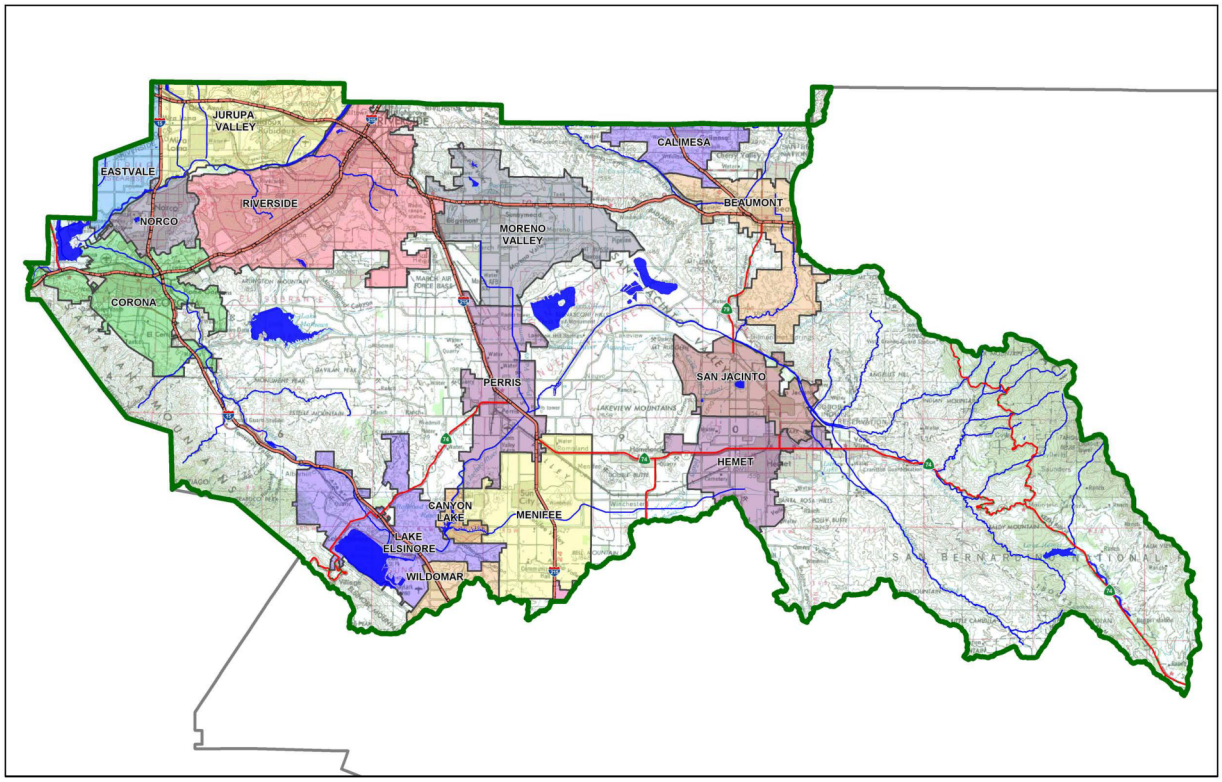
Project Specific Water Quality Management Plan

*A Template for Projects located within the **Santa Ana Watershed** Region of Riverside County*

Project Title: Phelan-Barnett

Development No: TBD

Design Review/Case No: WQ-0269



☒ **Preliminary**
☐ **Final**

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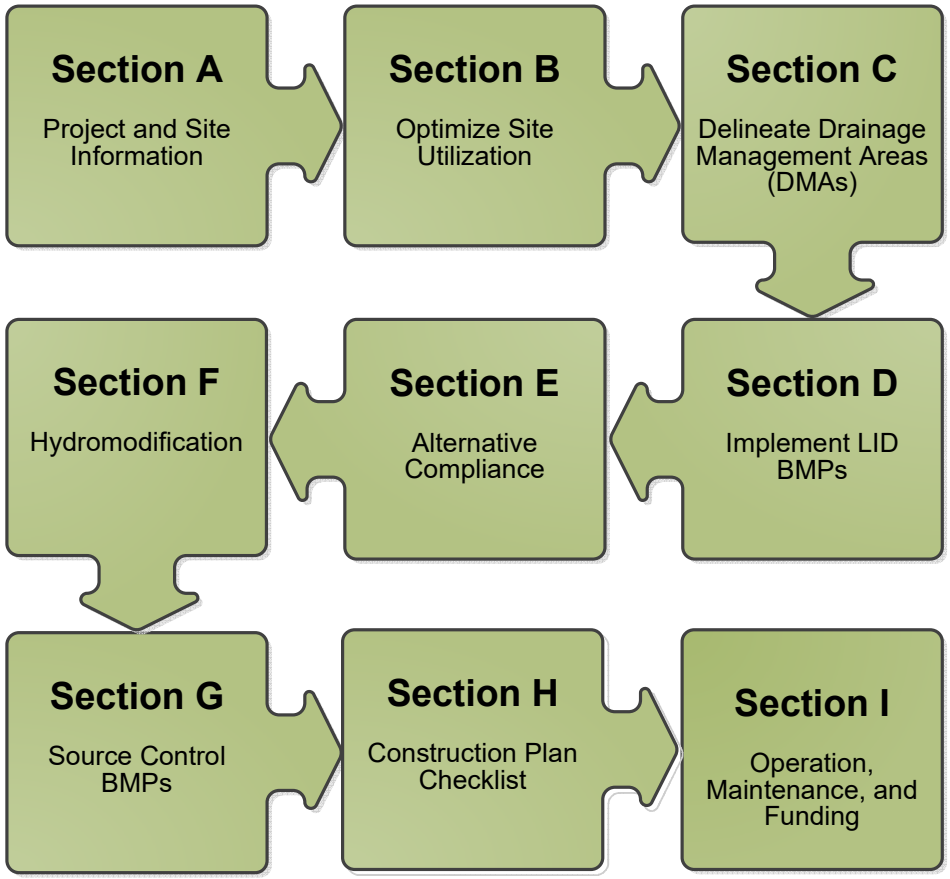
Contact Information:

Prepared for:
Phelan Development Company
450 Newport Center Drive, Suite 405
Newport Beach, CA 92660
(949) 720-8050

Prepared by:
SDH & Associates, Inc.
27363 Via Industria
Temecula, CA 92590
(951) 683-3691

A Brief Introduction

This Project-Specific WQMP Template for the **Santa Ana Region** has been prepared to help guide you in documenting compliance for your project. Because this document has been designed to specifically document compliance, you will need to utilize the WQMP Guidance Document as your "how-to" manual to help guide you through this process. Both the Template and Guidance Document go hand-in-hand, and will help facilitate a well prepared Project-Specific WQMP. Below is a flowchart for the layout of this Template that will provide the steps required to document compliance.



OWNER'S CERTIFICATION

This Project-Specific Water Quality Management Plan (WQMP) has been prepared for Phelan Development Company by SDH & Associates, Inc. for the Phelan-Barnett project, located at the southwest corner of the intersection of Barnett Road and Ethanac Road.

This WQMP is intended to comply with the requirements of City of Menifee Municipal Code Section 15.01, which includes the requirement for the preparation and implementation of a Project-Specific WQMP.

The undersigned, while owning the property/project described in the preceding paragraph, shall be responsible for the implementation and funding of this WQMP and will ensure that this WQMP is amended as appropriate to reflect up-to-date conditions on the site. In addition, the property owner accepts responsibility for interim operation and maintenance of Stormwater BMPs until such time as this responsibility is formally transferred to a subsequent owner. This WQMP will be reviewed with the facility operator, facility supervisors, employees, tenants, maintenance and service contractors, or any other party (or parties) having responsibility for implementing portions of this WQMP. At least one copy of this WQMP will be maintained at the project site or project office in perpetuity. The undersigned is authorized to certify and to approve implementation of this WQMP. The undersigned is aware that implementation of this WQMP is enforceable under the City of Menifee Water Quality Ordinance (Municipal Code Section 15.01).

"I, the undersigned, certify under penalty of law that the provisions of this WQMP have been reviewed and accepted and that the WQMP will be transferred to future successors in interest."

Owner's Signature	Date
Owner's Printed Name	Owner's Title/Position

PREPARER'S CERTIFICATION

"The selection, sizing and design of stormwater treatment and other stormwater quality and quantity control measures in this plan meet the requirements of Regional Water Quality Control Board Order No. **R8-2010-0033** and any subsequent amendments thereto."

Preparer's Signature	Date
Nobu Murakami	Water Resources Engineer
Preparer's Printed Name	Preparer's Title/Position

Preparer's Licensure:

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Section A: Project and Site Information

PROJECT INFORMATION	
Type of Project:	Industrial
Planning Area:	Economic Development Corridor – Northern Gateway (EDC-NG)
Community Name:	City of Menifee
Development Name:	Phelan - Barnett
PROJECT LOCATION	
Latitude & Longitude (DMS): 33°44'27.41"N, 117°11'40.12"W	
Project Watershed and Sub-Watershed: Santa Ana (Watershed) Perris Reservoir (Sub Watershed)	
Gross Acres: ~13.9 acres (parcel); Drainage Management Area: ~14.1 (overall)	
APN(s): 331-060-036 and 331-060-021	
Map Book and Page No.: Book 96 Page 86 of Parcel Maps	
PROJECT CHARACTERISTICS	
Proposed or Potential Land Use(s)	Industrial
Proposed or Potential SIC Code(s)	1541
Area of Impervious Project Footprint (SF)	517,954 SF
Total Area of proposed Impervious Surfaces within the Project Footprint (SF)/or Replacement	517,954 SF
Does the project consist of offsite road improvements?	☒ Y ☐ N
Does the project propose to construct unpaved roads?	☐ Y ☒ N
Is the project part of a larger common plan of development (phased project)?	☐ Y ☒ N
EXISTING SITE CHARACTERISTICS	
Total area of existing Impervious Surfaces within the Project limits Footprint (SF)	0
Is the project located within any MSHCP Criteria Cell?	☐ Y ☒ N
If so, identify the Cell number:	N/A
Are there any natural hydrologic features on the project site?	☐ Y ☒ N
Is a Geotechnical Report attached?	☒ Y ☐ N
If no Geotech. Report, list the NRCS soils type(s) present on the site (A, B, C and/or D)	See Appendix 3 – NRCS Soil Types C
What is the Water Quality Design Storm Depth for the project?	0.58 inch

Phelan Development Company is proposing to develop an industrial tilt-up warehouse building and associated parking as part of this project, which is located at the southwest corner of the intersection of Barnett Road and Ethanac Road in the City of Menifee (within Riverside County), California. A vicinity map is provided in Appendix 1 of this report for reference purpose. The site is approximately 13.9 acres (parcel gross area). The existing site consists of vacant/undeveloped land and vegetation has been cleared over times. In the existing condition, runoff from the site generally sheet-flows in a westerly direction towards an existing flood control master drainage plan (MDP) channel (a.k.a. Romoland Line A) that was constructed and the LOMR was recently approved by FEMA. Runoff will eventually discharge into an existing San Jacinto River, which eventually drains to Canyon Lake and ultimately Lake Elsinore. In the post-development condition, the proposed improvements will consist of hardscape areas such as roof, asphalt, concrete, and ornamental landscape areas. The post-project drainage characteristic will be maintained as similar to the existing condition. In order to comply with the Santa Ana Region's permanent storm water requirements and to be consistent with the existing hydrologic/drainage characteristic, best management practices (BMPs) are proposed at three locations on-site along the westerly edge, prior to discharging into the existing flood control channel.

In support of the infiltration feasibility for the proposed permanent storm water BMP, a geotechnical investigation including infiltration testing was provided. A copy of the geotechnical report is included in Appendix 3. The two preliminary infiltration testing results at the proposed permanent BMP locations showed field infiltration rates of 0.0 inch/hour (at Trench/Test No. T-1/TH-1), 0.0 inch/hour (at Trench/Test No. T-2/TH-2), and 0.7 inch/hour (at Trench/Test No. T-3/TH-3). Both infiltration rates are below the infiltration feasibility threshold of 1.6 inch/hour; therefore, infiltration is not technically feasible. In addition, the couple rates are even below 0.3 inch/hour, which would allow for the use of "biotreatment" type BMPs. However, in order to provide better pollutant removal efficiency than the biotreatment BMP, the project plans to provide proprietary BMP such as Modular Wetland System (MWS). In order to provide adequate justification for the proprietary BMPs, relevant supporting documentation are included with this report, including "TAPE/GULD" certification document as well as excerpts from the neighboring Santa Margarita Region's BMP guidance document related to "Priority 2 (Tier 2)" BMP language. Those supporting documentation are provided in Attachment 6 for reference purpose. As such, Modular Wetland Systems (MWS) are proposed at three (3) locations along the westerly edge of the project, prior to discharging into the MDP Romoland Line A channel.

As a note, each of the proposed MWS is expected to be designed to be "off-line" systems. In other words, there will be a low-flow diversion pipe (from the mainline storm drain system) into the proposed MWS while the excess flows (above the water quality low-flows) will bypass the MWS and outlet to the MDP Romoland Line A channel.

The project is expected to provide frontage street improvements associated with Barnett Road and Ethanac Road. Storm water quality treatment control BMPs and storm drain facilities are expected to be provided as part of the frontage street improvements and runoff will eventually discharge into the existing MDP Romoland Line A channel. In order to convey the flows from portions of Barnett Road and offsite parcels east of Barnett Road, a MDP lateral Line A-13 connector storm drain pipe (36-inch RCP) is expected to be provided along Barnett Road. This Lateral Line A-13 connector pipe is anticipated to be constructed as part of the project (and possible collaboration with the northeasterly parcels' future development). The downstream MDP Line A-13 was recently approved by RCFC&WCD and will be constructed by others (i.e. – developer for TTM 37223) in early 2022, based on the improvement plans titled, "Romoland MDP Line A-13, Stage 1" (RCFC Project No. 4-0-00429; Drawing No. 4-1150).

The project is expected to have some run-on from adjacent parcels (i.e. – APNs 331-060-034 and 331-060-035 to the northeast of the project and APNs 331-060-029, 331-060-032, and 331-060-033 to the southeast of the project) and a portion of Barnett Road. In order to maintain the existing drainage characteristics, the proposed development plans to provide a couple "bypass" storm drain facilities (one near the northerly edge and the other one near the southeasterly edge) in order to convey offsite run-on flows from adjacent parcels (mentioned above) towards the existing MDP Romoland Line A Channel. For storm drain outlets into the MDP Romoland Line A Channel, the project anticipates to prepare and process an encroachment permit through RCFC&WCD during final engineering.

A.1 Maps and Site Plans

When completing your Project-Specific WQMP, include a map of the local vicinity and existing site. In addition, include all grading, drainage, landscape/plant palette and other pertinent construction plans in Appendix 2. At a **minimum**, your WQMP Site Plan should include the following:

- Drainage Management Areas
- Proposed Structural BMPs
- Drainage Path
- Drainage Infrastructure, Inlets, Overflows
- Source Control BMPs
- Buildings, Roof Lines, Downspouts
- Impervious Surfaces
- Standard Labeling
- BMP Locations (Lat/Long)

Use your discretion on whether or not you may need to create multiple sheets or can appropriately accommodate these features on one or two sheets. Keep in mind that the Co-Permittee plan reviewer must be able to easily analyze your project utilizing this template and its associated site plans and maps.

A.2 Identify Receiving Waters

Using Table A.1 below, list in order of upstream to downstream, the receiving waters that the project site is tributary to. Continue to fill each row with the Receiving Water's 303(d) listed impairments (if any), designated beneficial uses, and proximity, if any, to a RARE beneficial use. Include a map of the receiving waters in Appendix 1.

Table A.1 Identification of Receiving Waters

Receiving Waters	EPA Approved 303(d) List Impairments	Designated Beneficial Uses	Proximity to RARE Beneficial Use
MDP Romoland Line A	N/A	N/A	San Jacinto River Rach 3 (downstream).
San Jacinto River Reach 3 – Canyon Lake to Nuevo Road (HU#802.11)	None	MUN, AGR, GWR, REC1, REC2, WARM, WILD, RARE	This river reach has existing or potential RARE beneficial use.
Canyon Lake (HU#802.11, 802.12)	Nutrients, Pathogens **TMDL Completed** - Nutrients	MUN, AGR, GWR, REC1, REC2, COMM, WARM, WILD	San Jacinto River Reaches 1 (downstream).
San Jacinto River Rach 1 (HU#802.32, 802.31)	None	MUN, AGR, GWR, REC1, REC2, WARM, WILD, RARE	This river reach has existing or potential RARE beneficial use.
Lake Elsinore (HU#802.31)	Nutrients, Organic Enrichment/Low Dissolved Oxygen, PCBs, Toxicity **TMDL Completed** – Nutrients, Organic Enrichment/Low Dissolved Oxygen	MUN, REC1, REC2, COMM, WARM, WILD, RARE	The lake has existing or potential RARE beneficial use.

Note: The 2012 impairment listing is referenced.

