Rain Gauge:	Lake Wohlford
Jurisdiction:	County of San Diego	Total Project Area:	119,300
Parcel (APN):	282-141-32-00, 33-00 & 34-00	Low Flow Threshold:	0.1Q2
BMP Name:	BMP 2	BMP Type:	Cistern
BMP Native Soil Type:	D	BMP Infiltration Rate (in/hr):	NA

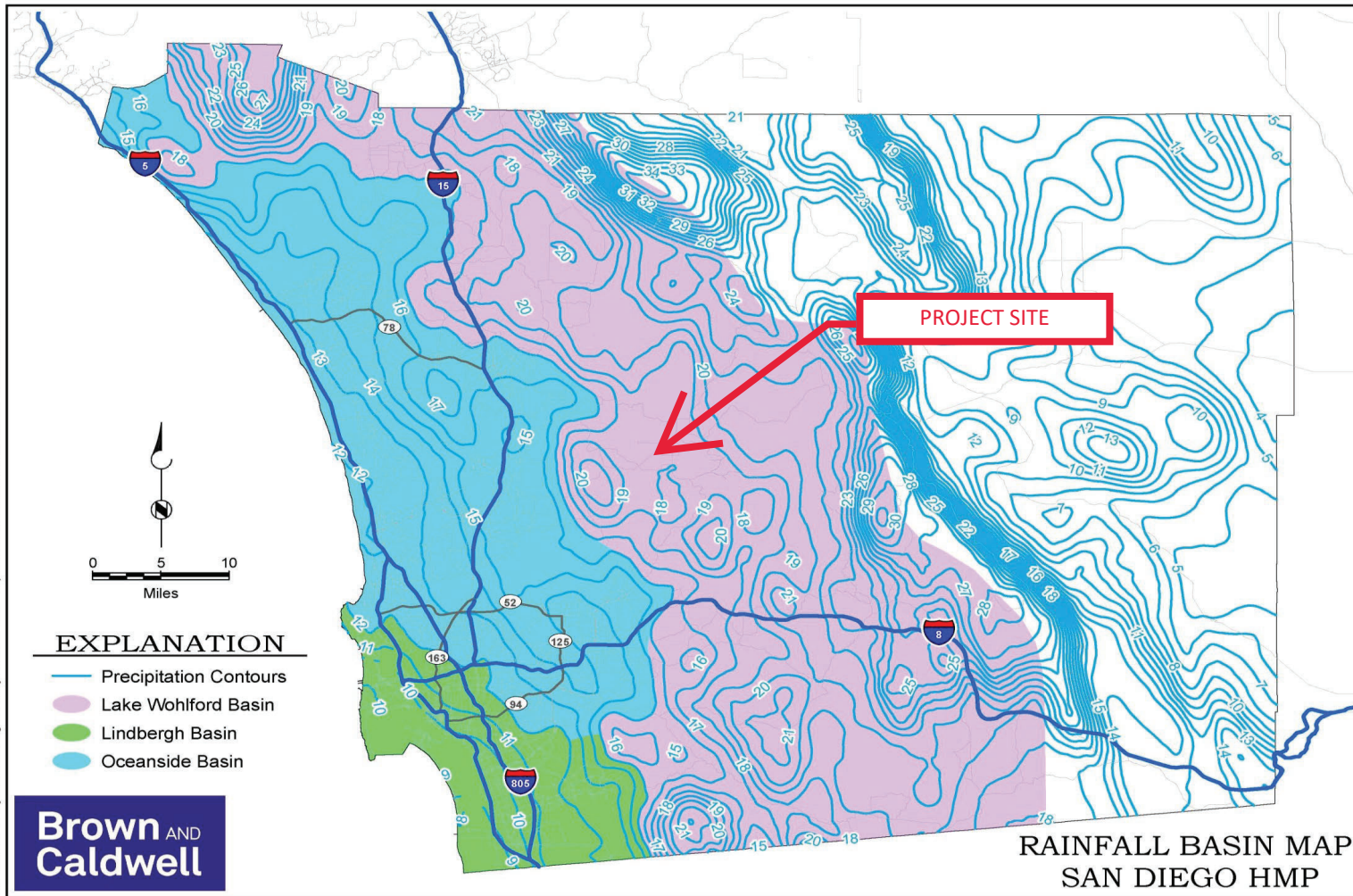
Areas Draining to BMP						HMP Sizing Factors	Minimum BMP Size
DMA Name	Area (sf)	Pre Project Soil Type	Pre-Project Slope	Post Project Surface Type	Area Weighted Runoff Factor (Table G.2-1) ¹	Volume	Volume (CF)
DMA-1	107,370	D	Flat	Mixed	1.0	0.12	12884
Landscape	11,930	D	Flat	Landscape	0.1	0.12	143
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
BMP Tributary Area	119,300					0	0

Minimum BMP Size	13028
Proposed BMP Size*	13381

* Assumes standard configuration

Standard Cistern Depth (Overflow Elevation)	3.5	ft
Provided Cistern Depth (Overflow Elevation)	2.3	ft
Minimum Required Cistern Footprint)	5583	CF

Notes:
 1. Runoff factors which are used for hydromodification management flow control (Table G.2-1) are different from the runoff factors used for pollutant control BMP sizing (Table B.1-1). Table references are taken from the San Diego Region Model BMP Design Manual,
 Describe the BMP's in sufficient detail in your PDP SWQMP to demonstrate the area, volume, and other criteria can be met within the constraints of the site.
 BMP's must be adapted and applied to the conditions specific to the development project such as unstable slopes or the lack of available head.
 Designated Staff have final review and approval authority over the project design.
 This BMP Sizing Spreadsheet has been updated in conformance with the San Diego Region Model BMP Design Manual, May 2018. For questions or concerns please contact the jurisdiction in which your project is located.



PROJECT DESCRIPTION

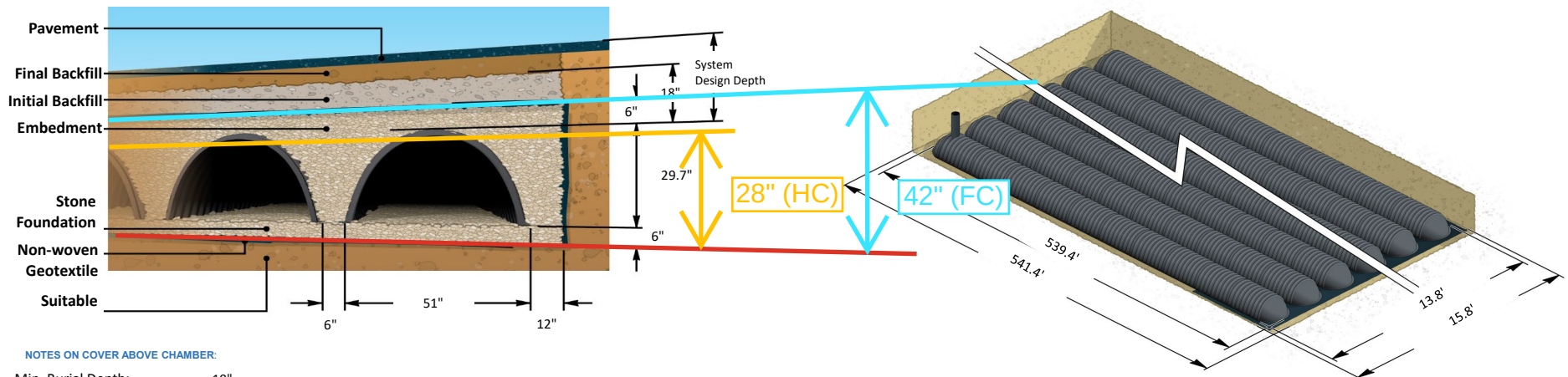
Project Name: Colonnade Hotel Date: 7 / 7 / 2023 City/State: Ramona / California Phone #: (760) 414-9212
 Engineer: TRWE Contractor: TBD Designed By: AJS Prinsco Rep:

DESIGN CRITERIA - BASED ON STORAGE VOLUME

Chamber Size: HS75 Constraint on System Dimensions: Width Number of Manifolds: 0 Manifold Diameter: 24 (in) Include Manifold Volume?: No Units: Standard **
 Target Storage Volume: 18000 (cf) Constraint Limit: 20 (ft) Stone Porosity: 40 % Bottom of Stone Elevation: 1402.76 (ft) Max. Pavement Elevation: 1409.42 (ft) Min. Pavement Elevation: 1407.86 (ft)
 Additional Stone Above Chamber*: 0 (in) Additional Stone Below Chamber*: 0 (in) Additional Stone Side of Chamber*: 0 (in) Additional Stone Between Chambers: 0 (in)

* Minimum recommended values are already included in calculations

SYSTEM LAYOUT



NOTES ON COVER ABOVE CHAMBER:

Min. Burial Depth: 18"
 Max. Burial Depth: 8'

SYSTEM STORAGE & QUANTITIES

System Layout		System Footprint	Stone Storage	Manifold Storage	Chamber Storage	Total System Storage
1 of 76 rows chambers	& 2 of 75 rows chambers	8554 (sf)	7561 (cf)	0 (cf)	10494 (cf)	18055 (cf)
Number of Chambers	Number of End Caps	Required Stone (For Embedment Backfill)	Non-Woven Geotextile (Includes 20% Overlap)	Woven Geotextile - Scour	Woven Geotextile - Sediment Row	
226	6	700 (cy)	2775 (sy)	3 (sy)	602 (sy)	

ASSISTANCE: For assistance with design, drawings or pricing please have your completed system design aid ready, and contact your Prinsco sales representative

This tool is intended to assist in sizing stormwater management systems using Prinsco products. It should be used for estimating purposes only and is not intended to be a final design tool. The design engineer needs to verify all the values and ensure they meet all project design criteria.

Chamber Model

HS75



Number of Chambers

226

Number of Endcaps

6

Stone Voids (porosity)

40%

Base of Stone Elevation

0 ft

Recommended Stone Below Chambers*

6 in.

Include perimeter stone?

Yes



Recommended Stone Above Chambers*

6 in.

Area of System**

8554

sq.ft

**Area must be greater than: 8453 sq.ft

*The minimum stone below and above the chambers to be determined by the design engineer.

System Height (in)	Incremental Single Chamber Storage (cu.ft)	Incremental Single End Cap Storage (cu.ft)	Incremental Total Chamber Storage (cu.ft)	Incremental Total End Cap Storage (cu.ft)	Incremental Stone Storage (cu.ft)	Incremental Chamber, End Cap, & Stone (cu.ft)	Cumulative System Storage (cu.ft)	Elevation (ft)
42	0.000	0.000	0.000	0.000	285.14	285.14	18271.80	3.50
41	0.000	0.000	0.000	0.000	285.14	285.14	17986.67	3.42
40	0.000	0.000	0.000	0.000	285.14	285.14	17701.53	3.33
39	0.000	0.000	0.000	0.000	285.14	285.14	17416.39	3.25
38	0.000	0.000	0.000	0.000	285.14	285.14	17131.25	3.17
37	0.000	0.000	0.000	0.000	285.14	285.14	16846.12	3.08
36	0.125	0.000	28.245	0.000	273.84	302.08	16560.98	3.00
35	0.301	0.010	67.950	0.060	257.93	325.94	16258.90	2.92
34	0.616	0.020	139.293	0.120	229.37	368.79	15932.95	2.83
33	0.852	0.030	192.466	0.180	208.08	400.73	15564.17	2.75
32	1.012	0.040	228.612	0.240	193.60	422.45	15163.44	2.67
31	1.138	0.050	257.274	0.300	182.11	439.68	14740.99	2.58
30	1.244	0.060	281.070	0.360	172.57	454.00	14301.31	2.50
29	1.333	0.060	301.265	0.360	164.49	466.11	13847.32	2.42
28	1.411	0.070	318.831	0.420	157.44	476.69	13381.20	2.33
27	1.481	0.080	334.753	0.480	151.04	486.28	12904.51	2.25
26	1.547	0.080	349.594	0.480	145.11	495.18	12418.24	2.17
25	1.608	0.090	363.444	0.540	139.54	503.53	11923.06	2.08
24	1.665	0.100	376.361	0.600	134.35	511.31	11419.53	2.00
23	1.719	0.100	388.396	0.600	129.54	518.53	10908.21	1.92
22	1.768	0.110	399.603	0.660	125.03	525.30	10389.68	1.83
21	1.814	0.110	410.020	0.660	120.87	531.55	9864.38	1.75
20	1.855	0.120	419.153	0.720	117.19	537.06	9332.84	1.67
19	1.897	0.120	428.749	0.720	113.35	542.82	8795.78	1.58
18	1.935	0.120	437.286	0.720	109.93	547.94	8252.96	1.50
17	1.970	0.130	445.297	0.780	106.71	552.78	7705.02	1.42
16	2.004	0.130	452.793	0.780	103.71	557.28	7152.23	1.33
15	2.034	0.130	459.795	0.780	100.91	561.48	6594.95	1.25
14	2.064	0.140	466.457	0.840	98.22	565.52	6033.47	1.17
13	2.093	0.140	472.922	0.840	95.63	569.39	5467.96	1.08
12	2.121	0.140	479.379	0.840	93.05	573.27	4898.56	1.00
11	2.149	0.140	485.672	0.840	90.53	577.04	4325.29	0.92

Chamber Model

HS75



Number of Chambers

226

Number of Endcaps

6

Stone Voids (porosity)

40%

Base of Stone Elevation

0 ft

Recommended Stone Below Chambers*

6 in.

Include perimeter stone?

Yes



Recommended Stone Above Chambers*

6 in.

Area of System**

8554

sq. ft

**Area must be greater than: 8453 sq. ft

*The minimum stone below and above the chambers to be determined by the design engineer.