A.3 Additional Permits/Approvals required for the Project:

Table A.2 Other Applicable Permits

Agency	Permit Required	
State Department of Fish and Game, 1602 Streambed Alteration Agreement	☐ Y	☒ N
State Water Resources Control Board, Clean Water Act (CWA) Section 401 Water Quality Cert.	☐ Y	☒ N
US Army Corps of Engineers, CWA Section 404 Permit	☐ Y	☒ N
US Fish and Wildlife, Endangered Species Act Section 7 Biological Opinion	☐ Y	☒ N
Statewide Construction General Permit Coverage	☒ Y	☐ N
Statewide Industrial General Permit Coverage (dependent on tenant)	☒ Y	☐ N
Western Riverside MSHCP Consistency Approval (e.g., JPR, DBESP)	☐ Y	☒ N
Other *(please list in the space below as required)* City of Menifee – Grading Permit & Building Permit RCFC&WCD – Encroachment Permit (if applicable)	☒ Y	☐ N

If yes is answered to any of the questions above, the Co-Permittee may require proof of approval/coverage from those agencies as applicable including documentation of any associated requirements that may affect this Project-Specific WQMP.

Section B: Optimize Site Utilization (LID Principles)

Review of the information collected in Section 'A' will aid in identifying the principal constraints on site design and selection of LID BMPs as well as opportunities to reduce imperviousness and incorporate LID Principles into the site and landscape design. For example, **constraints** might include impermeable soils, high groundwater, groundwater pollution or contaminated soils, steep slopes, geotechnical instability, high-intensity land use, heavy pedestrian or vehicular traffic, utility locations or safety concerns. **Opportunities** might include existing natural areas, low areas, oddly configured or otherwise unbuildable parcels, easements and landscape amenities including open space and buffers (which can double as locations for bioretention BMPs), and differences in elevation (which can provide hydraulic head). Prepare a brief narrative for each of the site optimization strategies described below. This narrative will help you as you proceed with your LID design and explain your design decisions to others.

The 2010 Santa Ana MS4 Permit further requires that LID Retention BMPs (Infiltration Only or Harvest and Use) be used unless it can be shown that those BMPs are infeasible. Therefore, it is important that your narrative identify and justify if there are any constraints that would prevent the use of those categories of LID BMPs. Similarly, you should also note opportunities that exist which will be utilized during project design. Upon completion of identifying Constraints and Opportunities, include these on your WQMP Site plan in Appendix 1.

Consideration of "highest and best use" of the discharge should also be considered. For example, Lake Elsinore is evaporating faster than runoff from natural precipitation can recharge it. Requiring infiltration of 85% of runoff events for projects tributary to Lake Elsinore would only exacerbate current water quality problems associated with Pollutant concentration due to lake water evaporation. In cases where rainfall events have low potential to recharge Lake Elsinore (i.e. no hydraulic connection between groundwater to Lake Elsinore, or other factors), requiring infiltration of Urban Runoff from projects is counterproductive to the overall watershed goals. Project proponents, in these cases, would be allowed to discharge Urban Runoff, provided they used equally effective filtration-based BMPs.

Site Optimization

The following questions are based upon Section 3.2 of the WQMP Guidance Document. Review of the WQMP Guidance Document will help you determine how best to optimize your site and subsequently identify opportunities and/or constraints, and document compliance.

Did you identify and preserve existing drainage patterns? If so, how? If not, why?

In terms of drainage, the existing site generally drains (sheet-flows) in a westerly direction toward an existing flood control channel (a.k.a. MDP Romoland Line A). In the post-project condition, the drainage pattern from the proposed project will be maintained as similar to the pre-project condition and outlets the treated storm water into the existing flood control channel.

Did you identify and protect existing vegetation? If so, how? If not, why?

The site has little vegetation on the site. It appears that vegetation has been consistently cleared over many years.

Did you identify and preserve natural infiltration capacity? If so, how? If not, why?

Where applicable, runoff from the proposed hardscape area are being directed towards landscape area in an effort to promote incidental infiltration and preserve the infiltration capacity. Site-specific infiltration tests were performed and results indicated rates specific to where the permanent BMPs are proposed have relatively poor infiltration rates. Additionally, runoff from the site will ultimately drain to Canyon Lake and Lake Elsinore (where "highest and best use" are considered). As a result, it was determined that infiltration BMPs were not suitable for the site and proprietary Modular Wetland Systems (MWS) are proposed for this project. Supporting "TAPE/GULD" certification materials will be provided in support of the MWS.

Did you identify and minimize impervious area? If so, how? If not, why?

Impervious areas are only used where necessary and have been minimized to the extent practicable. The design parameters for parking are based on the City ordinance or planning requirements. Parking spaces are minimized close to the required amount and the landscaped areas have been maximized to the extent practicable.

Did you identify and disperse runoff to adjacent pervious areas? If so, how? If not, why?

Runoff from impervious surfaces is directed to the pervious areas where possible prior to being directed to the proposed structural BMP for water quality treatment.

Section C: Delineate Drainage Management Areas (DMAs)

Utilizing the procedure in Section 3.3 of the WQMP Guidance Document which discusses the methods of delineating and mapping your project site into individual DMAs, complete Table C.1 below to appropriately categorize the types of classification (e.g., Type A, Type B, etc.) per DMA for your project site. Upon completion of this table, this information will then be used to populate and tabulate the corresponding tables for their respective DMA classifications.

Table C.1 DMA Classifications

DMA Name or ID	Surface Type(s)[1][2]	Area (Sq. Ft.)	DMA Type
DMA 1-1	Ornamental Landscape	42,464	Type D
DMA 1-2	Concrete or Asphalt	93,561	Type D
DMA 1-3	Roofs	125,890	Type D
DMA 2-1	Ornamental Landscape	19,572	Type D
DMA 2-2	Concrete or Asphalt	63,705	Type D
DMA 2-3	Roofs	113,335	Type D
DMA 2-1	Ornamental Landscape	33,463	Type D
DMA 2-2	Concrete or Asphalt	108,079	Type D
DMA 2-3	Roofs	12,555	Type D

[1] *Reference Table 2-1 in the WQMP Guidance Document to populate this column*
[2] *If multi-surface provide back-up*

Table C.2 Type 'A', Self-Treating Areas

DMA Name or ID	Area (Sq. Ft.)	Stabilization Type	Irrigation Type (if any)
DMA 1-1	42,264	Landscaping	Drip
DMA 2-1	19,572	Landscaping	Drip
DMA 3-1	33,463	Landscaping	Drip

Table C.3 Type 'B', Self-Retaining Areas

Self-Retaining Area				**Type 'C' DMAs that are draining to the Self-Retaining Area**		
DMA Name/ ID	Post-project surface type	Area (square feet) [A]	Storm Depth (inches) [B]	DMA Name / ID	[C] from Table C.4 = [C]	Required Retention Depth (inches) [D]
N/A						

$$[D] = [B] + \frac{[B] \cdot [C]}{[A]}$$

Table C.4 Type 'C', Areas that Drain to Self-Retaining Areas

DMA					**Receiving Self-Retaining DMA**		
DMA Name/ ID	Area (square feet)	Post-project surface type	Impervious fraction	Product		Area (square feet)	Ratio
	[A]		[B]	[C] = [A] x [B]	DMA name /ID	[D]	[C]/[D]
N/A							

Table C.5 Type 'D', Areas Draining to BMPs

DMA Name or ID	BMP Name or ID
DMA 1-1	BMP 1-Modular Wetland System (Proprietary)
DMA 1-2	BMP 1-Modular Wetland System (Proprietary)
DMA 1-3	BMP 1-Modular Wetland System (Proprietary)
DMA 2-1	BMP 2-Modular Wetland System (Proprietary)
DMA 2-2	BMP 2-Modular Wetland System (Proprietary)
DMA 2-3	BMP 2-Modular Wetland System (Proprietary)
DMA 3-1	BMP 3-Modular Wetland System (Proprietary)
DMA 3-2	BMP 3-Modular Wetland System (Proprietary)
DMA 3-3	BMP 3-Modular Wetland System (Proprietary)

Note: More than one drainage management area can drain to a single LID BMP, however, one drainage management area may not drain to more than one BMP.

Section D: Implement LID BMPs

D.1 Infiltration Applicability

Is there an approved downstream 'Highest and Best Use' for stormwater runoff (see discussion in Chapter 2.4.4 of the WQMP Guidance Document for further details)? ☒ Y ☐ N

If yes has been checked, Infiltration BMPs shall not be used for the site; proceed to section D.3

If no, continue working through this section to implement your LID BMPs. It is recommended that you contact your Co-Permittee to verify whether or not your project discharges to an approved downstream 'Highest and Best Use' feature.

Geotechnical Report

A Geotechnical Report or Phase I Environmental Site Assessment may be required by the Copermittee to confirm present and past site characteristics that may affect the use of Infiltration BMPs. In addition, the Co-Permittee, at their discretion, may not require a geotechnical report for small projects as described in Chapter 2 of the WQMP Guidance Document. If a geotechnical report has been prepared, include it in Appendix 3. In addition, if a Phase I Environmental Site Assessment has been prepared, include it in Appendix 4.

Is this project classified as a small project consistent with the requirements of Chapter 2 of the WQMP Guidance Document? ☐ Y ☒ N

Infiltration Feasibility

Table D.1 below is meant to provide a simple means of assessing which DMAs on your site support Infiltration BMPs and is discussed in the WQMP Guidance Document in Chapter 2.4.5. Check the appropriate box for each question and then list affected DMAs as applicable. If additional space is needed, add a row below the corresponding answer.

Table D.1 Infiltration Feasibility

Does the project site…	YES	NO
…have any DMAs with a seasonal high groundwater mark shallower than 10 feet?		✓
If Yes, list affected DMAs:		
…have any DMAs located within 100 feet of a water supply well?		✓
If Yes, list affected DMAs:		
…have any areas identified by the geotechnical report as posing a public safety risk where infiltration of stormwater could have a negative impact?		✓
If Yes, list affected DMAs:		
…have measured in-situ infiltration rates of less than 1.6 inches / hour?	✓	
If Yes, list affected DMAs:		
…have significant cut and/or fill conditions that would preclude in-situ testing of infiltration rates at the final infiltration surface?		✓
If Yes, list affected DMAs:		
…geotechnical report identify other site-specific factors that would preclude effective and safe infiltration?		✓
Describe here:		

If you answered "Yes" to any of the questions above for any DMA, Infiltration BMPs should not be used for those DMAs and you should proceed to the assessment for Harvest and Use below.

D.2 Harvest and Use Assessment

Note: Based on consideration of the "Highest and Best Use" from previous Section D.1, this section is not applicable for this project and this section is not required to be completed (skipped to Section D.3).

Please check what applies*:*

☐ Reclaimed water will be used for the non-potable water demands for the project.

☐Downstream water rights may be impacted by Harvest and Use as approved by the Regional Board (verify with the Copermittee).

☐The Design Capture Volume will be addressed using Infiltration Only BMPs. In such a case, Harvest and Use BMPs are still encouraged, but it would not be required if the Design Capture Volume will be infiltrated or evapotranspired.

If any of the above boxes have been checked, Harvest and Use BMPs need not be assessed for the site. If none of the above criteria applies, follow the steps below to assess the feasibility of irrigation use, toilet use and other non-potable uses (e.g., industrial use).

Irrigation Use Feasibility

Complete the following steps to determine the feasibility of harvesting stormwater runoff for Irrigation Use BMPs on your site:

Step 1: Identify the total area of irrigated landscape on the site, and the type of landscaping used.

Total Area of Irrigated Landscape: Insert Area (Acres)

Type of Landscaping (Conservation Design or Active Turf): List Landscaping Type

Step 2: Identify the planned total of all impervious areas on the proposed project from which runoff might be feasibly captured and stored for irrigation use. Depending on the configuration of buildings and other impervious areas on the site, you may consider the site as a whole, or parts of the site, to evaluate reasonable scenarios for capturing and storing runoff and directing the stored runoff to the potential use(s) identified in Step 1 above.

Total Area of Impervious Surfaces: Insert Area (Acres)

Step 3: Cross reference the Design Storm depth for the project site (see Exhibit A of the WQMP Guidance Document) with the left column of Table 2-3 in Chapter 2 to determine the minimum area of Effective Irrigated Area per Tributary Impervious Area (EIATIA).

Enter your EIATIA factor: EIATIA Factor

Step 4: Multiply the unit value obtained from Step 3 by the total of impervious areas from Step 2 to develop the minimum irrigated area that would be required.

Minimum required irrigated area: Insert Area (Acres)

Step 5: Determine if harvesting stormwater runoff for irrigation use is feasible for the project by comparing the total area of irrigated landscape (Step 1) to the minimum required irrigated area (Step 4).

Minimum required irrigated area (Step 4)	Available Irrigated Landscape (Step 1)
Insert Area (Acres)	Insert Area (Acres)

Toilet Use Feasibility

Complete the following steps to determine the feasibility of harvesting stormwater runoff for toilet flushing uses on your site:

Step 1: Identify the projected total number of daily toilet users during the wet season, and account for any periodic shut downs or other lapses in occupancy:

Projected Number of Daily Toilet Users: Number of daily Toilet Users

Project Type: Enter 'Residential', 'Commercial', 'Industrial' or 'Schools'

Step 2: Identify the planned total of all impervious areas on the proposed project from which runoff might be feasibly captured and stored for toilet use. Depending on the configuration of buildings and other impervious areas on the site, you may consider the site as a whole, or parts of the site, to evaluate reasonable scenarios for capturing and storing runoff and directing the stored runoff to the potential use(s) identified in Step 1 above.

Total Area of Impervious Surfaces: Insert Area (Acres)

Step 3: Enter the Design Storm depth for the project site (see Exhibit A) into the left column of Table 2-2 in Chapter 2 to determine the minimum number or toilet users per tributary impervious acre (TUTIA).

Enter your TUTIA factor: TUTIA Factor

Step 4: Multiply the unit value obtained from Step 3 by the total of impervious areas from Step 2 to develop the minimum number of toilet users that would be required.

Minimum number of toilet users: Required number of toilet users

Step 5: Determine if harvesting stormwater runoff for toilet flushing use is feasible for the project by comparing the Number of Daily Toilet Users (Step 1) to the minimum required number of toilet users (Step 4).

Minimum required Toilet Users (Step 4)	**Projected number of toilet users (Step 1)**
Insert Area (Acres)	Insert Area (Acres)

Other Non-Potable Use Feasibility

Are there other non-potable uses for stormwater runoff on the site (e.g. industrial use)? See Chapter 2 of the Guidance for further information. If yes, describe below. If no, write N/A.

Insert narrative description here.

Step 1: Identify the projected average daily non-potable demand, in gallons per day, during the wet season and accounting for any periodic shut downs or other lapses in occupancy or operation.

Average Daily Demand: Projected Average Daily Use (gpd)

Step 2: Identify the planned total of all impervious areas on the proposed project from which runoff might be feasibly captured and stored for the identified non-potable use. Depending on the configuration of buildings and other impervious areas on the site, you may consider the site as a whole, or parts of the site, to evaluate reasonable scenarios for capturing and storing runoff and directing the stored runoff to the potential use(s) identified in Step 1 above.

Total Area of Impervious Surfaces: Insert Area (Acres)

Step 3: Enter the Design Storm depth for the project site (see Exhibit A) into the left column of Table 2-4 in Chapter 2 to determine the minimum demand for non-potable uses per tributary impervious acre.

Enter the factor from Table 2-4: Enter Value

Step 4: Multiply the unit value obtained from Step 3 by the total of impervious areas from Step 2 to develop the minimum number of gallons per day of non-potable use that would be required.

Minimum required use: Minimum use required (gpd)

Step 5: Determine if harvesting stormwater runoff for other non-potable use is feasible for the project by comparing the projected average daily use (Step 1) to the minimum required non-potable use (Step 4).

Minimum required non-potable use (Step 4)	**Projected average daily use (Step 1)**
Minimum use required (gpd)	Projected Average Daily Use (gpd)

If Irrigation, Toilet and Other Use feasibility anticipated demands are less than the applicable minimum values, Harvest and Use BMPs are not required and you should proceed to utilize LID Bioretention and Biotreatment per Section 3.4.2 of the WQMP Guidance Document.

D.3 Bioretention and Biotreatment Assessment

Other LID Bioretention and Biotreatment BMPs as described in Chapter 2.4.7 of the WQMP Guidance Document are feasible on nearly all development sites with sufficient advance planning.

Select one of the following:

☒ LID Bioretention/Biotreatment BMPs will be used for some or all DMAs of the project as noted below in Section D.4 (note the requirements of Section 3.4.2 in the WQMP Guidance Document).

☐ A site-specific analysis demonstrating the technical infeasibility of all LID BMPs has been performed and is included in Appendix 5. If you plan to submit an analysis demonstrating the technical infeasibility of LID BMPs, request a pre-submittal meeting with the Copermittee to discuss this option. Proceed to Section E to document your alternative compliance measures.

D.4 Feasibility Assessment Summaries

From the Infiltration, Harvest and Use, Bioretention and Biotreatment Sections above, complete Table D.2 below to summarize which LID BMPs are technically feasible, and which are not, based upon the established hierarchy.

Table D.2 LID Prioritization Summary Matrix

DMA Name/ID	LID BMP Hierarchy				No LID (Alternative Compliance)
	1. Infiltration	2. Harvest and use	3. Bioretention	4. Biotreatment	
DMA 1-1	☐	☐	☒	☐	☐
DMA 1-2	☐	☐	☒	☐	☐
DMA 1-3	☐	☐	☒	☐	☐
DMA 2-1	☐	☐	☒	☐	☐
DMA 2-2	☐	☐	☒	☐	☐
DMA 2-3	☐	☐	☒	☐	☐
DMA 3-1	☐	☐	☒	☐	☐
DMA 3-2	☐	☐	☒	☐	☐
DMA 3-3	☐	☐	☒	☐	☐

For those DMAs where LID BMPs are not feasible, provide a brief narrative below summarizing why they are not feasible, include your technical infeasibility criteria in Appendix 5, and proceed to Section E below to document Alternative Compliance measures for those DMAs. Recall that each proposed DMA must pass through the LID BMP hierarchy before alternative compliance measures may be considered.

N/A

D.5 LID BMP Sizing

Each LID BMP must be designed to ensure that the Design Capture Volume will be addressed by the selected BMPs. First**,** calculate the Design Capture Volume for each LID BMP using the V_{BMP} worksheet in Appendix F of the LID BMP Design Handbook. Second**,** design the LID BMP to meet the required V_{BMP} using a method approved by the Copermittee. Utilize the worksheets found in the LID BMP Design Handbook or consult with your Copermittee to assist you in correctly sizing your LID BMPs. Complete Table D.3 below to document the Design Capture Volume and the Proposed Volume for each LID BMP. Provide the completed design procedure sheets for each LID BMP in Appendix 6. You may add additional rows to the table below as needed.

Table D.3 DCV Calculations for LID BMPs

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Impervious Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*"BMP 1" / Proprietary MWS*		
	[A]		[B]	[C]	[A] x [C]			
DMA 1-1	*41,803*	*Ornamental Landscaping*	*0.1*	*0.11*	*4617.5*	*Design Storm Depth (in)*	*Design Capture Volume,* $\mathbf{V_{BMP}}$ *(cubic feet)*	*Proposed Volume on Plans (cubic feet)*
DMA 1-2	*94,028*	*Concrete or Asphalt*	*1.0*	*0.89*	*83873*			
DMA 1-3	*125,689*	*Roofs*	*1.0*	*0.89*	*112114.6*			
	A_T = Σ[A] = 261,520				Σ= [D] = 200605.1	[E] = 0.58	$[F] = \frac{[D]x[E]}{12}$ = 9695.9	[G] = N/A See Att. 6 for backup treatment flow calculation for MWS

[B], [C] is obtained as described in Section 2.3.1 of the WQMP Guidance Document.

[E] is obtained from Section 2.3.1 in the WQMP Guidance Document.

[G] is obtained from the proprietary BMP manufacturer (BioClean A Forterra Company). Supporting calculation is provided in Attachment 6.

Table D.4 DCV Calculations for LID BMPs

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Impervious Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*"BMP 2" / Proprietary MWS*		
	[A]		[B]	[C]	[A] x [C]	*Design Storm Depth (in)*	*Design Capture Volume, V_{BMP} (cubic feet)*	*Proposed Volume on Plans (cubic feet)*
DMA 2-1	*19,273*	*Ornamental Landscaping*	*0.1*	*0.11*	*2128.9*			
DMA 2-2	*64,241*	*Concrete or Asphalt*	*1.0*	*0.89*	*57303*			
DMA 2-3	*113,394*	*Roofs*	*1.0*	*0.89*	*101147.4*			
	A_T = Σ[A] = 196,908				Σ= [D] = 160579.3	[E] = 0.58	$[F] = \frac{[D]x[E]}{12}$ = 7761.3	[G] = N/A See Att. 6 for backup treatment flow calculation for MWS

[B], [C] is obtained as described in Section 2.3.1 of the WQMP Guidance Document.

[E] is obtained from Section 2.3.1 in the WQMP Guidance Document.

[G] is obtained from the proprietary BMP manufacturer (BioClean A Forterra Company). Supporting calculation is provided in Attachment 6.

Table D.5 DCV Calculations for LID BMPs

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Impervious Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*"BMP 3" / Proprietary MWS*		
	[A]		[B]	[C]	[A] x [C]	*Design Storm Depth (in)*	*Design Capture Volume, V_{BMP} (cubic feet)*	*Proposed Volume on Plans (cubic feet)*
DMA 3-1	*33,725*	*Ornamental Landscaping*	*0.1*	*0.11*	*3725.2*			
DMA 3-2	*108,224*	*Concrete or Asphalt*	*1.0*	*0.89*	*96535.8*			
DMA 3-3	*12,378*	*Roofs*	*1.0*	*0.89*	*11041.2*			
	A_T = Σ[A] = 154,327				Σ= [D] = 111302.2	[E] = 0.58	$[F] = \frac{[D]x[E]}{12}$ = 5379.6	[G] = N/A See Att. 6 for backup treatment flow calculation for MWS

[B], [C] is obtained as described in Section 2.3.1 of the WQMP Guidance Document.

[E] is obtained from Section 2.3.1 in the WQMP Guidance Document.

[G] is obtained from the proprietary BMP manufacturer (BioClean A Forterra Company). Supporting calculation is provided in Attachment 6.

Section E: Alternative Compliance (LID Waiver Program)

LID BMPs are expected to be feasible on virtually all projects. Where LID BMPs have been demonstrated to be infeasible as documented in Section D, other Treatment Control BMPs must be used (subject to LID waiver approval by the Copermittee). Check one of the following Boxes:

☒ LID Principles and LID BMPs have been incorporated into the site design to fully address all Drainage Management Areas. **No alternative compliance measures are required for this project and thus this Section is not required to be completed.**

- *Or* -

☐ The following Drainage Management Areas are unable to be addressed using LID BMPs. A site-specific analysis demonstrating technical infeasibility of LID BMPs has been approved by the Co-Permittee and included in Appendix 5. Additionally, no downstream regional and/or sub-regional LID BMPs exist or are available for use by the project. The following alternative compliance measures on the following pages are being implemented to ensure that any pollutant loads expected to be discharged by not incorporating LID BMPs, are fully mitigated.

N/A

E.1 Identify Pollutants of Concern

Utilizing Table A.1 from Section A above which noted your project's receiving waters and their associated EPA approved 303(d) listed impairments, cross reference this information with that of your selected Priority Development Project Category in Table E.1 below. If the identified General Pollutant Categories are the same as those listed for your receiving waters, then these will be your Pollutants of Concern and the appropriate box or boxes will be checked on the last row. The purpose of this is to document compliance and to help you appropriately plan for mitigating your Pollutants of Concern in lieu of implementing LID BMPs.

Table E.1 Potential Pollutants by Land Use Type

Priority Development Project Categories and/or Project Features (check those that apply)	General Pollutant Categories							
	Bacterial Indicators	Metals	Nutrients	Pesticides	Toxic Organic Compounds	Sediments	Trash & Debris	Oil & Grease
☐ Detached Residential Development	P	N	P	P	N	P	P	P
☐ Attached Residential Development	P	N	P	P	N	P	P	P[(2)]
☐ Commercial/Industrial Development	P[(3)]	P	P[(1)]	P[(1)]	P[(5)]	P[(1)]	P	P
☐ Automotive Repair Shops	N	P	N	N	P[(4, 5)]	N	P	P
☐ Restaurants (>5,000 ft^2)	P	N	N	N	N	N	P	P
☐ Hillside Development (>5,000 ft^2)	P	N	P	P	N	P	P	P
☐ Parking Lots (>5,000 ft^2)	P[(6)]	P	P[(1)]	P[(1)]	P[(4)]	P[(1)]	P	P
☐ Retail Gasoline Outlets	N	P	N	N	P	N	P	P
Project Priority Pollutant(s) of Concern	☐	☐	☐	☐	☐	☐	☐	☐

P = Potential

N = Not Potential

(1) A potential Pollutant if non-native landscaping exists or is proposed onsite; otherwise not expected

(2) A potential Pollutant if the project includes uncovered parking areas; otherwise not expected

(3) A potential Pollutant is land use involving animal waste

(4) Specifically petroleum hydrocarbons

(5) Specifically solvents

(6) Bacterial indicators are routinely detected in pavement runoff

E.2 Stormwater Credits

Projects that cannot implement LID BMPs but nevertheless implement smart growth principles are potentially eligible for Stormwater Credits. Utilize Table 3-8 within the WQMP Guidance Document to identify your Project Category and its associated Water Quality Credit. If not applicable, write N/A.

Table E.2 Water Quality Credits

Qualifying Project Categories	Credit Percentage[2]
N/A	
Total Credit Percentage[1]	

[1] *Cannot Exceed 50%*
[2] *Obtain corresponding data from Table 3-8 in the WQMP Guidance Document*

E.3 Sizing Criteria

After you appropriately considered Stormwater Credits for your project, utilize Table E.3 below to appropriately size them to the DCV, or Design Flow Rate, as applicable. Please reference Chapter 3.5.2 of the WQMP Guidance Document for further information.

Table E.3 Treatment Control BMP Sizing

DMA Type/ID	**DMA Area (square feet)**	**Post-Project Surface Type**	**Effective Impervious Fraction, I_f**	**DMA Runoff Factor**	**DMA Area x Runoff Factor**		***Enter BMP Name / Identifier Here***		
	[A]		[B]	[C]	[A] x [C]				
N/A						*Design Storm Depth (in)*	*Minimum Design Capture Volume or Design Flow Rate (cubic feet or cfs)*	*Total Storm Water Credit % Reduction*	*Proposed Volume or Flow on Plans (cubic feet or cfs)*
	A_T = Σ[A]				Σ= [D]	[E]	$[F] = \frac{[D]x[E]}{[G]}$	[F] X (1-[H])	[I]

[B], [C] is obtained as described in Section 2.3.1 from the WQMP Guidance Document
[E] is for Flow-Based Treatment Control BMPs [E] = .2, for Volume-Based Control Treatment BMPs, [E] obtained from Exhibit A in the WQMP Guidance Document
[G] is for Flow-Based Treatment Control BMPs [G] = 43,560, for Volume-Based Control Treatment BMPs, [G] = 12
[H] is from the Total Credit Percentage as Calculated from Table E.2 above
[I] as obtained from a design procedure sheet from the BMP manufacturer and should be included in Appendix 6

E.4 Treatment Control BMP Selection

Treatment Control BMPs typically provide proprietary treatment mechanisms to treat potential pollutants in runoff, but do not sustain significant biological processes. Treatment Control BMPs must have a removal efficiency of a medium or high effectiveness as quantified below:

- **High**: equal to or greater than 80% removal efficiency
- **Medium**: between 40% and 80% removal efficiency

Such removal efficiency documentation (e.g., studies, reports, etc.) as further discussed in Chapter 3.5.2 of the WQMP Guidance Document, must be included in Appendix 6. In addition, ensure that proposed Treatment Control BMPs are properly identified on the WQMP Site Plan in Appendix 1.

Table E.4 Treatment Control BMP Selection

Selected Treatment Control BMP Name or ID[1]	Priority Pollutant(s) of Concern to Mitigate[2]	Removal Efficiency Percentage[3]
N/A		

[1] *Treatment Control BMPs must not be constructed within Receiving Waters. In addition, a proposed Treatment Control BMP may be listed more than once if they possess more than one qualifying pollutant removal efficiency.*
[2] *Cross Reference Table E.1 above to populate this column.*
[3] *As documented in a Co-Permittee Approved Study and provided in Appendix 6.*

Section F: Hydromodification

F.1 Hydrologic Conditions of Concern (HCOC) Analysis

Once you have determined that the LID design is adequate to address water quality requirements, you will need to assess if the proposed LID Design may still create a HCOC. Review Chapters 2 and 3 (including Figure 3-7) of the WQMP Guidance Document to determine if your project must mitigate for Hydromodification impacts. If your project meets one of the following criteria which will be indicated by the check boxes below, you do not need to address Hydromodification at this time. However, if the project does not qualify for Exemptions 1, 2 or 3, then additional measures must be added to the design to comply with HCOC criteria. This is discussed in further detail below in Section F.2.

HCOC EXEMPTION 1: The Priority Development Project disturbs less than one acre. The Copermittee has the discretion to require a Project-Specific WQMP to address HCOCs on projects less than one acre on a case by case basis. The disturbed area calculation should include all disturbances associated with larger common plans of development.

Does the project qualify for this HCOC Exemption? ☐ Y ☒ N

If Yes, HCOC criteria do not apply.

HCOC EXEMPTION 2: The volume and time of concentration[1] of storm water runoff for the post-development condition is not significantly different from the pre-development condition for a 2-year return frequency storm (a difference of 5% or less is considered insignificant) using one of the following methods to calculate:

- Riverside County Hydrology Manual
- Technical Release 55 (TR-55): Urban Hydrology for Small Watersheds (NRCS 1986), or derivatives thereof, such as the Santa Barbara Urban Hydrograph Method
- Other methods acceptable to the Co-Permittee

Does the project qualify for this HCOC Exemption? ☐ Y ☒ N

If Yes, report results in Table F.1 below and provide your substantiated hydrologic analysis in Appendix 7.

Table F.1 Hydrologic Conditions of Concern Summary

	2 year – 24 hour		
	Pre-condition	**Post-condition**	**% Difference**
Time of Concentration	N/A		
Volume (Cubic Feet)			

[1] Time of concentration is defined as the time after the beginning of the rainfall when all portions of the drainage basin are contributing to flow at the outlet.

HCOC EXEMPTION 3: All downstream conveyance channels to an adequate sump (for example, Prado Dam, Lake Elsinore, Canyon Lake, Santa Ana River, or other lake, reservoir or naturally erosion resistant feature) that will receive runoff from the project are engineered and regularly maintained to ensure design flow capacity; no sensitive stream habitat areas will be adversely affected; or are not identified on the Co-Permittees Hydromodification Susceptibility Maps.

Does the project qualify for this HCOC Exemption? ☒ Y ☐ N

If Yes, HCOC criteria do not apply and note below which adequate sump applies to this HCOC qualifier:

The project runoff will discharge into the existing flood control channel (a.k.a. Romoland Line A) that is maintained by the RCFC. This channel drains into San Jacinto River, which outlets into Canyon Lake and eventually into Lake Elsinore. Therefore, it is anticipated that HCOC criteria should not be required for this project.

F.2 HCOC Mitigation

If none of the above HCOC Exemption Criteria are applicable, HCOC criteria is considered mitigated if they meet one of the following conditions:

a. Additional LID BMPS are implemented onsite or offsite to mitigate potential erosion or habitat impacts as a result of HCOCs. This can be conducted by an evaluation of site-specific conditions utilizing accepted professional methodologies published by entities such as the California Stormwater Quality Association (CASQA), the Southern California Coastal Water Research Project (SCCRWP), or other Co-Permittee approved methodologies for site-specific HCOC analysis.

b. The project is developed consistent with an approved Watershed Action Plan that addresses HCOC in Receiving Waters.

c. Mimicking the pre-development hydrograph with the post-development hydrograph, for a 2-year return frequency storm. Generally, the hydrologic conditions of concern are not significant, if the post-development hydrograph is no more than 10% greater than pre-development hydrograph. In cases where excess volume cannot be infiltrated or captured and reused, discharge from the site must be limited to a flow rate no greater than 110% of the pre-development 2-year peak flow.

Be sure to include all pertinent documentation used in your analysis of the items a, b or c in Appendix 7.

Section G: Source Control BMPs

Source control BMPs include permanent, structural features that may be required in your project plans — such as roofs over and berms around trash and recycling areas — and Operational BMPs, such as regular sweeping and "housekeeping", that must be implemented by the site's occupant or user. The MEP standard typically requires both types of BMPs. In general, Operational BMPs cannot be substituted for a feasible and effective permanent BMP. Using the Pollutant Sources/Source Control Checklist in Appendix 8, review the following procedure to specify Source Control BMPs for your site:

1. ***Identify Pollutant Sources*:** Review Column 1 in the Pollutant Sources/Source Control Checklist. Check off the potential sources of Pollutants that apply to your site.

2. ***Note Locations on Project-Specific WQMP Exhibit*:** Note the corresponding requirements listed in Column 2 of the Pollutant Sources/Source Control Checklist. Show the location of each Pollutant source and each permanent Source Control BMP in your Project-Specific WQMP Exhibit located in Appendix 1.

3. ***Prepare a Table and Narrative*:** Check off the corresponding requirements listed in Column 3 in the Pollutant Sources/Source Control Checklist. In the left column of Table G.1 below, list each potential source of runoff Pollutants on your site (from those that you checked in the Pollutant Sources/Source Control Checklist). In the middle column, list the corresponding permanent, Structural Source Control BMPs (from Columns 2 and 3 of the Pollutant Sources/Source Control Checklist) used to prevent Pollutants from entering runoff. **Add additional narrative** in this column that explains any special features, materials or methods of construction that will be used to implement these permanent, Structural Source Control BMPs.