System Height (in)	Incremental Single Chamber Storage (cu.ft)	Incremental Single End Cap Storage (cu.ft)	Incremental Total Chamber Storage (cu.ft)	Incremental Total End Cap Storage (cu.ft)	Incremental Stone Storage (cu.ft)	Incremental Chamber, End Cap, & Stone (cu.ft)	Cumulative System Storage (cu.ft)	Elevation (ft)
10	2.175	0.140	491.645	0.840	88.14	580.63	3748.25	0.83
9	2.201	0.140	497.456	0.840	85.82	584.12	3167.62	0.75
8	2.226	0.150	503.109	0.900	83.53	587.54	2583.50	0.67
7	0.000	0.000	0.000	0.000	285.14	285.14	1995.96	0.58
6	0.000	0.000	0.000	0.000	285.14	285.14	1710.82	0.50
5	0.000	0.000	0.000	0.000	285.14	285.14	1425.69	0.42
4	0.000	0.000	0.000	0.000	285.14	285.14	1140.55	0.33
3	0.000	0.000	0.000	0.000	285.14	285.14	855.41	0.25
2	0.000	0.000	0.000	0.000	285.14	285.14	570.27	0.17
1	0.000	0.000	0.000	0.000	285.14	285.14	285.14	0.08
0	0.000	0.000	0.000	0.000	0.00	0.00	0.00	0.00

FLOW CONTROL STRUCTURE COLONNADE HOTEL COUNTY OF SAN DIEGO, CA

LOWEST TG ELEV 1407.86
LOWEST SURFACE ELEV 1407.97
HIGHEST SURFACE HP 1409.48
HOTEL FF ELEV 1410.00

>>>12" FREEBOARD

OVERFLOW ELEV
1407.05

FC ELEV 1406.25

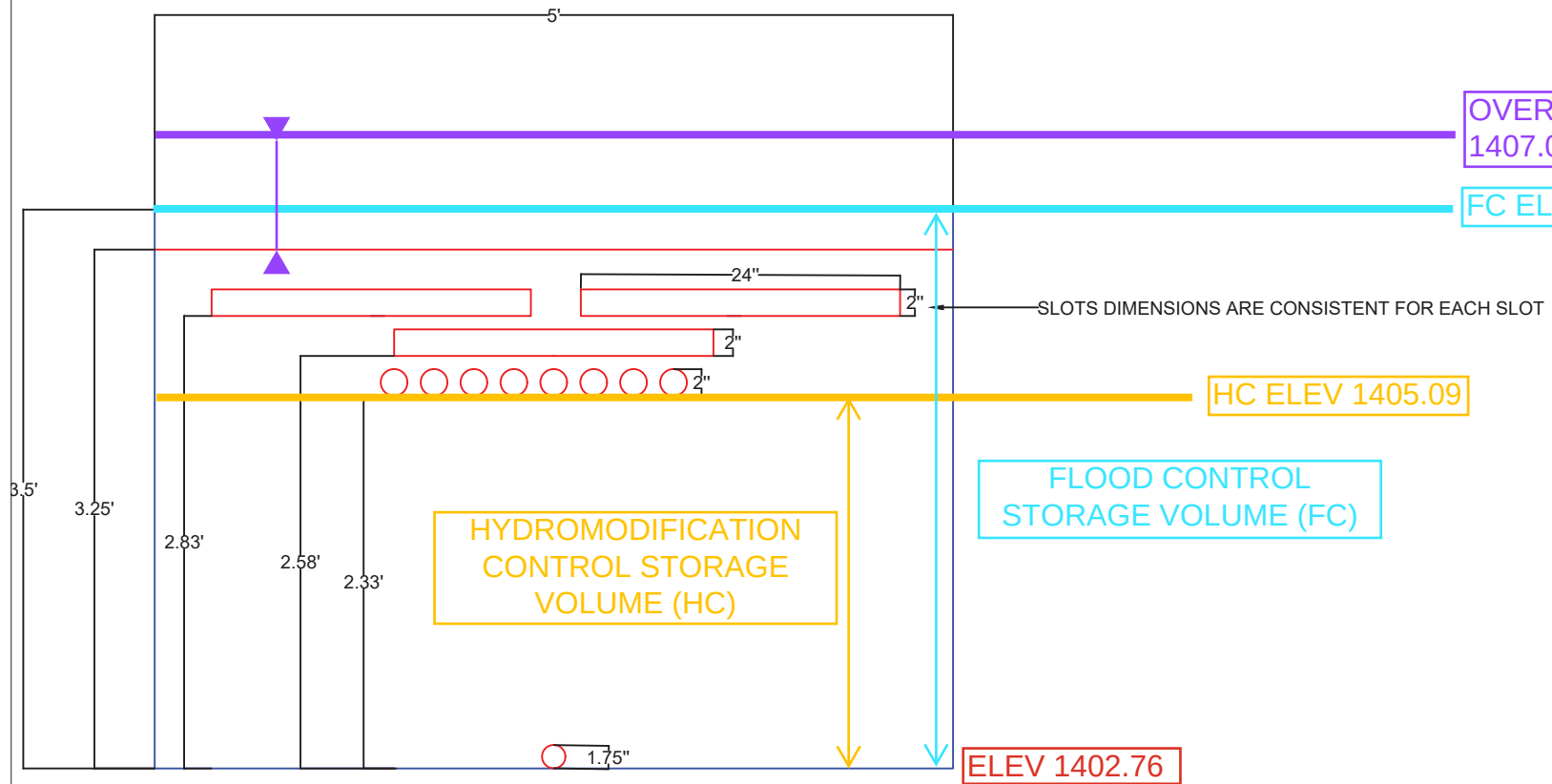
SLOTS DIMENSIONS ARE CONSISTENT FOR EACH SLOT

HC ELEV 1405.09

FLOOD CONTROL
STORAGE VOLUME (FC)

HYDROMODIFICATION
CONTROL STORAGE
VOLUME (HC)

ELEV 1402.76



Drawdown Calculation for BMP-2

Total Drawdown Time: 70.0 hours

Orifice Diameter D: 1.75 in
C: 0.60

Note: This drawdown time is inherently conservative due to the artificial assumption that the final one inch of ponding requires an extraordinarily long drawdown (285 cubic feet over 20 hours).

Surface Depth H (ft)	Volume (cu-ft)	H/D	Q _{orifice} (cfs)	ΔT (hr)	Total Time (hr)
2.33	13381	16.00	0.122	0.000	0.0
2.25	12905	15.43	0.119	1.099	1.1
2.17	12418	14.86	0.117	1.143	2.2
2.08	11923	14.29	0.115	1.187	3.4
2.00	11420	13.71	0.112	1.232	4.7
1.92	10908	13.14	0.110	1.279	5.9
1.83	10390	12.57	0.107	1.327	7.3
1.75	9864	12.00	0.105	1.376	8.6
1.67	9333	11.43	0.102	1.427	10.1
1.58	8796	10.86	0.099	1.481	11.6
1.50	8253	10.29	0.097	1.538	13.1
1.42	7705	9.71	0.094	1.599	14.7
1.33	7152	9.14	0.091	1.664	16.4
1.25	6595	8.57	0.088	1.734	18.1
1.17	6033	8.00	0.085	1.810	19.9
1.08	5468	7.43	0.081	1.894	21.8
1.00	4899	6.86	0.078	1.987	23.8
0.92	4325	6.29	0.074	2.093	25.9
0.83	3748	5.71	0.071	2.213	28.1
0.75	3168	5.14	0.067	2.353	30.4
0.67	2584	4.57	0.062	2.518	33.0
0.58	1996	4.00	0.058	2.717	35.7
0.50	1711	3.43	0.053	1.432	37.1
0.42	1426	2.86	0.047	1.580	38.7
0.33	1141	2.29	0.041	1.786	40.5
0.25	855	1.71	0.034	2.103	42.6
0.17	570	1.14	0.025	2.694	45.3
0.08	285	0.57	0.008	4.839	50.1
0.00	0	0.00	0.000	19.886	70.0