4. ***Identify Operational Source Control BMPs:*** To complete your table, refer once again to the Pollutant Sources/Source Control Checklist. List in the right column of your table the Operational BMPs that should be implemented as long as the anticipated activities continue at the site. Copermittee stormwater ordinances require that applicable Source Control BMPs be implemented; the same BMPs may also be required as a condition of a use permit or other revocable Discretionary Approval for use of the site.

Table G.1 Permanent and Operational Source Control Measures

Potential Sources of Runoff pollutants	Permanent Structural Source Control BMPs	Operational Source Control BMPs
On-site storm drain inlets	Mark all inlets with the words "Only Rain Down the Storm Drain" or similar. Catch Basin Markers may be available from the Riverside County Flood Control and Water Conservation District, call 951.955.1200 to verify.	Maintain and periodically repaint or replace inlet markings. Provide stormwater pollution prevention information to new site owners, lessees, or operators. 3See applicable operational BMPs in Fact Sheet SC-44, "Drainage System Maintenance," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com Include the following in lease agreements: "Tenant shall not allow anyone to discharge anything to storm drains or to store or deposit materials so as to create a potential discharge to

		storm drain."
Interior floor drains	Interior floor drains shall be plumbed to sanitary sewer.	Inspect and maintain drains to prevent blockages and overflow.
Need for future indoor & structural pest control	Building design features including sealants barriers and fully closing windows and doors have been included to discourage entry of pests.	Integrated Pest Management (IPM) information to be provided to owners, lessees, and operators.
Landscape/outdoor pesticide use	Final Landscape Plans will accomplish the following: Preserve existing native trees, shrubs, and ground cover to the maximum extent possible. Design landscaping to minimize irrigation and runoff, to promote surface infiltration where appropriate, and to minimize the use of fertilizers and pesticides that can contribute to stormwater pollution. Where landscaped areas are used to retain or detain stormwater, specify plants that are tolerant of saturated soil conditions. Consider using pest-resistant plants, especially adjacent to hardscape. To insure successful establishment, select plants appropriate to site soils, slopes, climate, sun, wind, rain, land use, air movement, ecological consistency, and plant interactions.	Maintain landscaping using minimum or no pesticides. Prevent erosion of slopes by planting fast-growing, dense ground covering plants. Plant native vegetation to reduce the amount of water, fertilizers, and pesticides applied to the landscape. Do not overwater. Use irrigation practices such as drip irrigation, soaker hoses or micro-spray systems. Periodically inspect and fix leaks and misdirected sprinklers. Do not rake or blow leaves, clippings, or pruning waste into the street, gutter, or storm drain. Instead, dispose of green waste by composting, hauling it to a permitted landfill, or recycling it through your city's program. Integrated Pest Management (IPM) information to be provided to owners, lessees, and operators.
Refuse areas	Site design features dumpster enclosures. Signs will be posted on or near dumpsters with the words "Do not dump hazardous materials here" or similar.	Periodic inspections for leaky, overfilled, uncovered, or other problematic conditions will occur. Corrective action will be made upon detection, as circumstances permit. Dumping of liquid or hazardous wastes will be prohibited. Spill control materials will be available on-site. All wastes to properly stored and disposed of in accordance with all applicable Local, State and Federal regulations
Industrial Processes	All process activities to be performed indoors. No processes to drain to exterior or to storm drain system.	All process activities to be performed indoors. No processes to drain to exterior or to storm drain system. See Fact Sheet SC-10, "Non-Stormwater Discharges" in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com See the brochure "Industrial & Commercial Facilities Best Management Practices for: Industrial, Commercial Facilities" at http://rcflood.org/stormwater/
Loading Docks	Maintain in a clean and orderly fashion. Loading dock areas draining directly to the sanitary sewer shall be equipped with a spill control valve or equivalent device, which shall be kept closed during periods of operation. Provide a roof overhang over the loading area or	Move loaded and unloaded items indoors as soon as possible. See Fact Sheet SC-30, "Outdoor Loading and Unloading," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com

	install door skirts (cowling) at each bay that enclose the end of the trailer.	
Fire Sprinkler Test Water	Provide a means to drain fire sprinkler test water to the sanitary sewer.	See the note in the Fact Sheet SC-41, "Building and Grounds Maintenance," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com
Miscellaneous Drain or Wash Water or Other Sources	Boiler drain lines shall be directly or indirectly connected to the sanitary sewer system and may not discharge to the storm drain system. Condensate drain lines may discharge to landscaped areas if the flow is small enough that runoff will not occur. Condensate drain lines may not discharge to the storm drain. Rooftop equipment with potential to produce pollutants shall be roofed and/or have secondary. Any drainage sumps on-site shall feature a sediment sump to reduce pumped water. Roofing, gutters, and trim made out of unprotected metals that may leach into runoff shall be avoided.	Inspect periodically to verify that equipment is not leaking or discharging to the storm drain system.
Plazas, Sidewalks, and Parking Lots	Maintain in a clean and orderly fashion.	Sweep plazas, sidewalks, and parking lots regularly to prevent accumulation of litter and debris. Collect debris from pressure washing to prevent entry into the storm drain system. Collect wash water containing any cleaning agent or degreaser and discharge to the sanitary sewer, not to a storm drain.

Section H: Construction Plan Checklist

Populate Table H.1 below to assist the plan checker in an expeditious review of your project. The first two columns will contain information that was prepared in previous steps, while the last column will be populated with the corresponding plan sheets. This table is to be completed with the submittal of your final Project-Specific WQMP.

Table H.1 Construction Plan Cross-reference

BMP No. or ID	BMP Identifier and Description	Corresponding Plan Sheet(s)	BMP Location (Lat/Long)
BMP 1	Modular Wetland System (Proprietary) (Two units: MWS-8-16-V-UG)	BMP Site Plan	33°44’30.42"N / 117°11’42.10"W
BMP 2	Modular Wetland System (Proprietary) (One unit: MWS-8-24-V-UG)	BMP Site Plan	33°44'26.22"N / 117°11'42.15"W
BMP 3	Modular Wetland System (Proprietary) (One unit: MWS-8-20-V-UG)	BMP Site Plan	33°44'21.85"N / 117°11'42.32"W

Note that the updated table — or Construction Plan WQMP Checklist — is **only a reference tool** to facilitate an easy comparison of the construction plans to your Project-Specific WQMP. Co-Permittee staff can advise you regarding the process required to propose changes to the approved Project-Specific WQMP.

Section I: Operation, Maintenance and Funding

The Copermittee will periodically verify that Stormwater BMPs on your site are maintained and continue to operate as designed. To make this possible, your Copermittee will require that you include in Appendix 9 of this Project-Specific WQMP:

1. A means to finance and implement facility maintenance in perpetuity, including replacement cost.
2. Acceptance of responsibility for maintenance from the time the BMPs are constructed until responsibility for operation and maintenance is legally transferred. A warranty covering a period following construction may also be required.
3. An outline of general maintenance requirements for the Stormwater BMPs you have selected.
4. Figures delineating and designating pervious and impervious areas, location, and type of Stormwater BMP, and tables of pervious and impervious areas served by each facility. Geo-locating the BMPs using a coordinate system of latitude and longitude is recommended to help facilitate a future statewide database system.
5. A separate list and location of self-retaining areas or areas addressed by LID Principles that do not require specialized O&M or inspections but will require typical landscape maintenance as noted in Chapter 5, pages 85-86, in the WQMP Guidance. Include a brief description of typical landscape maintenance for these areas.

Your local Co-Permittee will also require that you prepare and submit a detailed Stormwater BMP Operation and Maintenance Plan that sets forth a maintenance schedule for each of the Stormwater BMPs built on your site. An agreement assigning responsibility for maintenance and providing for inspections and certification may also be required.

Details of these requirements and instructions for preparing a Stormwater BMP Operation and Maintenance Plan are in Chapter 5 of the WQMP Guidance Document.

Maintenance Mechanism: See Appendix 9

Will the proposed BMPs be maintained by a Home Owners' Association (HOA) or Property Owners Association (POA)?

☐ Y ☒ N

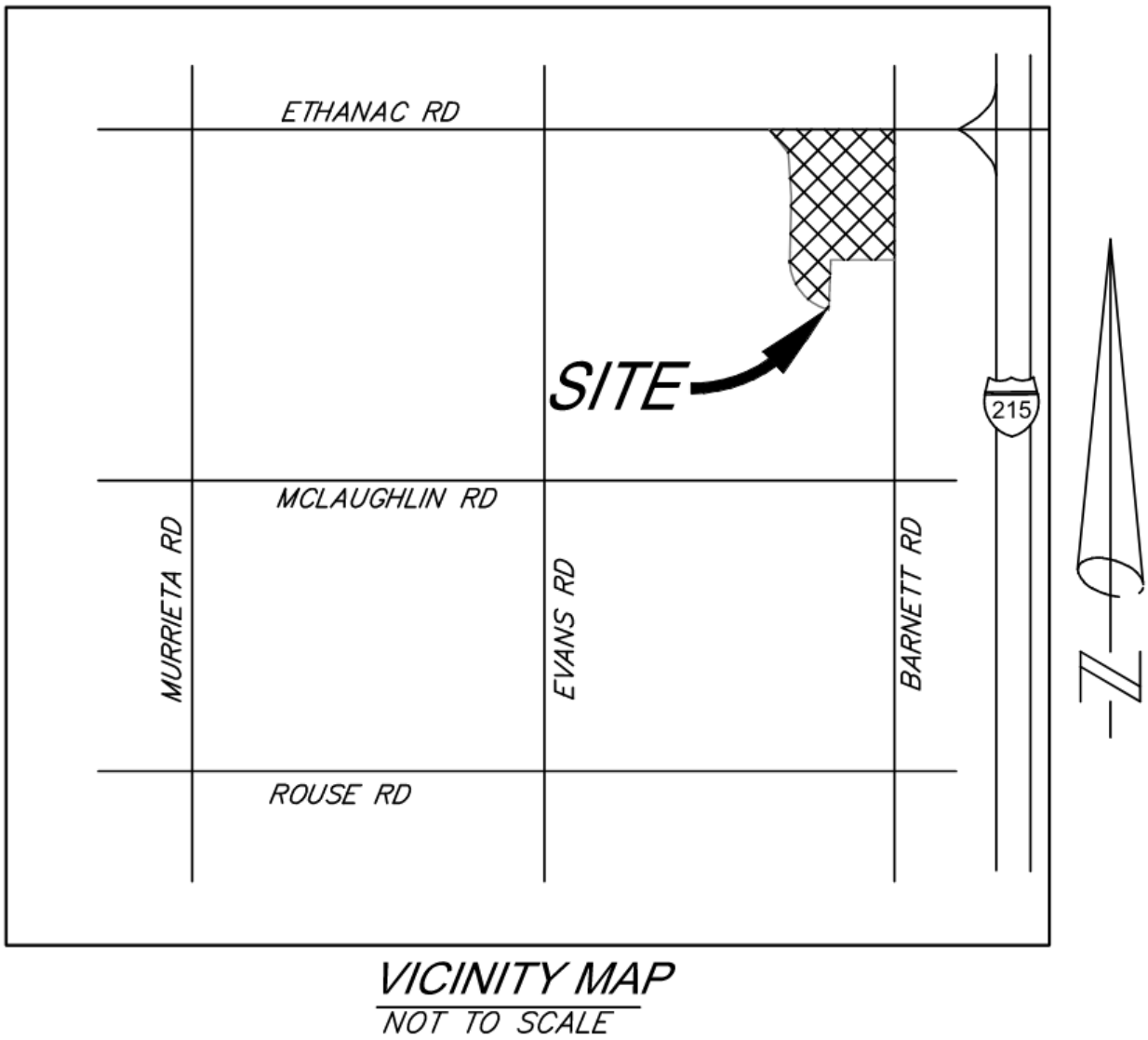
Include your Operation and Maintenance Plan and Maintenance Mechanism in Appendix 9. Additionally, include all pertinent forms of educational materials for those personnel that will be maintaining the proposed BMPs within this Project-Specific WQMP in Appendix 10.

Note: To be completed at the time of the FWQMP.

Appendix 1: Maps and Site Plans

Location Map, WQMP Site Plan and Receiving Waters Map

Vicinity Map



VICINITY MAP
NOT TO SCALE

The project is located at the southwest of the intersection of Barnett Road and Ethanac Road in the City of Menifee, CA.

POST-CONSTRUCTION BMP SITE PLAN
PHELAN-BARNETT

GENERAL NOTES

1. RUNOFF FROM THE PROJECT IN THE EXISTING CONDITION DRAINS WESTERLY TOWARDS AN EXISTING MASTER DRAINAGE PLAN (MDP) ROMOLAND LINE A CHANNEL LOCATED TO THE WEST OF THE PROJECT. THE DRAINAGE CHARACTERISTIC FROM THE PROPOSED DEVELOPMENT WILL BE MAINTAINED AS SIMILAR TO THE EXISTING CONDITION. BASED ON FEEDBACK FROM RCFC&WCD, THE DOWNSTREAM MDP CHANNEL LINE A WAS DESIGNED TO ACCOMMODATE RUNOFF FROM THE PROPOSED DEVELOPMENT BASED ON THE BUILD-OUT CONDITION; THEREFORE, DIRECT STORM DRAIN CONNECTION IS ALLOWED WITHOUT FLOOD CONTROL DETENTION/MITIGATION.
2. THERE IS A SLIVER OF AREA FROM A PORTION OF BARNETT ROAD THAT APPEARS TO CONTRIBUTE TO THE OFFSITE NORTHEASTERLY PARCELS (APN 331-060-034 AND APN 331-060-035) IN THE EXISTING CONDITION AND THIS SITUATION TAKES PLACE JUST OUTSIDE OF THE PROPOSED PROJECT BOUNDARY. THE PROPOSED PROJECT IS REQUESTED BY THE CITY OF MENIFEE TO PROVIDE OFFSITE FRONTAGE STREET IMPROVEMENTS ASSOCIATED WITH BARNETT ROAD AND ETHANAC ROAD. RUNOFF FROM BARNETT ROAD FRONTAGE IMPROVEMENT IS EXPECTED TO DRAIN TO THE PROPOSED MDP LATERAL LINE A-13 CONNECTOR ALONG BARNETT ROAD (TO BE CONSTRUCTED AS PART OF THIS PROJECT WITH POSSIBLE COLLABORATION WITH THE NORTHEASTERLY PARCELS' FUTURE DEVELOPMENT). THIS FUTURE CONNECTOR PIPE WILL DISCHARGE INTO THE DOWNSTREAM MDP LINE A-13 (CURRENTLY BEING CONSTRUCTED BY OTHERS) AND EVENTUALLY TO MDP ROMOLAND LINE A. RUNOFF FROM ETHANAC ROAD FRONTAGE IMPROVEMENT IS TO BE MAINTAINED AS SIMILAR TO THE EXISTING CONDITION.
3. IT IS UNDERSTOOD THE PARCELS (APN 331-060-034 AND APN 331-060-035) ARE EXPECTED TO BE DEVELOPED IN THE FUTURE AND STORM WATER RUNOFF FROM THESE TWO PARCELS WILL BE TREATED/MANAGED BY THE DEVELOPER (BY OTHERS) AND THE TREATED RUNOFF IS EXPECTED TO CONVEYED THROUGH THE PHELAN-BARNETT PROJECT VIA A BYPASS STORM DRAIN PIPE TOWARDS THE MDP ROMOLAND LINE A CHANNEL.
4. RUNOFF FROM THE EXISTING SOUTHEASTERLY PARCELS (APN 331-060-029, APN 331-060-032, AND APN 331-060-033) APPEAR TO RUN-ON TO THE PROJECT SITE IN THE EXISTING CONDITION. AT THIS TIME, IT IS UNKNOWN IF THE PARCEL WILL BE DEVELOPED IN THE NEAR FUTURE. RUNOFF FROM THE SOUTHEASTERLY PARCELS ARE EXPECTED TO BE CONVEYED VIA A PROPOSED STORM DRAIN FACILITY (DITCH AND/OR PIPE) THAT WILL DIRECTLY DISCHARGE INTO THE EXISTING MDP ROMOLAND LINE A CHANNEL NEAR THE SOUTHWESTERLY CORNER OF THE PROJECT.
5. PRELIMINARY DETAILS FOR TRASH ENCLOSURE WITH COVER, STENCIL, AND ROOF DRAIN OUTLET LOCATION ARE PROVIDED ON THIS EXHIBIT; HOWEVER, THOSE DETAILS COULD BE REFINED FURTHER AT THE TIME OF FINAL WQMP.

PERMANENT SOURCE CONTROL BMPs

(1) MARK ALL INLETS WITH THE WORDS "ONLY RAIN DOWN THE STORM DRAIN" OR SIMILAR
(2) ENCLOSED REFUSE AREA WITH SIGNS POSTED NEARBY STATING "DO NOT DUMP HAZARDOUS MATERIALS HERE" OR SIMILAR
- LANDSCAPING DESIGNED TO MINIMIZE IRRIGATION AND RUNOFF, TO PROMOTE SURFACE INFILTRATION WHERE APPROPRIATE, AND TO MINIMIZE THE USE OF FERTILIZERS AND PESTICIDES THAT CAN CONTRIBUTE TO STORMWATER POLLUTION.

OPERATIONAL SOURCE CONTROL BMPs

- MAINTAIN LANDCAPING USING MINIMUM OR NO PESTICIDES
- PREVENT EROSION OF SLOPES BY PLANTING FAST-GROWING, DENSE GROUND COVERING PLANTS
- PLANT NATIVE VEGETATION TO REDUCE THE AMOUNT OF WATER, FERTILIZERS, AND PESTICIDES APPLIED TO THE LANDSCAPE
- DO NOT OVERWATER
- USE IRRIGATION PRACTICES SUCH AS DRIP IRRIGATION, SOAKER HOSES OR MICRO-SPRAY SYSTEMS
- PERIODICALLY INSPECT AND FIX LEAKS AND MISDIRECTED SPRINKLERS.
- DO NOT RAKE OR BLOW LEAVES, CLIPPINGS, OR PRUNING WASTE INTO THE STREET, GUTTER OR STORM DRAIN
- DISPOSE OF GREEN WASTE BY COMPOSTING, HAULING IT TO A PERMITTED LANDFILL, OR RECYCLING IT THROUGH YOUR CITY'S PROGRAM
- PROVIDE IPM INFORMATION TO NEW OWNERS, LESSEES AND OPERATORS
- PERIODIC INSPECTIONS FOR LEAKY, OVERFILLED, UNCOVERED, OR OTHER PROBLEMATIC CONDITIONS WILL OCCUR
- CORRECTIVE ACTION WILL BE MADE UPON DETECTION, AS CIRCUMSTANCES PERMIT
- DUMPING OF LIQUID OR HAZARDOUS WASTES WILL BE PROHIBITED
- SPILL CONTROL MATERIALS WILL BE AVAILABLE ON-SITE
- MOVE LOADED AND UNLOADED ITEMS INDOORS AS SOON AS POSSIBLE
- SWEEP PLAZAS, SIDEWALKS, AND PARKING LOTS REGULARLY TO PREVENT ACCUMULATION OF LITTER AND DEBRIS
- COLLECT DEBRIS FROM PRESSURE WASHING TO PREVENT ENTRY INTO THE STORM DRAIN SYSTEM
- COLLECT WASHWATER CONTAINING ANY CLEANING AGENT OR DEGREASER AND DISCHARGE TO THE SANITARY SEWER (NOT TO THE STORM DRAIN)

LID OPPORTUNITIES

1. PRESERVE EXISTING PERVIOUS AREA WHERE POSSIBLE.
2. LANDSCAPED AREAS DESIGNED TO BE SELF-RETAINING WHERE FEASIBLE.

DMA LEGEND & AREAS

DMAs DRAINING TO PERMANENT STRUCTURAL BMP

DMA 1

- DMA 1-1 (ORNAMENTAL LANDSCAPE/PERVIOUS AREA) = 41,803 S.F.
- DMA 1-2 (CONCRETE/IMPERVIOUS AREA) = 94,028 S.F.
- DMA 1-3 (ROOFS/IMPERVIOUS AREA) = 125,689 S.F.

TOTAL AREA = 261,520 S.F.

DMA 2

- DMA 2-1 (ORNAMENTAL LANDSCAPE/PERVIOUS AREA) = 19,273 S.F.
- DMA 2-2 (CONCRETE/IMPERVIOUS AREA) = 64,241 S.F.
- DMA 2-3 (ROOFS/IMPERVIOUS AREA) = 113,394 S.F.

TOTAL AREA = 196,908 S.F.

DMA 3

- DMA 3-1 (ORNAMENTAL LANDSCAPE/PERVIOUS AREA) = 33,725 S.F.
- DMA 3-2 (CONCRETE/IMPERVIOUS AREA) = 108,224 S.F.
- DMA 3-3 (ROOFS/IMPERVIOUS AREA) = 12,378 S.F.

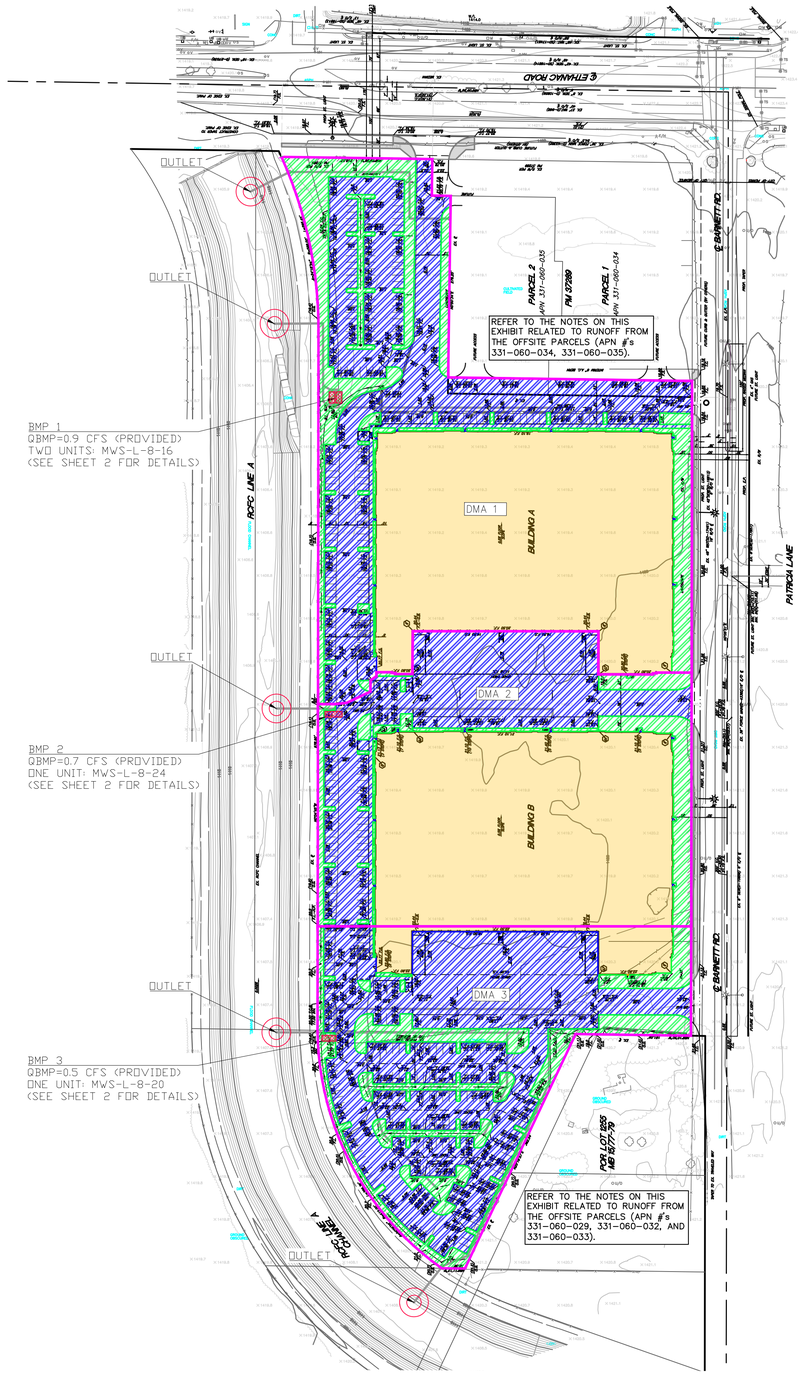
TOTAL AREA = 154,327 S.F.

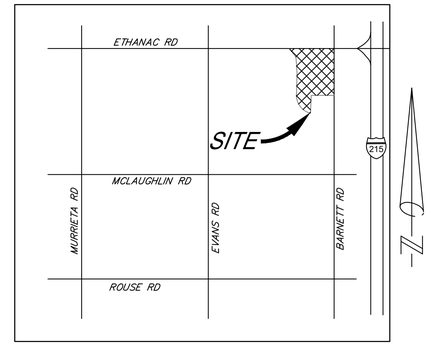
LEGEND

- DRAINAGE MANAGEMENT AREA = 113,462 S.F.
- TRACT BOUNDARY
- CENTERLINE
- CURB AND GUTTER
- 1280 EXISTING CONTOUR LINE
- LOT LINE
- SLOPE
- PROPOSED STORM DRAIN
- OFFSITE FRONTAGE PROPOSED SIDEWALK (HATCH)
- ROOF DRAIN LOCATION (TBD)
- DISCHARGE LOCATION

PERMANENT STRUCTURAL BMP

- PROPOSED MODULAR WETLAND SYSTEM (BMP 1, BMP 2, AND BMP 3)

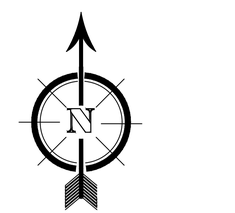




VICINITY MAP
NOT TO SCALE

ADDITIONAL NOTES

1. THE PROJECT EXPECTS TO HAVE OUTLETS (DIRECT DISCHARGE) INTO THE EXISTING MDP ROMOLAND LINE A CHANNEL AT A FEW LOCATIONS. DURING FINAL ENGINEERING, A ENCROACHMENT PERMIT IS EXPECTED TO BE PREPARED AND PROCESSED WITH RCFC&WCD FOR DIRECT CONNECTION/DISCHARGE.
2. REGARDING THE FRONTAGE OFFSITE STREET IMPROVEMENTS ASSOCIATED WITH BARNETT ROAD AND ETHANAC ROAD, THE PROJECT PLANS TO PROVIDE STORM WATER QUALITY TREATMENT FOR THE NEWLY ADDED OR REPLACED HARDSCAPE (IMPERVIOUS) PORTIONS OF THE OFFSITE FRONTAGE IMPROVEMENTS. AT THIS PRELIMINARY STAGE, PERMANENT BMP CONCEPT SUCH AS "SELF-RETAINING" AREAS AND/OR PROPRIETARY TREATMENT CONTROL FACILITIES ARE ANTICIPATED TO ADDRESS THE STORM WATER QUALITY TREATMENT REQUIREMENTS FOR THE FRONTAGE OFFSITE STREET IMPROVEMENTS. SUPPORTING CALCULATIONS ALONG WITH TYPICAL SECTIONS ARE ANTICIPATED TO BE PROVIDED AT THE TIME OF THE FINAL ENGINEERING WQMP.
3. STORM WATER QUALITY TREATMENT/MITIGATION REQUIREMENTS FOR AREAS OUTSIDE OF THE PROPOSED PROJECT AND ASSOCIATED FRONTAGE STREET IMPROVEMENT AREAS WILL BE ADDRESSED BY OTHERS.
4. AS INDICATED IN THE GENERAL NOTES ON THIS EXHIBIT, IN AN EFFORT TO MAINTAIN THE EXISTING CONDITION DRAINAGE CHARACTERISTICS, A COUPLE STORM DRAIN FACILITIES ARE EXPECTED TO BE PROVIDED (ONE NEAR THE NORTHERLY EDGE AND THE OTHER ONE NEAR THE SOUTHEASTERLY EDGE) TO CONVEY AND BYPASS RUNOFF FROM THE ADJACENT OFFSITE PARCELS, INCLUDING PARCEL APN's: 331-060-035, 331-060-034, 331-060-029, 331-060-032, AND 331-060-033, TOWARDS THE EXISTING MDP ROMOLAND LINE A CHANNEL.



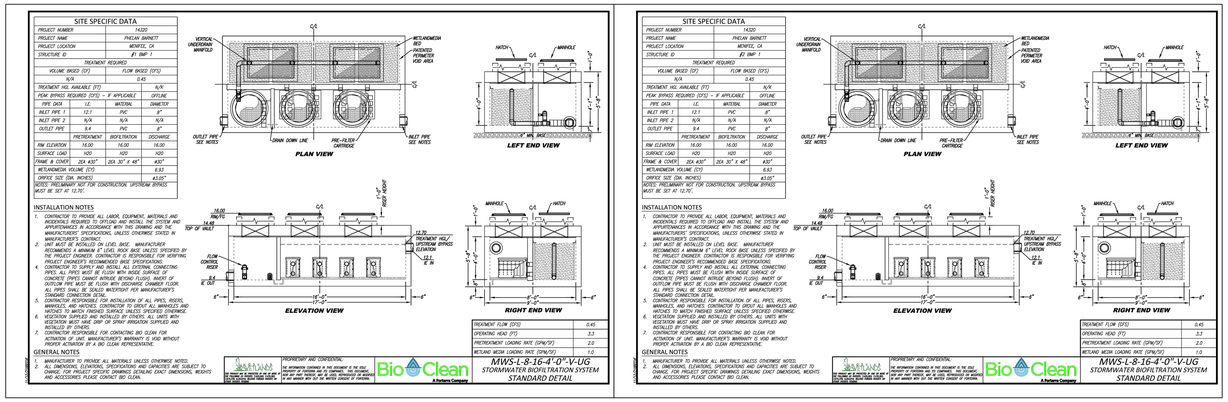
SCALE 1"=100'

REVISED: NOVEMBER 2021

CITY OF MENIFEE	
POST-CONSTRUCTION BMP SITE PLAN DMA PLAN PHELAN-BARNETT (CITY CASE NO. PLN21-0290 PP)	1 OF 2 SHEETS

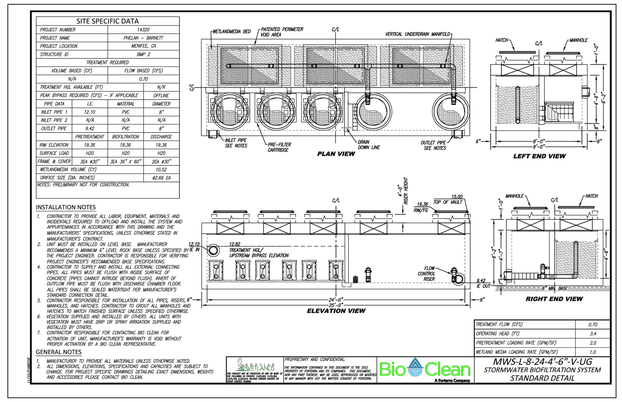
NOT FOR CONSTRUCTION - THIS POST-CONSTRUCTION BMP SITE PLAN IS FOR WQMP REVIEW PURPOSE

POST-CONSTRUCTION BMP SECTION DETAIL
PHELAN-BARNETT



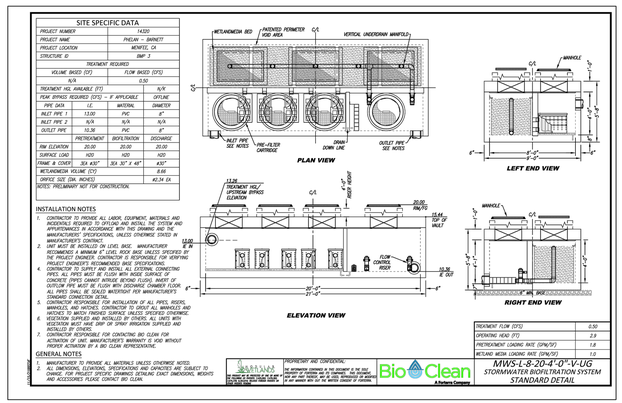
BMP 1 - PROPRIETARY MODULAR WETLAND SYSTEM (TWO UNITS)

NOT TO SCALE



BMP 2 - PROPRIETARY MODULAR WETLAND SYSTEM (ONE UNIT)

NOT TO SCALE

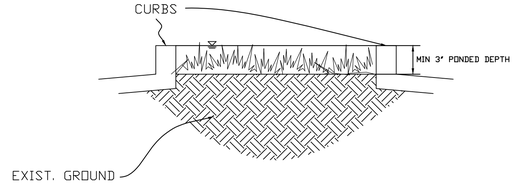


BMP 3 - PROPRIETARY MODULAR WETLAND SYSTEM (ONE UNIT)

NOT TO SCALE

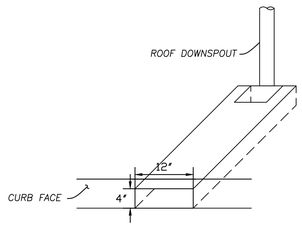
INLET PLACARD DETAIL (TYP.)

NOT TO SCALE



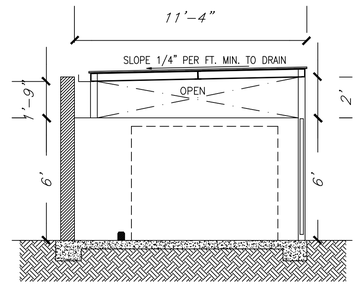
LANDSCAPED ISLAND DETAIL (TYP.)

NOT TO SCALE



ROOF DRAIN CURB OUTLET STRUCTURE DETAIL (TYP.)

NOT TO SCALE



TRASH ENCLOSURE STRUCTURE DETAIL (TYP.)