8.2 Hydromodification Management Points of Compliance

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

POC name or #	Channel name or #	POC Description
POC-1	1	Existing frontage storm drain draining southwesterly and ultimately discharging directly to an unnamed tributary to Santa Maria Creek



County of San Diego Stormwater Quality Management Plan (SWQMP)
Attachment 9: Management of Critical Coarse Sediment Yield Areas

9.0 General Requirements

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

Sub-attachments	BMPDM Design Resources
☐ 9.1: Documentation of Hydromodification Management Exemption¹	Section 1.6
☒ 9.2: Watershed Management Area Analysis (WMAA) Mapping¹	Appendix H.1.1.2
☐ 9.3: Resource Protection Ordinance (RPO) Methods	Appendix H.1.1.1
☐ 9.4: No Net Impact Analysis	Appendix H.4

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

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

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

- Based on the WMAA map and the proposed project design, demonstrate below that both of the following conditions apply to the PDP:
 - (a) Less than 5% of PCCSYAs will be impacted (built on or obstructed) by the PDP, and
 - (b) All upstream offsite PCCSYAs will be bypassed (see BMPDM Appendix H.3).

A. Mapping Results -- At a minimum, show: (1) the project footprint, (2) areas of proposed development, (3) impacted onsite PCCSYAs, (4) offsite tributary areas⁴, and (5) bypass of upstream offsite PCCSYAs.

Please see attached annotated WMAA exhibit,

³ Applicants may refine initial mapping results using options identified in BMPDM Appendix H.1.2.

⁴ Tributary areas must be shown to demonstrate that upstream offsite PCCSYAs do not exist. If bypassing these areas, only the bypass should be shown.

Colonnade Hotel

WMAA Potential Critical Coarse Sediment Yield Area Exhibit

Legend

 Potential Critical Coarse Sediment Yield Area



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

Based on the WMAA PCCSYA map, no PCCSYAs exist within or are tributary to the project site. Therefore, it can be determined that: (1) no PCCSYAs will be impacted by the PDP, and (2) no offsite PCCSYAs are tributary to the project site.



County of San Diego
Stormwater Quality Management Plan (SWQMP)
Attachment 10: BMP Installation Verification for Priority Development Projects

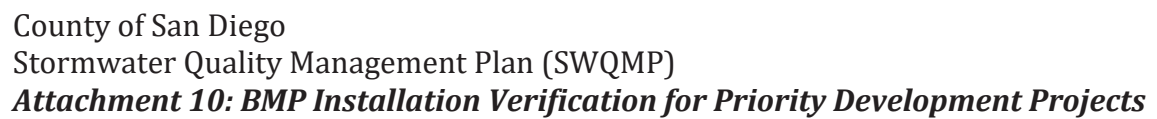
This form must be accepted by the County prior to the release of construction permits or granting of construction permits to project(s) proposed for use with the project. Applicants are responsible for providing all requested information.

**ATTACHMENT 10 TO BE COMPLETED
WITH FINAL SWQMP AT
ENGINEERING PHASE**

PART 1 PROJECT INFORMATION

A. Project Summary Information	
Project Name	Colonnade Hotel
Record ID (e.g. grading/improvement plan number, building permit)	TBD
Project Address	Main Street and Letton Street, Ramona, CA 92065
Assessor's Parcel Number(s) APN(s)	282-141-32-00, 282-141-33-00, 282-141-34-00
Project Watershed (Hydrologic Unit, Area, and Subarea Name with Numeric Identifier)	San Dieguito, Ramona, 905.41
B. Owner Information	
Name	Steve Powell
Address	2428 Montecito Road, Ramona, 92065
Email Address	steve@woodcrestrev.com
Phone Number	(760) 789-5493

COUNTY – OFFICIAL USE ONLY	
INTAKE ID#	
ACCEPTANCE ID#	



If final grade release or granting of occupancy is being requested for only a portion of the Priority Development Project (PDP) please fill out the table below. Include ALL of the Structural BMPs and/or Significant Site Design BMPs for the entire project in the table. **Include a mark-up of the DMA map from the approved SWQMP with this Verification package that clearly shows which DMAs you are submitting for approval and which DMAs have already been accepted (if any).**

Page 2 of 6
Preparation Date: 8/11/2023



County of San Diego
Stormwater Quality Management Plan (SWQMP)
Attachment 10: BMP Installation Verification for Priority Development Projects

PART 2 BMP INVENTORY INFORMATION

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

- In **Part A** list all Structural BMPs (including both Pollutant Control and/or Hydromodification as applicable) by DMA.
- Complete **Part B** for all DMAs that contain only Significant Site Design BMPs. SSD-BMPs are Site Design BMPs (SD-BMPs) that are sized and constructed to satisfy Structural Performance Standards for a DMA.
- The information provided for each BMP in the table must match that provided in the Stormwater Quality Management Plan (SWQMP), construction plans, maintenance agreements, and other relevant project documentation.

DMA #	BMP Information			Maintenance Category (1, 2, 3, or 4)	Maintenance Agreement Recorded DOC #	Construction Plan Sheet #	Landscape Plan Sheet #	FOR DPW-WPP USE ONLY
	Quantity	Description/Type of Structural BMP	BMP ID #					
A. Structural BMPs (S-BMPs)								
1	1	MWS-L-8-24-V	1	1				
1	1	Underground Detention)	2	1				
Add rows as needed. Click into the last column in the row below this, then press TAB to add a new row.								
B. Significant Site Design BMPs (SSD-BMPs)								
1A	1	Tree Well	1A	N/A				
		Choose an item.		Choose				
		Choose an item.		Choose				
		Choose an item.		Choose				
		Choose an item.		Choose				
		Choose an item.		Choose				
Add rows as needed. Click into the last column in the row below this, then press TAB to add a new row.								



PART 3 REQUIRED ATTACHMENTS

For the permanent BMPs listed in Part 2, submit the following to the County inspector along with this Verification form as a package (check all that are attached):

- ☐ **PHOTOGRAPHS:** Final construction photos of every permanent BMP listed in Part 2 are required. Final photos must be recent and be labeled with the date and a BMP Identifier. Additional photographs illustrating proper construction of the BMPs are recommended to be included and may be requested by WPP prior to acceptance of this Verification (e.g. excavation depths, liners, hydromodification orifices, Biofiltration Soil Media (BSM), vegetation, mulch).

- ☐ **MAINTENANCE AGREEMENTS:** Copies of approved and recorded Storm Water Maintenance Agreements (SWMA), Category 1 Maintenance Notification Agreements (MN), or Encroachment Maintenance and Removal Agreements (EMRA) for all S-BMPs.
Note: Significant Site Design (SSD) BMPs and most Category 4 BMPs do not require recorded maintenance agreements.

- ☐ **CONSTRUCTION PLANS:** Submit electronic and/or 11" X 17" hard copies of the current approved Construction Plan sheets for the Record ID(s) listed on Page 1:

- ☐ Grading Plans
- ☐ Improvement Plans
- ☐ Precise Grading Plan
- ☐ Building Plan (Applicable BMP Sheets only)
- ☐ Other (Please specify) _____

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

- A BMP Table on Sheet 1, AND
- A plan detail cross-section of each verified as-built BMP, AND
- The location of each verified as-built BMP

- ☐ **LANDSCAPE PLANS:** If the PDP includes vegetated BMPs and has a Landscape Plan, submit the following:

- ☐ Final Landscape Plans
- ☐ Proof of Irrigation Installed (if applicable)



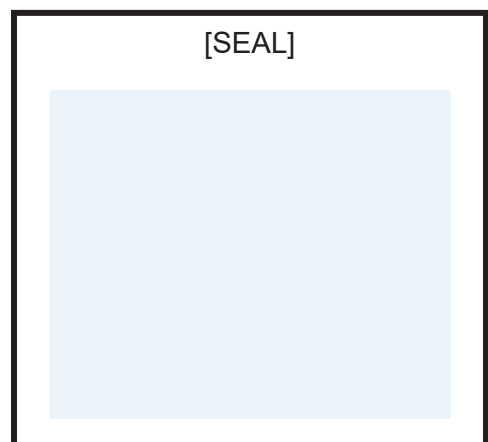
PART 4 PREPARER'S CERTIFICATION

By signing below, I certify that the BMP(s) listed in Part 2 of this Verification Form have been constructed and are in substantial conformance with the approved plans and applicable regulations. I understand the County reserves the right to inspect the above BMPs to verify compliance with the approved plans and Watershed Protection Ordinance (WPO). Should it be determined that the BMPs were not constructed to plan or code, corrective actions may be necessary before permits can be closed.

Note: Structural BMPs must be certified by a licensed professional engineer.

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

Preparer's Name:	Paul E. Fisher
Email Address:	paulfisher@projectionengineering.com
Phone Number:	(760) 443-6504
Preparer's Signature:	
Date:	





County of San Diego
Stormwater Quality Management Plan (SWQMP)
Attachment 10: BMP Installation Verification for Priority Development Projects

PROJECT RECORD ID: _____

COUNTY - OFFICIAL USE ONLY

County Inspector Approval:

***NOTE: The County approved SWQMP document and any Addendums or Revisions must be included with this BMP Installation Verification submittal package.**

- ☐ DPW Private Development Construction Inspection (PDCI)
- ☐ PDS Building
- ☐ DGS
- ☐ DPR

By signing below, the County Inspector concurs that every BMP listed in Part 2 of this BMP Installation Verification form has been installed per plan.

Inspector Name: _____

Inspector's Signature: _____ Date: _____

DPW Watershed Protection Program (WPP) Acceptance:

Date Received: _____

WPP Reviewer: _____

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

WPP Reviewer's Signature: _____ Date: _____

Enter Acceptance ID# on page 1.

NOTES:



11.0 Cover Sheet and General Requirements

- All Structural BMPs must have a plan and mechanism to ensure on-going maintenance. Use the

**ATTACHMENT 11 TO BE COMPLETED
WITH FINAL SWQMP AT
ENGINEERING PHASE**

a. Applicability of Maintenance Agreements

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

☐ **Maintenance Notification Agreement for Category 1 Stormwater Structural BMPs**

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

CATEGORY 1 MAINTENANCE AGREEMENTS ARE RECORDED PRIOR TO OCCUPANCY.

☐ **Storm Water Facilities Maintenance Agreement (SWMA) (Category 2 BMPs)**

- Exhibit A: Legal Description of Property
- Exhibit B: BMP Maintenance Program (see below)
- Exhibit C: BMP Locations

CATEGORY 2 MAINTENANCE AGREEMENTS ARE RECORDED PRIOR TO PERMIT ISSUANCE.

Maintenance agreement templates and instructions are available on the County's website: www.sandiegocounty.gov/stormwater under the Development Resources tab, Submittal Templates.

b. Maintenance Plan Requirements

Maintenance plans should include the following:

- ☐ Specific **maintenance indicators and actions** for proposed structural BMP(s). These must be based on maintenance indicators presented in BMP Design Manual Fact Sheets in Appendix E and enhanced to reflect actual proposed components of the structural BMP(s).
- ☐ **Access** to inspect and perform maintenance on the structural BMP(s).
- ☐ Features to **facilitate inspection** (e.g., observation ports, cleanouts, silt posts, or other features that allow the inspector to view necessary components of the structural BMP and compare to maintenance thresholds).
- ☐ 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.

Modular Wetlands[®] Linear Operation & Maintenance Manual



MODULAR WETLANDS® LINEAR OPERATION & MAINTENANCE MANUAL

TABLE OF CONTENTS

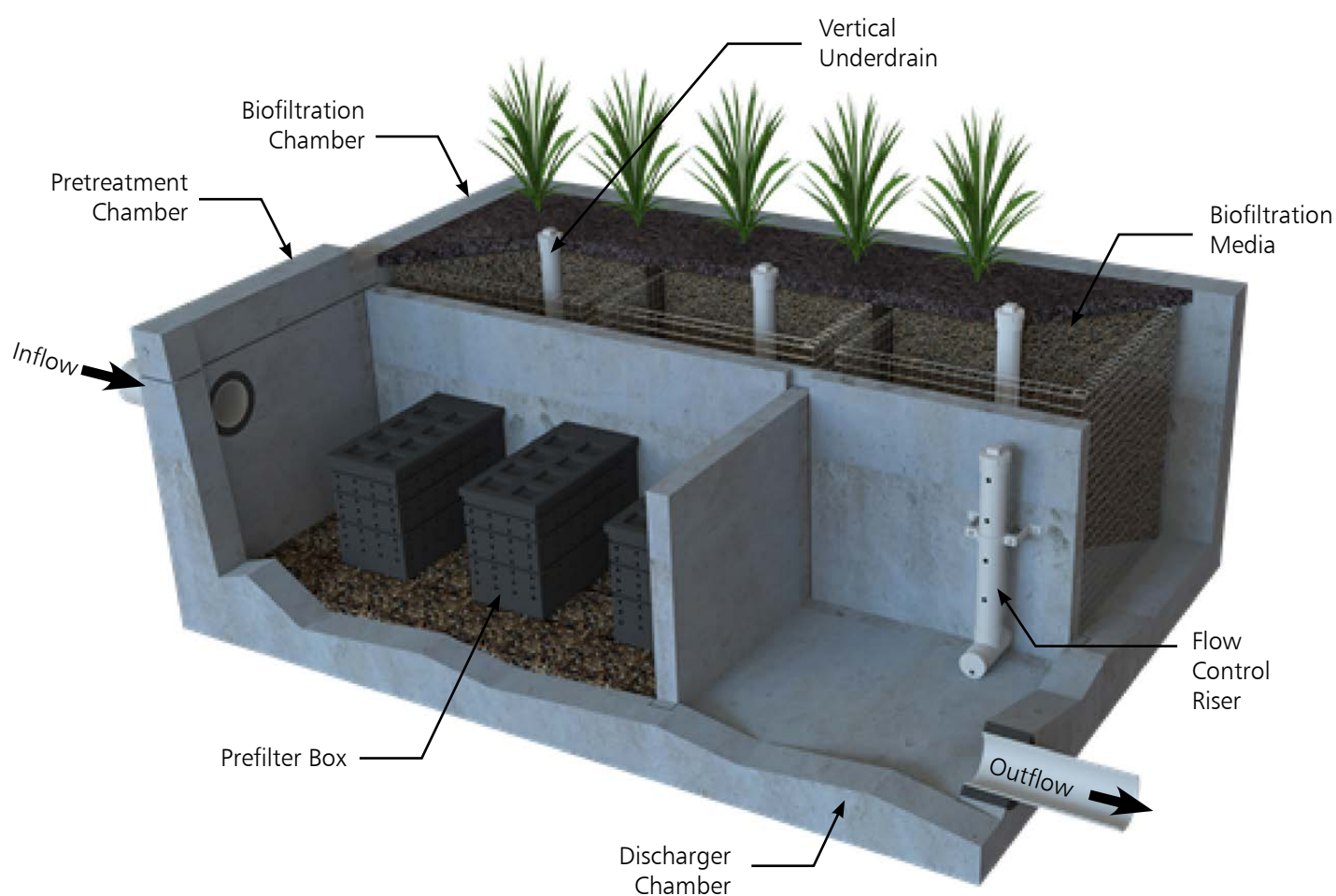
Overview	3
Inspection Summary.....	4
Inspection Process.....	5
Maintenance Indicators	6
Inspection Process.....	7
Maintenance Summary	8
Pretreatment Chamber	9
Prefilter Cartridge	10
Biofiltration Chamber	11
Discharge Chamber	12
Inspection Report.....	13
Cleaning and Maintenance Report.....	14