NOT TO SCALE

REVISED: NOVEMBER 2021

CITY OF MENIFEE

POST-CONSTRUCTION BMP SITE PLAN
BMP DETAILS

PHELAN-BARNETT

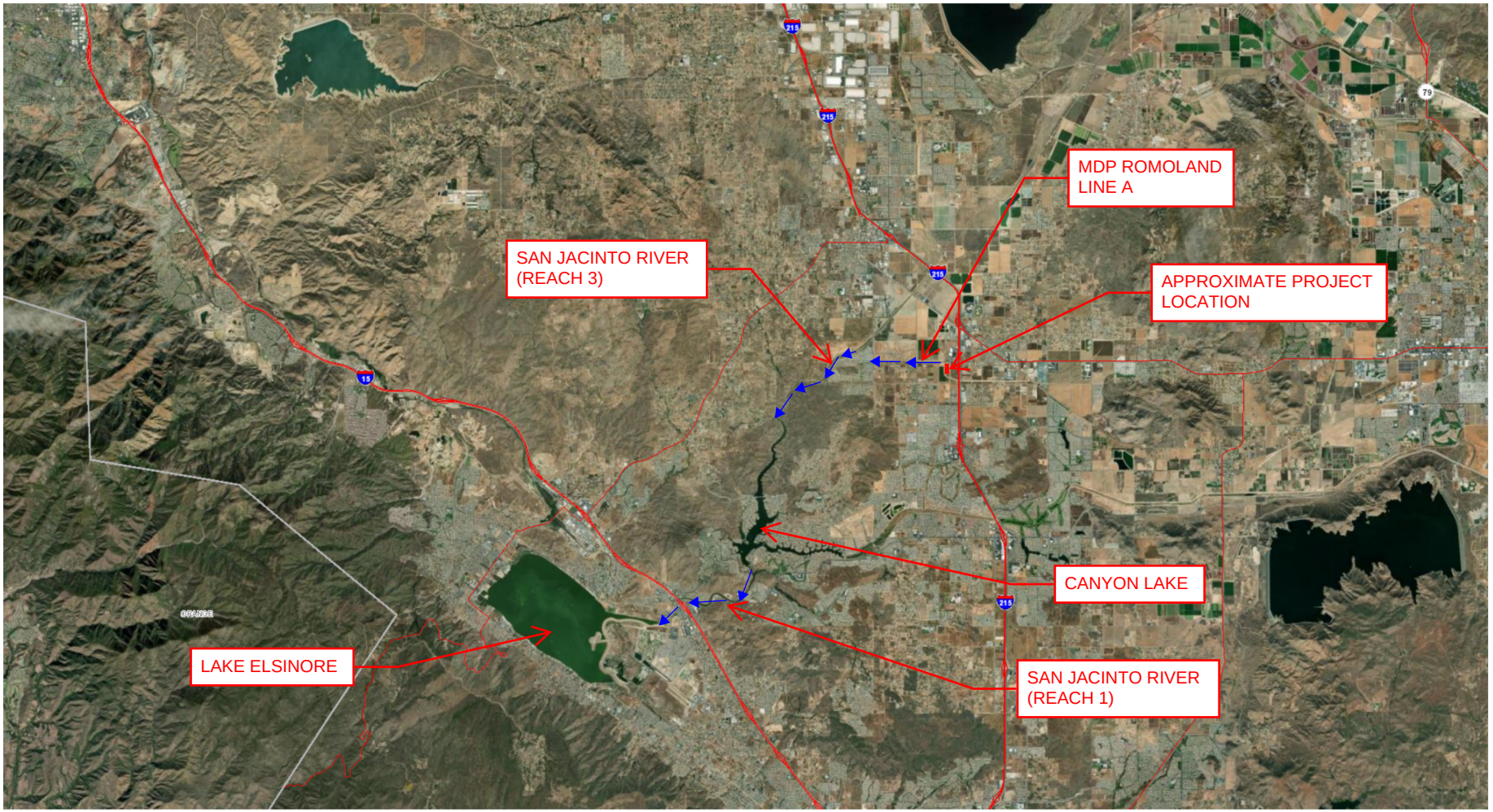
(CITY CASE NO. PLN21-0290 PP)

2 OF 2 SHEETS

NOT FOR CONSTRUCTION – THIS POST–CONSTRUCTION BMP SITE PLAN IS FOR WQMP REVIEW PURPOSE

SCREEN CAPTURE - RIVERSIDE COUNTY STORMWATER & WATER CONSERVATION TRACKING TOOL

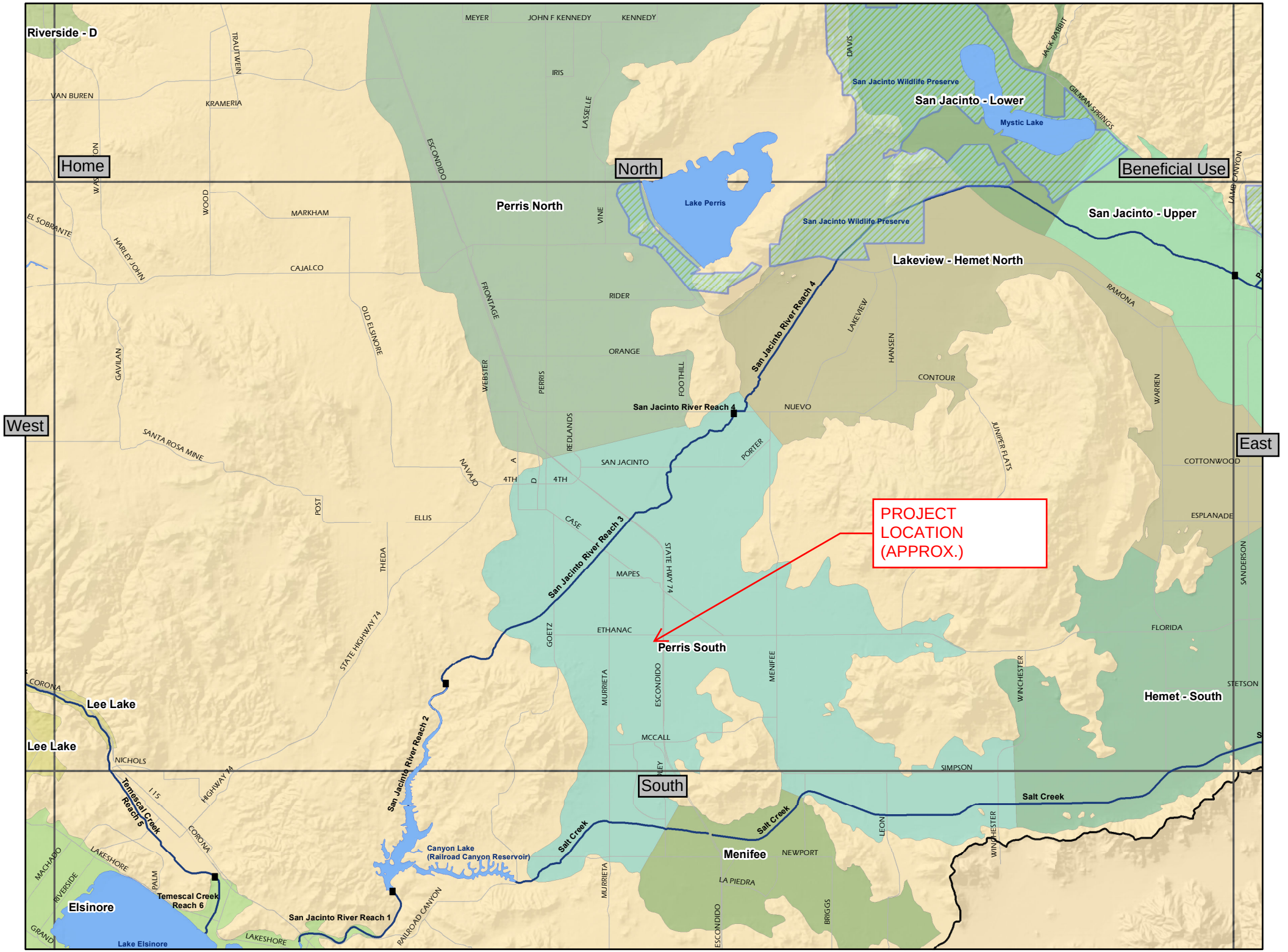
RECEIVING WATER MAP - SUPPORTING MATERIALS



Riverside County
SWCTT

Stormwater Map

Site Address: rivco.permitrack.com


Riverside - D
Home
North
Beneficial Use
West
East
South
PROJECT LOCATION (APPROX.)
San Jacinto - Lower
San Jacinto - Upper
Lakeview - Hemet North
Perris North
Perris South
Hemet - South
Menifee
Elsinore
Lee Lake
Lee Lake
Lake Perris
Mystic Lake
San Jacinto Wildlife Preserve
San Jacinto Wildlife Preserve
Canyon Lake (Railroad Canyon Reservoir)
Lake Elsinore
San Jacinto River Reach 4
San Jacinto River Reach 3
San Jacinto River Reach 2
San Jacinto River Reach 1
Temescal Creek Reach 5
Temescal Creek Reach 6
Salt Creek
Salt Creek
Salt Creek
MEYER
JOHN F KENNEDY
KENNEDY
IRIS
VAN BUREN
KRAMERIA
TRAUTWEIN
LASSELLE
ESCONDIDO
DAVIS
JACK RABBIT
GILMAN SPRINGS
LAMB CANYON
WASHINGTON
WOOD
MARKHAM
EL SOBRANTE
HARLEY JOHN
CAJALCO
VINE
FRONTAGE
RIDER
ORANGE
WEBSTER
PERRIS
FOOTHILL
REDLANDS
OLD ELSINORE
GAVILAN
SANTA ROSA MINE
POST
ELLIS
THEDA
NAVAJO
4TH
D
4TH
SAN JACINTO
CASE
MAPES
STATE HWY 74
STATE HIGHWAY 74
GOETZ
ETHANAC
MURRIETA
ESCONDIDO
MENIFEE
MCCALL
SIMPSON
LEON
WINCHESTER
NEWPORT
LA PIEDRA
BRIGGS
RAILROAD CANYON
LAKESHORE
LAKESHORE
PALM
RIVERSIDE
MACHADO
GRAND
CORONA
CORONA
NICHOLS
HIGHWAY 74
115
LAKEVIEW
HANSEN
CONTOUR
NUEVO
RAMONA
WARREN
JUNIPER FLATS
PORTER
COTTONWOOD
ESPLANADE
SANDERSON
FLORIDA
STETSON

Appendix 2: Construction Plans

Grading and Drainage Plans

Note: Preliminary site plans are included.

Appendix 3: Soils Information

Geotechnical Study and Other Infiltration Testing Data

7.0 Infiltration Characteristics

Infiltration tests within the site were performed to provide preliminary infiltration rates for the purpose of planning and design of an on-site water disposal system. The infiltration tests consisted of the double ring infiltration test per ASTM Method D 3385. The field infiltration rate was computed using a reduction factor – R_f based on the field measurements with our calculations given in Appendix D. Based upon the results of our testing, the soils encountered in the planned on-site drainage disposal system area exhibit the following infiltration rates.

Trench/Test No.	Depth	Soil Classification	Field Infiltration Rate	Design Rate
T-1/TH-1	5'	Sandy CLAY	0.0 in/hr	0.0 in/hr
T-2/TH-2	6'	Sandy CLAY	0.0 in/hr	0.0 in/hr
T-3/TH-3	6'	Sandy CLAY	0.7 in/hr	0.2 in/hr

The correction factors CF_t, CF_v and CF_s are given below based on soils at 6 feet from our field tests.

a) $CF_t = Rf = 1.0$ for our double ring infiltration test holes.

b) $CF_v = 1.0$ based on uniform soils encountered in three (3) trenches for infiltration tests.

c) $CF_s = 3.0$ for long-term siltation, plugging and maintenance. The subsurface soils are likely to have some plugging and regular maintenance of storm water discharge devices is required.

The infiltration rates indicates very stiff fine-grained clayey soils which are not suitable for seepage pits at the project site. Review of nearby groundwater wells located approximately 0.5 to 0.75 miles to the north and northeast of the subject site noted groundwater depths greater than 50 feet below ground surface.

NORCAL ENGINEERING

SOILS AND GEOTECHNICAL CONSULTANTS

Project: Phelan Development Company
Project No.: 22603-21
Date: 6/1/2021
Test No. 1
Depth: 6'
Tested By: D.R.

TIME (hr/min)	CHANGE TIME (min)	CUMULATIVE TIME (min)	INNER RING READING (cm)	INNER RING CHANGE	INNER RING FLOW (cc)	OUTER RING READING (cm)	OUTER RING CHANGE	OUTER RING FLOW (cc)	INNER RING INF RATE (cm/hr)	OUTER RING INF RATE (cm/hr)	INNER RING INF RATE (ft/hr)
7:52			37.5			67.9					
8:07	15	15	37.5	0.0		67.9	0.0				
8:07			37.5			67.9					
8:22	15	30	37.5	0.0		67.9	0.0				
8:22			37.5			67.9					
8:37	15	45	37.5	0.0		67.9	0.0				
8:37			37.5			67.9					
8:52	15	60	37.5	0.0		67.9	0.0				
8:52			37.5			67.9					
9:07	15	75	37.5	0.0		67.9	0.0				
9:07			37.5			67.9					
9:22	15	90	37.5	0.0		67.9	0.0				
9:22			37.5			67.9					
9:37	15	105	37.5	0.0		67.9	0.0				
9:37			37.5			67.9					
9:52	15	120	37.5	0.0		67.9	0.0				
9:52			37.5			67.9					
10:07	15	135	37.5	0.0		67.9	0.0				
10:07			37.5			67.9					
10:22	15	150	37.5	0.0		67.9	0.0				
10:22			37.5			67.9					
10:37	15	165	37.5	0.0		67.9	0.0				
10:37			37.5			67.9					
10:52	15	180	37.5	0.0		67.9	0.0				

Average = Ø cm/hr

NORCAL ENGINEERING

SOILS AND GEOTECHNICAL CONSULTANTS

Project: Phelan Development Company
Project No.: 22603-21
Date: 6/1/2021
Test No. 2
Depth: 6'
Tested By: D.R.

TIME (hr/min)	CHANGE TIME (min)	CUMULATIVE TIME (min)	INNER RING READING (cm)	INNER RING CHANGE	INNER RING FLOW (cc)	OUTER RING READING (cm)	OUTER RING CHANGE	OUTER RING FLOW (cc)	INNER RING INF RATE (cm/hr)	OUTER RING INF RATE (cm/hr)	INNER RING INF RATE (ft/hr)
			40.0			98.5					
	15	15	40.1	0.1		98.6	0.1				
			40.1			98.6					
	15	30	40.3	0.2		98.8	0.2				
			40.3			98.8					
	15	45	40.3	0.0		98.8	0.0				
			40.3			98.8					
	15	60	40.3	0.0		98.8	0.0				
			40.3			98.8					
	15	75	40.3	0.0		98.8	0.0				
			40.3			98.8					
	15	90	40.3	0.0		98.8	0.0				
			40.3			98.8					
	15	105	40.3	0.0		98.8	0.0				
			40.3			98.8					
	15	120	40.3	0.0		98.8	0.0				
			40.3			98.8					
	15	135	40.3	0.0		98.8	0.0				
			40.3			98.8					
	15	150	40.3	0.0		98.8	0.0				
			40.3			98.8					
	15	165	40.3	0.0		98.8	0.0				
			40.3			98.8					
	15	180	40.3	0.0		98.8	0.0				

Average = 0 cm/hr

NORCAL ENGINEERING

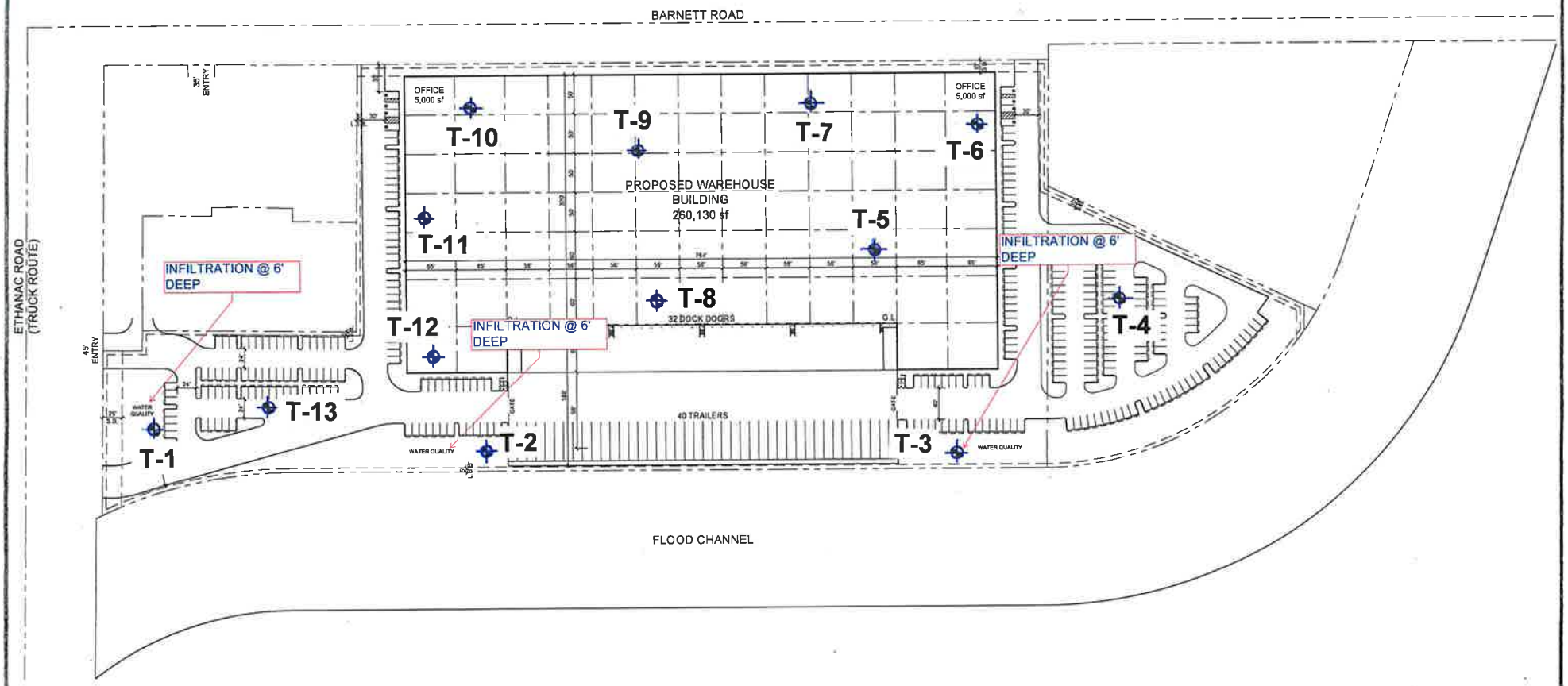
SOILS AND GEOTECHNICAL CONSULTANTS

Project: Phelan Development Company
Project No.: 22603-21
Date: 6/1/2021
Test No. 3
Depth: 6'
Tested By: D.R.

TIME (hr/min)	CHANGE TIME (min)	CUMULATIVE TIME (min)	INNER RING READING (cm)	INNER RING CHANGE	INNER RING FLOW (cc)	OUTER RING READING (cm)	OUTER RING CHANGE	OUTER RING FLOW (cc)	INNER RING INF RATE (cm/hr)	OUTER RING INF RATE (cm/hr)	INNER RING INF RATE (ft/hr)
			40.2			69.8					
	15	15	40.6	0.4		70.4	0.6				
			40.6			70.4					
	15	30	40.9	0.3		70.7	0.3				
			40.9			70.7					
	15	45	41.0	0.1		71.0	0.3				
			41.0			71.0					
	15	60	41.4	0.4		71.7	0.7				
			41.4			71.7					
	15	75	41.8	0.4		72.4	0.7				
			41.8			72.4					
	15	90	42.5	0.7		73.1	0.7				
			42.5			73.1					
	15	105	43.0	0.5		73.8	0.7		2.0	2.8	
			43.0			73.8					
	15	120	43.6	0.6		74.4	0.6		2.4	2.4	
			43.6			74.4					
	15	135	44.0	0.4		75.1	0.7		1.6	2.8	
			44.0			75.1					
	15	150	44.5	0.5		75.8	0.7		2.0	2.8	
			44.5			75.8					
	15	165	44.9	0.4		76.4	0.6		1.6	2.4	
			44.9			76.4					
	15	180	45.4	0.5		77.0	0.6		2.0	2.4	

Average = 1.9/2.6 cm/hr

0.748 in/hr



NORTH

1 INCH = 100 FEET

NorCal Engineering

SOILS AND GEOTECHNICAL CONSULTANTS

PROJECT 22603-21 **DATE** JUNE 2021

SITE PLAN

Appendix 4: Historical Site Conditions

Phase I Environmental Site Assessment or Other Information on Past Site Use

Not included.

Appendix 5: LID Infeasibility

LID Technical Infeasibility Analysis

N/A – Runoff from the project is directed to Canon Lake, which ultimately drains to Lake Elsinore. Based on consideration of "highest and best use" language in Section 2.4.4 of the WQMP guidance document and based on the infiltration investigation from the geotechnical engineer, infiltration is not technically feasible. Also, due to relatively poor field infiltration rates provided by the project-specific geotechnical investigation, infiltration would not be feasible. Therefore, proprietary Modular Wetland Systems (LID BMP) are proposed to treat runoff from the project. Supporting "TAPE/GULD" certification documentation will be provided for proposed MWS.

Appendix 6: BMP Design Details

BMP Sizing, Design Details and other Supporting Documentation

Santa Ana Watershed - BMP Design Volume, V_{BMP}

(Rev. 10-2011)

Legend: Required Entries; Calculated Cells

*(Note this worksheet shall **only** be used in conjunction with BMP designs from the **LID BMP Design Handbook**)*

Company Name	SDH & Associates, Inc.	Date	11/29/2021
Designed by	NM	Case No	
Company Project Number/Name	2113 / Phelan-Barnett		

BMP Identification

BMP NAME / ID: MWS / BMP 1

Must match Name/ID used on BMP Design Calculation Sheet

Design Rainfall Depth

85th Percentile, 24-hour Rainfall Depth, from the Isohyetal Map in Handbook Appendix E

D_{85}= 0.58 inches

Drainage Management Area Tabulation

Insert additional rows if needed to accommodate all DMAs draining to the BMP

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Imperivous Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*Design Storm Depth (in)*	*Design Capture Volume, V_{BMP} (cubic feet)*	*Proposed Volume on Plans (cubic feet)*
DMA 1-1	*41,803*	*Ornamental Landscaping*	*0.1*	*0.11*	*4617.5*			
DMA 1-2	*94,028*	*Concrete or Asphalt*	*1*	*0.89*	*83873*			
DMA 1-3	*125,689*	*Roofs*	*1*	*0.89*	*112114.6*			
	261520	***Total***			**200605.1**	**0.58**	***9695.9***	***N/A***

Notes:

Santa Ana Watershed - BMP Design Flow Rate, Q_{BMP}

(Rev. 10-2011)

Legend: Required Entries / Calculated Cells

*(Note this worksheet shall **only** be used in conjunction with BMP designs from the **LID BMP Design Handbook**)*

Company Name SDH & Associates, Inc. Date 11/29/2021

Designed by NM Case No

Company Project Number/Name 2113 / Phelan-Barnett

BMP Identification

BMP NAME / ID MWS / BMP 1

Must match Name/ID used on BMP Design Calculation Sheet

Design Rainfall Depth

Design Rainfall Intensity I = 0.20 in/hr

Drainage Management Area Tabulation

Insert additional rows if needed to accommodate all DMAs draining to the BMP

DMAs

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type (use pull-down menu)	Effective Impervious Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*Design Rainfall Intensity (in/hr)*	*Design Flow Rate (cfs)*	*Proposed Flow Rate (cfs)*
DMA 1-1	*41,803*	*Ornamental Landscaping*	*0.1*	*0.11*	*4617.5*			
DMA 1-2	*94,028*	*Concrete or Asphalt*	*1*	*0.892*	*83873*			
DMA 1-3	*125,689*	*Roofs*	*1*	*0.892*	*112114.6*			
	261520	***Total***			**200605.1**	**0.20**	***0.9***	***0.9***

Notes:

Santa Ana Watershed - BMP Design Volume, V_{BMP}

(Rev. 10-2011)

Legend: Required Entries / Calculated Cells

*(Note this worksheet shall **only** be used in conjunction with BMP designs from the **LID BMP Design Handbook**)*

Company Name: SDH & Associates, Inc. Date: 11/29/2021

Designed by: NM Case No:

Company Project Number/Name: 2113 / Phelan-Barnett

BMP Identification

BMP NAME / ID: MWS / BMP 2

Must match Name/ID used on BMP Design Calculation Sheet

Design Rainfall Depth

85th Percentile, 24-hour Rainfall Depth, from the Isohyetal Map in Handbook Appendix E

D_{85}= 0.58 inches

Drainage Management Area Tabulation

Insert additional rows if needed to accommodate all DMAs draining to the BMP

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Imperivous Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*Design Storm Depth (in)*	*Design Capture Volume, V_{BMP} (cubic feet)*	*Proposed Volume on Plans (cubic feet)*
DMA 2-1	*19,273*	*Ornamental Landscaping*	*0.1*	*0.11*	*2128.9*			
DMA 2-2	*64,241*	*Concrete or Asphalt*	*1*	*0.89*	*57303*			
DMA 2-3	*113,394*	*Roofs*	*1*	*0.89*	*101147.4*			
	196908	***Total***			**160579.3**	**0.58**	***7761.3***	***N/A***

Notes:

Santa Ana Watershed - BMP Design Flow Rate, Q_{BMP}

(Rev. 10-2011)

Legend: Required Entries / Calculated Cells

*(Note this worksheet shall **only** be used in conjunction with BMP designs from the **LID BMP Design Handbook**)*

Company Name: SDH & Associates, Inc. Date: 11/29/2021

Designed by: NM Case No:

Company Project Number/Name: 2113 / Phelan-Barnett

BMP Identification

BMP NAME / ID: MWS / BMP 2

Must match Name/ID used on BMP Design Calculation Sheet

Design Rainfall Depth

Design Rainfall Intensity I = 0.20 in/hr

Drainage Management Area Tabulation

Insert additional rows if needed to accommodate all DMAs draining to the BMP

	DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type (use pull-down menu)	Effective Imperivous Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*Design Rainfall Intensity (in/hr)*	*Design Flow Rate (cfs)*	*Proposed Flow Rate (cfs)*
DMAs	*DMA 2-1*	*19,273*	*Ornamental Landscaping*	*0.1*	*0.11*	*2128.9*			
	DMA 2-2	*64,241*	*Concrete or Asphalt*	*1*	*0.892*	*57303*			
	DMA 2-3	*113,394*	*Roofs*	*1*	*0.892*	*101147.4*			
		196908	***Total***			**160579.3**	**0.20**	***0.7***	***0.7***

Notes:

Santa Ana Watershed - BMP Design Volume, V_{BMP}

(Rev. 10-2011)

Legend: Required Entries / Calculated Cells

*(Note this worksheet shall **only** be used in conjunction with BMP designs from the **LID BMP Design Handbook**)*

Company Name	SDH & Associates, Inc.	Date	11/29/2021
Designed by	NM	Case No	
Company Project Number/Name	2113 / Phelan-Barnett		

BMP Identification

BMP NAME / ID: MWS / BMP 3

Must match Name/ID used on BMP Design Calculation Sheet

Design Rainfall Depth

85th Percentile, 24-hour Rainfall Depth, from the Isohyetal Map in Handbook Appendix E

D_{85}= 0.58 inches

Drainage Management Area Tabulation

Insert additional rows if needed to accommodate all DMAs draining to the BMP

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Imperivous Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*Design Storm Depth (in)*	*Design Capture Volume, V_{BMP} (cubic feet)*	*Proposed Volume on Plans (cubic feet)*
DMA 3-1	*33,725*	*Ornamental Landscaping*	*0.1*	*0.11*	*3725.2*			
DMA 3-2	*108,224*	*Concrete or Asphalt*	*1*	*0.89*	*96535.8*			
DMA 3-3	*12,378*	*Roofs*	*1*	*0.89*	*11041.2*			
	154327	***Total***			**111302.2**	**0.58**	***5379.6***	***N/A***

Notes:

Santa Ana Watershed - BMP Design Flow Rate, Q_{BMP}

(Rev. 10-2011)

Legend: Required Entries / Calculated Cells

(Note this worksheet shall ***only*** *be used in conjunction with BMP designs from the* ***LID BMP Design Handbook*** *)*

Company Name SDH & Associates, Inc. Date 11/29/2021

Designed by NM Case No

Company Project Number/Name 2113 / Phelan-Barnett

BMP Identification

BMP NAME / ID MWS / BMP 3

Must match Name/ID used on BMP Design Calculation Sheet

Design Rainfall Depth

Design Rainfall Intensity I = 0.20 in/hr

Drainage Management Area Tabulation

Insert additional rows if needed to accommodate all DMAs draining to the BMP

	DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type (use pull-down menu)	Effective Imperivous Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*Design Rainfall Intensity (in/hr)*	*Design Flow Rate (cfs)*	*Proposed Flow Rate (cfs)*
DMAs	*DMA 3-1*	*33,725*	*Ornamental Landscaping*	*0.1*	*0.11*	*3725.2*			
	DMA 3-2	*108,224*	*Concrete or Asphalt*	*1*	*0.892*	*96535.8*			
	DMA 3-3	*12,378*	*Roofs*	*1*	*0.892*	*11041.2*			
		154327	***Total***			**111302.2**	**0.20**	***0.5***	***0.5***

Notes:

SUPPORTING "TAPE" & "GULD" CERTIFICATION DOCUMENTS FOR MODULAR WETLAND SYSTEMS (MWS)

WASHINGTON STATE DEPARTMENT OF ECOLOGY

July 2017

GENERAL USE LEVEL DESIGNATION FOR BASIC, ENHANCED, AND PHOSPHORUS TREATMENT

For the

MWS-Linear Modular Wetland

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 MWS-Linear Modular Wetland Stormwater Treatment System for Basic treatment

   - Sized at a hydraulic loading rate of 1 gallon per minute (gpm) per square foot (sq ft) of wetland cell surface area. For moderate pollutant loading rates (low to medium density residential basins), size the Prefilters at 3.0 gpm/sq ft of cartridge surface area. For high loading rates (commercial and industrial basins), size the Prefilters at 2.1 gpm/sq ft of cartridge surface area.

2. General use level designation (GULD) for the MWS-Linear Modular Wetland Stormwater Treatment System for Phosphorus treatment

   - Sized at a hydraulic loading rate of 1 gallon per minute (gpm) per square foot (sq ft) of wetland cell surface area. For moderate pollutant loading rates (low to medium density residential basins), size the Prefilters at 3.0 gpm/sq ft of cartridge surface area. For high loading rates (commercial and industrial basins), size the Prefilters at 2.1 gpm/sq ft of cartridge surface area.

3. General use level designation (GULD) for the MWS-Linear Modular Wetland Stormwater Treatment System for Enhanced treatment

   - Sized at a hydraulic loading rate of 1 gallon per minute (gpm) per square foot (sq ft) of wetland cell surface area. For moderate pollutant loading rates (low to medium density residential basins), size the Prefilters at 3.0 gpm/sq ft of cartridge surface area. For high loading rates (commercial and industrial basins), size the Prefilters at 2.1 gpm/sq ft of cartridge surface area.

4. Ecology approves the MWS - Linear Modular Wetland Stormwater Treatment System units for Basic, Phosphorus, and Enhanced 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 flow rate as calculated using the latest version of the Western Washington Hydrology Model or other Ecology-approved continuous runoff model.
    - Eastern Washington: For treatment installed upstream of detention or retention, the water quality design flow rate is the peak 15-minute flow rate as calculated using one of the three methods described in Chapter 2.2.5 of the Stormwater Management Manual for Eastern Washington (SWMMEW) or local manual.
    - Entire State: For treatment installed downstream of detention, the water quality design flow rate is the full 2-year release rate of the detention facility.

5. These use level designations have no expiration date but may be revoked or amended 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 MWS – Linear Modular Wetland Stormwater Treatment System units, in accordance with Modular Wetland Systems, Inc. applicable manuals and documents and the Ecology Decision.
2. Each site plan must undergo Modular Wetland Systems, Inc. review and approval before site installation. This ensures that site grading and slope are appropriate for use of a MWS – Linear Modular Wetland Stormwater Treatment System unit.
3. MWS – Linear Modular Wetland Stormwater Treatment System media shall conform to the specifications submitted to, and approved by, Ecology.
4. The applicant tested the MWS – Linear Modular Wetland 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 MWS – Linear Modular Wetland 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 manufactured filter treatment device.

    - Typically, Modular Wetland Systems, Inc. designs MWS - Linear 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 MWS - Linear 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 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 MWS - Linear Modular Wetland Stormwater Treatment System units shall not cause or contribute to water quality standards violations in receiving waters.

Applicant:	Modular Wetland Systems, Inc.
Applicant's Address:	*PO. Box 869* *Oceanside, CA 92054*

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, Enhanced, 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 MWS – Linear Modular wetland is capable of removing a minimum of 80-percent of TSS from stormwater with influent concentrations between 100 and 200 mg/l.
- The MWS – Linear Modular wetland 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 MWS – Linear Modular wetland is capable of removing a minimum of 30-percent of dissolved Copper from stormwater with influent concentrations between 0.005 and 0.020 mg/l.
- The MWS – Linear Modular wetland is capable of removing a minimum of 60-percent of dissolved Zinc from stormwater with influent concentrations between 0.02 and 0.30 mg/l.

Ecology Recommendations:

- Modular Wetland Systems, Inc. has shown Ecology, through laboratory and field-testing, that the MWS - Linear Modular Wetland Stormwater Treatment System filter system is capable of attaining Ecology's Basic, Total phosphorus, and Enhanced treatment goals.

Findings of Fact:

<u>Laboratory Testing</u>

The MWS-Linear Modular wetland 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).