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.

New
BioMediaGREEN
0%

Exhausted
BioMediaGREEN
100%

85%



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:

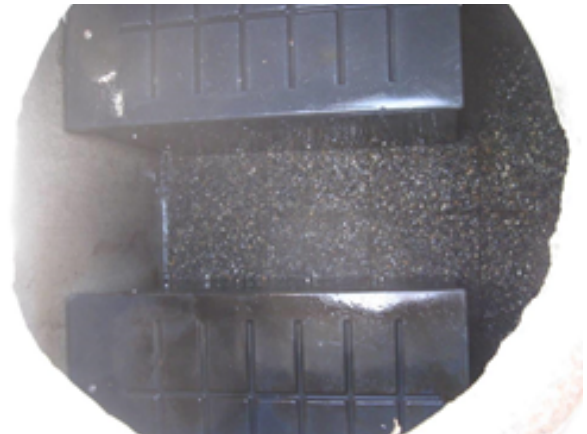
- Prepare the maintenance form by writing in the necessary information including project name, location, date & time, unit number and other info (see maintenance form).
- Set up all appropriate safety and cleaning equipment.
- Ensure traffic control is set up and properly positioned.
- Prepared pre-checks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

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

Inspection Report Modular Wetlands Linear

Project Name _____		For Office Use Only (Reviewed By) _____ (Date) _____ Office personnel to complete section to the left.
Project Address _____ (city) (Zip Code)		
Owner / Management Company _____		
Contact _____	Phone () - _____	
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: _____



Cleaning and Maintenance Report Modular Wetlands Linear

Project Name _____

Project Address _____
(city) (Zip Code)

Owner / Management Company _____

Contact _____

Phone () -

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 _____

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

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:	MWS Catch Basins						
	Long:							
		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:



© 2023 CONTECH ENGINEERED SOLUTIONS LLC, A QUIKRETE COMPANY

800-338-1122

WWW.CONTECHES.COM

ALL RIGHTS RESERVED. PRINTED IN THE USA.

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.

NOTHING IN THIS CATALOG SHOULD BE CONSTRUED AS A WARRANTY. APPLICATIONS SUGGESTED HEREIN ARE DESCRIBED ONLY TO HELP READERS MAKE THEIR OWN EVALUATIONS AND DECISIONS, AND ARE NEITHER GUARANTEES NOR WARRANTIES OF SUITABILITY FOR ANY APPLICATION. CONTECH MAKES NO WARRANTY WHATSOEVER, EXPRESS OR IMPLIED, RELATED TO THE APPLICATIONS, MATERIALS, COATINGS, OR PRODUCTS DISCUSSED HEREIN. ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND ALL IMPLIED WARRANTIES OF FITNESS FOR ANY PARTICULAR PURPOSE ARE DISCLAIMED BY CONTECH. SEE CONTECH'S CONDITIONS OF SALE (AVAILABLE AT WWW.CONTECHES.COM/COS) FOR MORE INFORMATION.

SUPPORT

DRAWINGS AND SPECIFICATIONS ARE AVAILABLE AT WWW.CONTECHES.COM

Modular Wetlands Maintenance Guide 1/2023

Introduction

Prinsco's HydroStor chamber systems provide a solution to effectively manage and store stormwater runoff utilizing a pipe manifold system to distribute the stormwater to rows of chambers and end caps. As stormwater flows to the chamber system, it carries sediment and debris that tend to collect within the system. Given that chambers are an open bottom system it is essential to capture the sediment and debris before it enters the chamber rows with the use of a pre-treatment device.

Pre-Treatment System Devices

The use of a pre-treatment unit is recommended for all HydroStor chamber systems as debris and sediment buildup in the system will clog the stone void space under the chambers. If the stone becomes clogged with sediment, the storage performance and service life of the system will be compromised. A pre-treatment unit is designed to capture a majority of sediment and debris before it is able to enter the entire chamber system. Therefore, the maintenance and cleaning of the system will be limited to only the pre-treatment and not the entire chamber system. It is crucial to ensure that the pre-treatment device(s) are maintained regularly. For chamber systems, there are two options for a pre-treatment device: a Stormwater Quality Unit (SWQU) or a sediment row.

Sediment Row

One option available for HydroStor chamber systems, which can be used in conjunction with a SWQU or by itself, is a sediment row. The sediment row consists of a series of chambers installed directly on top of two layers of woven geotextile. The geotextile serves as a filter and prevents the sediment from clogging the bedding stone. The specified geotextile is also durable enough to withstand cleaning and maintenance procedures using water jet technology. The sediment row will typically be located in the first row of chambers and connected to the control structure(s). This connection is made with a short stub of 18" (450 mm) pipe for HS75 chambers or 24" (600 mm) pipe for HS180 chambers and will be the point of access for cleaning and maintenance procedures. A 24" (600 mm) connection to HS75 chambers is possible, but a pipe adapter will be required to make the connection to the end cap.

Inspection Ports

Inspection ports are not required for the entire chamber system but may be installed to monitor the sediment levels, particularly in the sediment row. Inspection ports are typically 4"-8" (100-200 mm) PVC risers and are to be installed in the valley between the corrugations on the HS180 chambers or in the circular cut out point at the center of HS75 chambers.