Issues to be addressed by the Company:

1. Modular Wetland Systems, Inc. should collect maintenance and inspection data for the first year on all installations in the Northwest in order to assess standard maintenance requirements for various land uses in the region. Modular Wetland Systems, Inc. should use these data to establish required maintenance cycles.
2. Modular Wetland Systems, Inc. should collect pre-treatment chamber sediment depth data for the first year of operation for all installations in the Northwest. Modular Wetland Systems, Inc. will use these data to create a correlation between sediment depth and pre-filter clogging.

Technology Description:
Download at http://www.modularwetlands.com/

Contact Information:

Applicant: Zach Kent
BioClean A Forterra Company.
398 Vi9a El Centro
Oceanside, CA 92058
zach.kent@forterrabp.com

Applicant website: http://www.modularwetlands.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) 407-6444
douglas.howie@ecy.wa.gov

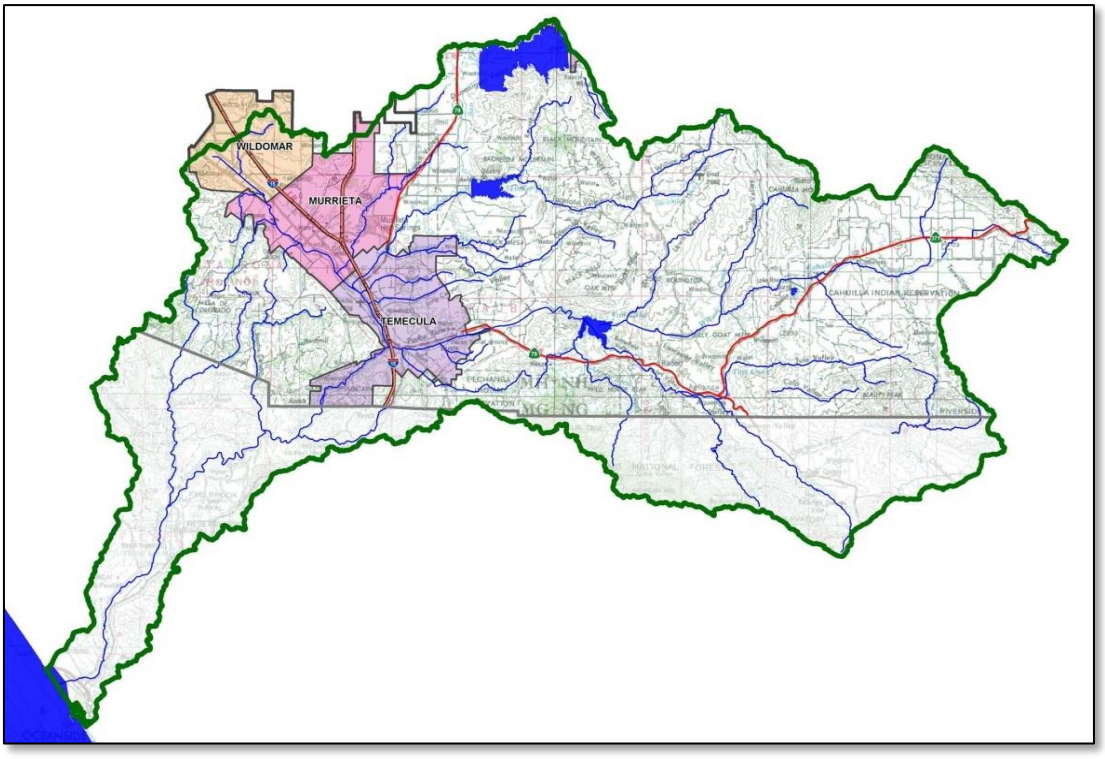
Revision History

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)

EXCERPT - SUPPORTING REFERENCE MATERIALS FROM NEIGHBORING SANTA MARGARITA REGION WQMP GUIDANCE REGARDING ACCPETABLE PROPRIETARY BMP

2018 WATER QUALITY MANAGEMENT PLAN

for the Santa Margarita Region of Riverside County



Functionally equivalent to **Model BMP Design Manual**
Prepared for Regional Water Quality Control Board Review
January 5, 2018

- **Bioretention BMPs** are engineered vegetated areas that are designed to receive and fully infiltrate runoff. Because they are designed to infiltrate the full Design Capture Volume (DCV), Bioretention BMPs are feasible only where soils are moderately to highly permeable. Water retained by Bioretention BMPs is either evapotranspired by plants in the BMP, or slowly allowed to infiltrate into the underlying soils. Bioretention BMPs may have capped underdrains to allow adaptation to a biofiltration BMP, if needed, but must not be designed with a planned discharge from underdrains.

- **Priority 2: Biofiltration BMPs**

Under the Regional MS4 Permit, if full retention of the DCV is not technically feasible per the criteria in Section 2.3.3, a PDP may use Biofiltration BMPs to achieve compliance with pollutant control requirements. Biofiltration BMPs must be **designed to maximize retention and pollutant removal** and must be sized according to one of the following methods:

1. Treat 1.5 times the DCV not reliably retained on site; or
2. Treat the DCV not reliably retained on site with a design that has a total static storage volume, including pore spaces and pre-filter detention volume, sized to hold at least 0.75 times the DCV not reliably retained on site.

Water can be considered "reliably retained" if it is estimated to infiltrate or evapotranspire within a reasonable time and is applied in conformance with infiltration feasibility criteria described in Section 2.3.3.

"Static storage volume" refers to the volume in ponded area and soil/media pore space, tabulated without accounting for any storm routing.

The following BMPs are considered Priority 2 Biofiltration BMPs:

- **Biofiltration with Partial Infiltration BMPs** are engineered vegetated areas that are designed to receive and filter runoff and infiltrate a portion of that runoff into underlying soils. Biofiltration with Partial Infiltration BMPs also retain runoff via evapotranspiration. They are typically used in areas with moderate soil infiltration rates where full infiltration of the DCV is infeasible but where BMPs can still be designed to achieve partial infiltration in less permeable soils.

IN SURROUNDING REGIONS, PROPRIETARY BMPs W/ APPLICABLE "TAPE" AND "GULD" CERTIFICATION ARE CONSIDERED TO HAVE EQUIVALENT POLLUTANT REMOVAL EFFICIENCY AS "BIORETENTION/BIOFILTRATION" (LID BMPs) AND CATEGORIZED AS "PRIORITY 2" IN THE BMP HIERACHY.

- **Biofiltration with No Infiltration BMPs** are engineered vegetated areas that are designed to receive and filter runoff but are not designed to promote infiltration of runoff into underlying soils. Because the Regional MS4 Permit requires that Biofiltration BMPs be designed to maximize retention, Biofiltration with No Infiltration BMPs are typically used only in areas with low soil infiltration rates where infiltration potential is minimal. They may also be used in areas where infiltration of runoff poses risks to property, people, or the environment, such as sites where infiltration would pose geotechnical risks or mobilize soil contamination.
- **Proprietary Biofiltration BMPs** are engineered vegetated biofiltration systems that have been designed by product vendors to receive and treat runoff. These BMPs typically achieve negligible volume reduction unless supplemented with infiltration to increase retention. Guidance for acceptance of proprietary BMPs is provided in Section 2.3.7. Use of proprietary biofiltration BMPs is at the discretion of the [Local Jurisdiction].

- **Priority 3: Flow-Through Treatment BMPs**

  Note: use of these BMPs may require pre-approval from [Insert Jurisdiction].

  Under the Regional MS4 Permit, if Biofiltration is not technically feasible a PDP may use Flow-Through Treatment Control BMPs to manage pollutants in runoff from the site. Flow-Through Treatment Control BMPs must be sized to remove pollutants to the MEP and filter or treat either:

  1. The maximum flow rate of runoff produced from a rainfall intensity of 0.2 inches of rainfall per hour, for each hour of a storm event; or,
  2. The maximum flow rate of runoff produced by the 85th percentile hourly rainfall intensity as determined form the local historical record.

  Flow-Through Treatment BMPs must be ranked with a medium or high pollutant removal efficiency for the Priority Pollutants of Concern for a PDP (Section 2.2.4), unless utilizing such BMPs is shown to be technically infeasible.

  PDPs that utilize Flow-Through Treatment Control BMPs to manage pollutants in site runoff must also mitigate, through participation in Alternative Compliance, for the pollutant load in the portion of the DCV not reliably retained on site. Alternative compliance options are described in Section 2.7.

The simplified process for Small PDPs is fully detailed in the Fact Sheet titled "LID Implementation for Small Priority Development Projects" in Section 3.10 of the LID BMP Design Handbook. The simplified process focuses on the following approaches to achieve compliance with water quality requirements:

- Implementation of site design practices that retain runoff such as permeable pavements, small area dispersion, and tree wells and have limited sensitivity to actual infiltration rates.
- Treatment of remaining runoff using Biofiltration with Partial Infiltration BMPs designed with internal retention storage beneath the underdrain discharge elevation to maximize infiltration in all soil types.

Compared to the standard LID feasibility and prioritization approach, the simplified process for Small PDPs includes the following differences:

- BMP selection and sizing does not require soil infiltration testing or documentation of infiltration rates. The specified approaches for sizing and design of BMPs for these projects are such that infiltration of runoff meets or exceeds the amount of infiltration that would be achieved under the Standard Approach in all soil types.
- This approach only allows PDPs to use Biofiltration with Partial Infiltration to treat and retain runoff from areas that are not already managed using LID principles. To maximize retention, internal retention storage is required beneath the underdrain discharge elevation of Biofiltration with Partial Infiltration BMPs.
- This provides a simplified approach for documenting potential risks associated with infiltration including downstream impacts, groundwater quality, and public safety concerns.

If an applicant wishes to use BMPs other than those pre-approved for Small PDPs, the standard feasibility and prioritization process should be used.

2.3.7. Approval Requirements for Proprietary BMPs

Proprietary BMPS may be used to comply with pollutant control requirements under certain circumstances if they meet the requirements in this section of the WQMP. Proprietary BMPs may be implemented as Biofiltration and Flow-Through Treatment Control BMPs, depending on the characteristics of the proprietary device.

Approval for a given Proprietary BMP is as follows:

1. The Project WQMP must adequately demonstrate that it is appropriate to use a proprietary BMP in the intended role. This shall be done per the BMP selection and design process described in Sections 2.3 and 3.4 of this WQMP. For example, if a DMA can fully or partially infiltrate stormwater, then it would be unacceptable to circumvent this infiltration feasibility through the use of a proprietary BMP that does not achieve the feasible level of infiltration.

2. The selected proprietary BMP must have adequate certifications or field-scale third party performance demonstration to serve the intended role. The performance standards for determining adequacy are based on the Washington State Technology Acceptance Protocol-Ecology (WA TAPE). Only BMPs with General Use Level Designation (GULD), or equivalent performance, for a treatment category that is appropriate for the identified BMP role will be considered valid. Specifically, a Proprietary BMP must have Washington TAPE GULD, or equivalent third party demonstrated performance, for any Primary Pollutants of Concern for a given PDP (see Section 2.2.4). Because the Washington TAPE program uses different pollutant treatment categories than this WQMP, Table 2–8 should be used to identify Washington TAPE Treatment Categories needed to provide treatment for any Primary Pollutants of Concern.

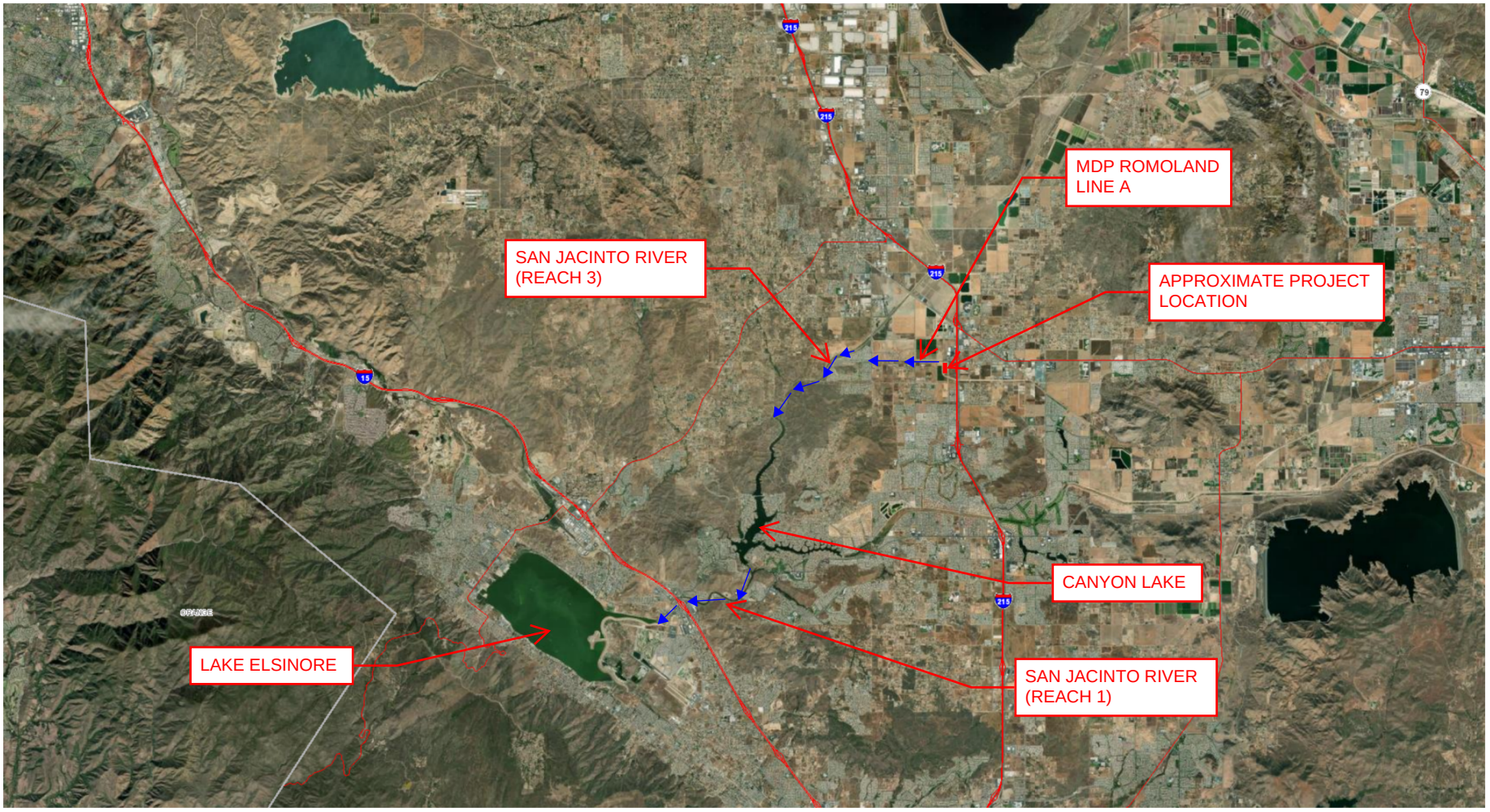
Appendix 7: Hydromodification

Supporting Detail Relating to Hydrologic Conditions of Concern

Note: The project runoff will discharge into the existing flood control channel (a.k.a. Romoland Line A) that is maintained by the RCFC. This channel drains into San Jacinto River, which outlets into Canyon Lake and eventually into Lake Elsinore. Therefore, it is anticipated that HCOC criteria should not be required for this project.

SCREEN CAPTURE - RIVERSIDE COUNTY STORMWATER & WATER CONSERVATION TRACKING TOOL

HCOC APPLICABILITY - SUPPORTING MATERIALS



NOTE: RUNOFF FROM THE PROJECT IS CONVEYED VIA AN ENGINEERED MDP ROMOLAND LINE A AND SAN JACINTO RIVER TOWARDS ADEQUATE SUMP, INCLUDING CANYON LAKE AND LAKE ELSINORE. THEREFORE, IT IS ANTICIPATED THAT HCOC CRITERIA SHOULD NOT APPLY TO THIS PROJECT PER THE "HCOC EXEMPTION 3".

Site Address: rivco.permitrack.com

Riverside County
SWCTT

Stormwater Map

Appendix 8: Source Control

Pollutant Sources/Source Control Checklist

Note: The Source Control checklist will be prepared during final engineering (construction document) stage at the time of the final WQMP.

Appendix 9: O&M

Operation and Maintenance Plan and Documentation of Finance, Maintenance and Recording Mechanisms

Note: The O&M Plan will be prepared during final engineering (construction document) stage at the time of the final WQMP.

Appendix 10: Educational Materials

BMP Fact Sheets, Maintenance Guidelines and Other End-User BMP Information

Note: The following reference materials are anticipated to be included in this Appendix during final engineering stage at the time of the final WQMP.

- **SC-10 – Non-Stormwater Discharges**
- **SC-11 – Spill Prevention, Control & Cleanup**
- **SC-30 – Outdoor Loading/Unloading**
- **SC-34 – Waste Handling and Disposal**
- **SC-41 – Building & Grounds Maintenance**
- **SC-43 – Parking/Storage Area Maintenance**
- **SC-60 – Housekeeping Practices**
- **SD-10 – Site Design and Landscape Planning**
- **SD-11 – Roof Runoff Controls**
- **SD-12 – Efficient Irrigation**
- **SD-13 – Storm Drain Signage**
- **SD-32 – Trash Storage Areas**