Initial System Inspection

An initial inspection of the pre-treatment device should be performed before the chamber system is put into operation. It is best to create an Inspection and Maintenance log sheet at this time. The Inspection and Maintenance Log Sheet can be found at the end of this technical note. Included with the log sheet should be a layout of the system and/or pre-treatment devices with the invert elevations at the inspection ports prior to sediment accumulation. Initial measurements can be taken with a stadia rod or other measurement techniques. These measurements will allow for future sediment height measurements to be taken from outside of the system, eliminating the need for a manned entrance.

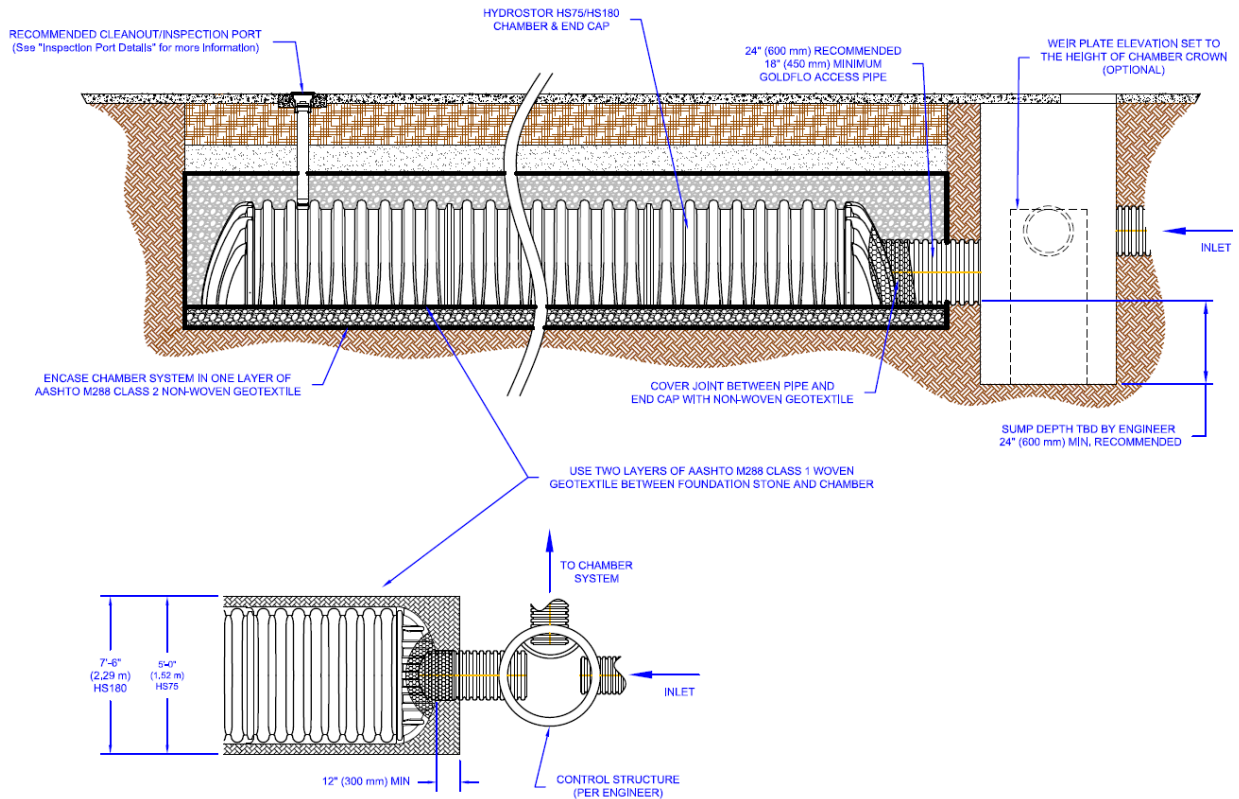


Figure 1: Chamber Sediment Row

Inspection Frequency

Inspection frequency will vary based on the system design and requirements. A system inspection schedule should be developed for each individual system, with the industry standard being a minimum of once per year. After the inspection schedule is established for the system, it should be tracked on the Inspection and Maintenance Log Sheet.

During the first year of operation, more frequent inspections should be done due to construction activities. Construction sediment and debris loading can be minimized if the Stormwater Pollution Prevention Plan (SWPP) for the construction site is followed. After the first year of operation, the rate at which the pretreatment system collects soil/pollutants will be heavily dependent on the site activities. During winter months, in geographical areas where sand is applied to road surfaces, systems may see increased sediment loading. Other increased loading areas are present with vehicle or equipment wash-down areas.

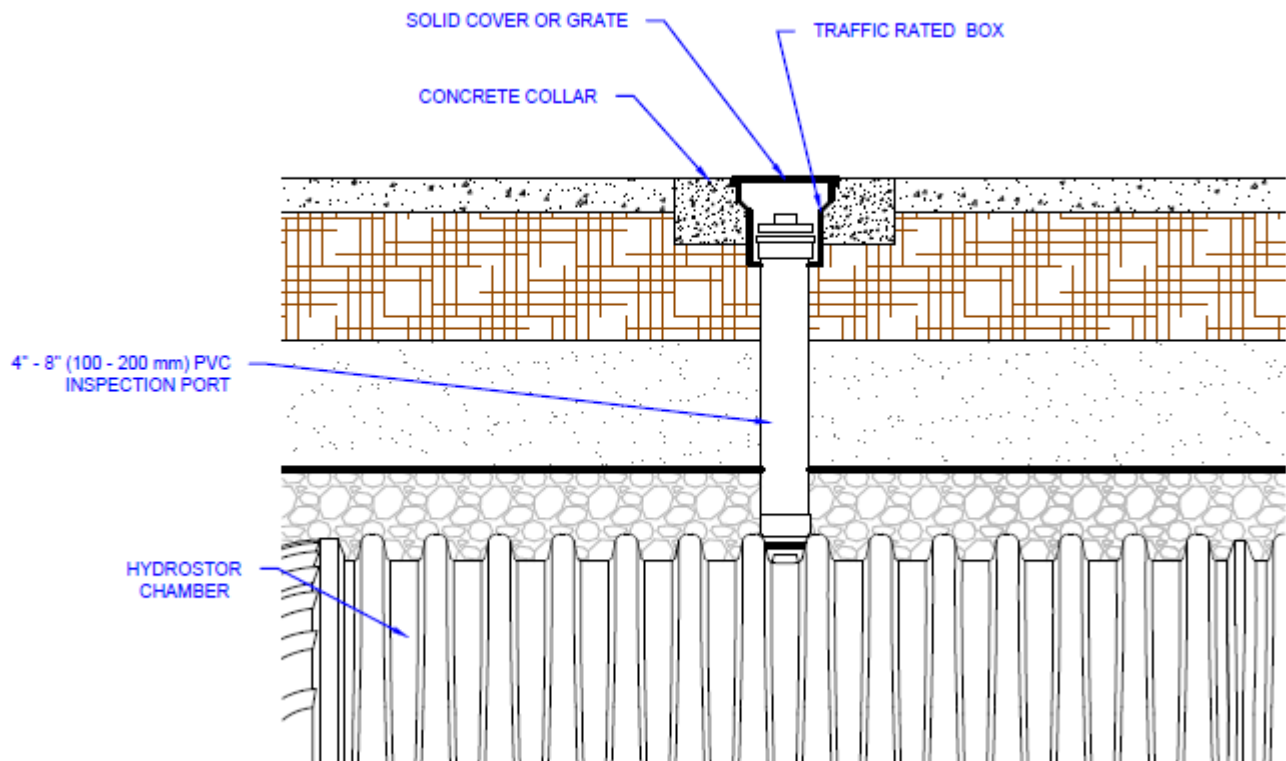


Figure 2: Inspection Ports for Chamber System

Inspection for a sediment row can either be done through an inspection port or by examining the chamber row through the upstream control structure. During inspections, elevations of sediment height should be taken from each riser, cleanout, or inspection port. These elevations should be recorded on the Inspection and Maintenance Log Sheet. During the inspection, personnel should be looking for blockages to inlet or outlet stubs or any other evidence of system malfunction.

Maintenance Frequency

Cleaning frequency will vary for each pre-treatment device based on the system design. It is at the sole discretion of the inspector to determine if or when the device will require cleaning. The following are recommendations of when the device should be cleaned:

- If the system is experiencing an unusual amount of silt and soil build up, the pre-treatment device should be investigated and/or cleaned.
- If the chamber sediment row reaches a sediment height between 1"-3" (25-76 mm), the inspector should recommend cleaning.
- If the system reaches a sediment height greater than 3" (76 mm) in the chamber sediment row, the system should be cleaned at the soonest opportunity.

System Cleaning

The most common method of cleaning is done by using a vacuum truck. For the sediment row, a high-pressure nozzle with rear facing jets is used to direct the sediment and debris to the inlet control structure where it can then be vacuumed out. Care needs to be taken to ensure damage to the geotextile fabric does not occur when removing sediment and debris.



Figure 3: Sediment Row Cleaning

Before the system is cleaned, the following considerations should be made:

- The system will be much easier to clean when there is little to no flow into the system and when the system does not have any standing water. For this reason, system cleaning should be scheduled around dry weather.
- Before cleaning begins, all outlet stubs should be blocked off. This includes the outlet from the diversion structure to the chamber system. If this is not done, sediment loading could back up or plug downstream pipelines adding to cleaning expenses. This is also done to prevent any of the debris or pollutants from washing into downstream waterways.
- When beginning the cleaning process, all upstream pipelines and pre-treatment units should be cleaned first.

Safety

Before entering a retention or detention system, ensure all OSHA and local safety regulations are being followed. Only personnel with appropriate confined space permits and personal protective equipment should be allowed to enter the system.

Material Disposal

After the maintenance and cleaning, dispose of sediment, as directed, in accordance with local regulations. Water and sediment from cleanout procedures should not be dumped into a sanitary sewer. In some locations, proper disposal of sediments from the sediment row can be compared to the disposal of sediments from manholes or catch basins.



Table 1: Example Inspection & Maintenance Log Sheet

Inspection & Maintenance Log Sheet									
Type of System: HS180 Chambers with SWQU & Sediment Row					Location: Minneapolis, MN				
Notes/Comments: Contact owner when sediment level reaches 8" (203 mm) or outlet stub is restricted. Scheduled cleaning should be done through SB's JET/VAC									
Ports / Cleanouts / Manholes	Point 1	Point 2	Point 3	Point 4	Point 5	Point 6	Point 7	Point 8	
Initial Inspection									
Date: 3/10/13	Invert Depth	84" (2134 mm)	84" (2134 mm)	86" (2184 mm)	87" (2210 mm)	88" (2235 mm)	89" (2261 mm)	90" (2286 mm)	91" (2311 mm)
	Sediment Depth	----	----	----	----	----	----	----	----
	Inspector Name:	Inspector 1		Maintenance Performed/Notes:					
Inspection and Maintenance									
Date: 8/10/13	Depth to Sediment	81" (2057 mm)	81" (2057 mm)	81" (2057 mm)	82" (2083 mm)	84" (2134 mm)	84" (2134 mm)	85" (2159 mm)	85" (2159 mm)
	Sediment Depth	3" (76 mm)	3" (76 mm)	5" (127 mm)	5" (127 mm)	4" (102 mm)	5" (127 mm)	5" (127 mm)	6" (152 mm)
	Inspector Name:	Inspector 2		Maintenance Performed/Notes:		excess amounts of sediment, upon further inspection pre-treatment unit was full			
Date:	Depth to Sediment								
	Sediment Depth								
	Inspector Name:			Maintenance Performed/Notes:					
Date:	Depth to Sediment								
	Sediment Depth								
	Inspector Name:			Maintenance Performed/Notes:					



Inspection & Maintenance Log Sheet									
Type of System:					Location:				
Notes/Comments:									
Ports / Cleanouts / Manholes	Point 1	Point 2	Point 3	Point 4	Point 5	Point 6	Point 7	Point 8	
Initial Inspection									
Date:	Invert Depth								
	Sediment Depth	----	----	----	----	----	----	----	----
	Inspector Name:	Inspector 1		Maintenance Performed/Notes:					
Inspection and Maintenance									
Date:	Depth to Sediment								
	Sediment Depth								
	Inspector Name:			Maintenance Performed/Notes:					
Date:	Depth to Sediment								
	Sediment Depth								
	Inspector Name:			Maintenance Performed/Notes:					
Date:	Depth to Sediment								
	Sediment Depth								
	Inspector Name:			Maintenance Performed/Notes:					
Date:	Depth to Sediment								
	Sediment Depth								
	Inspector Name:			Maintenance Performed/Notes:					
Date:	Depth to Sediment								
	Sediment Depth								
	Inspector Name:			Maintenance Performed/Notes:					
Date:	Depth to Sediment								
	Sediment Depth								
	Inspector Name:			Maintenance Performed/Notes:					



Technical Note / HydroStor™ Inspection and Maintenance Guide

Inspection & Maintenance Log Sheet									
Type of System:					Location:				
Notes/Comments:									
Ports / Cleanouts / Manholes		Point 1	Point 2	Point 3	Point 4	Point 5	Point 6	Point 7	Point 8
Initial Inspection									
Date:	Invert Depth								
	Sediment Depth	----	----	----	----	----	----	----	----
	Inspector Name:	Inspector 1		Maintenance Performed/Notes:					
Inspection and Maintenance									
Date:	Depth to Sediment								
	Sediment Depth								
	Inspector Name:			Maintenance Performed/Notes:					
Date:	Depth to Sediment								
	Sediment Depth								
	Inspector Name:			Maintenance Performed/Notes:					
Date:	Depth to Sediment								
	Sediment Depth								
	Inspector Name:			Maintenance Performed/Notes:					
Date:	Depth to Sediment								
	Sediment Depth								
	Inspector Name:			Maintenance Performed/Notes:					
Date:	Depth to Sediment								
	Sediment Depth								
	Inspector Name:			Maintenance Performed/Notes:					

Summary of Standard Inspection and Maintenance

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

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

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

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