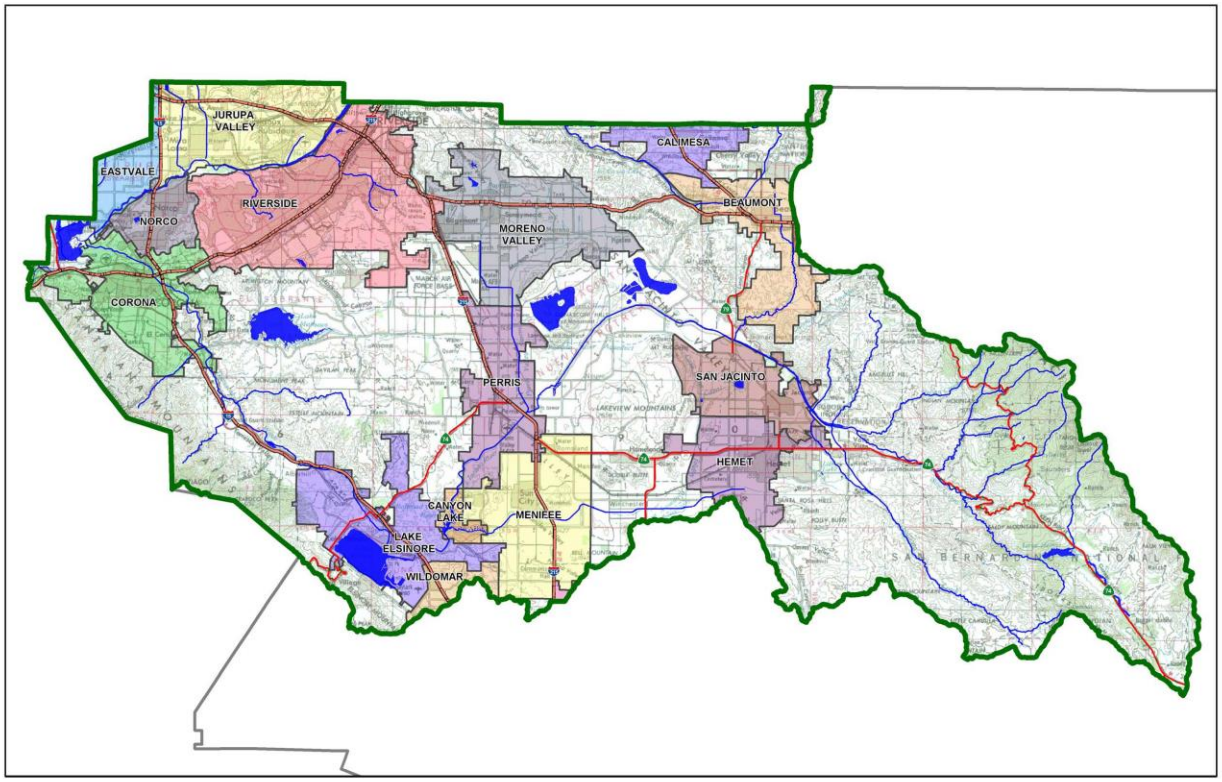
Project Specific Water Quality Management Plan

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

Project Title: Tentative Tract 38107

Development No:

Design Review/Case No:



☒ **Preliminary**
☐ **Final**

Original Date Prepared: July 22, 2021

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Prepared for Compliance with
Regional Board Order No. **R8-2010-0033**
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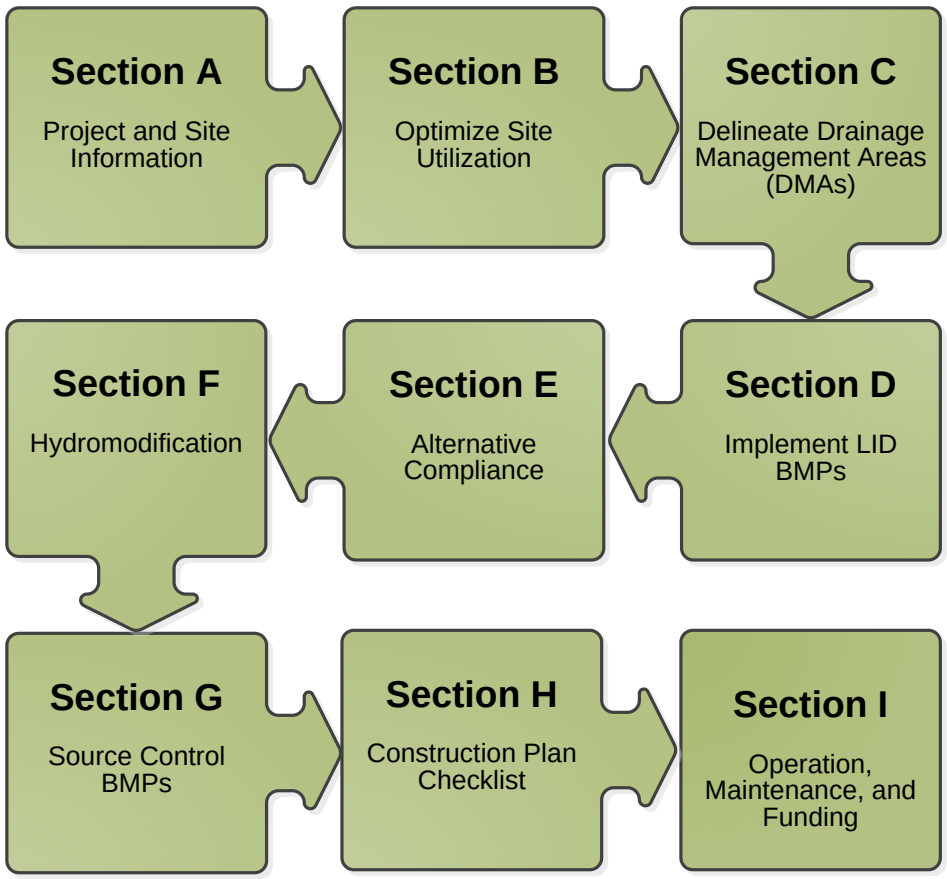
A Brief Introduction

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 SRDP, LLC by Blaine A. Womer Civil Engineering for the Sunterra project (TTM 38107).

This WQMP is intended to comply with the requirements of City of San Jacinto for Ordinance 13.44 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 City of San Jacinto Water Quality Ordinance (Municipal Code Section 13.44).

"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."

PENDING APPROVAL

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	7/23/21 Date
Blaine Womer Preparer's Printed Name	President Preparer's Title/Position

Preparer's Licensure: RCE 46354
Expiration: 12/31/2022

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Section A: Project and Site Information

PROJECT INFORMATION	
Type of Project:	Single Family Residential
Planning Area:	N/A
Community Name:	San Jacinto
Development Name:	Tentative Tract 38107/Sunterra
PROJECT LOCATION	
Latitude & Longitude (DMS): 33°48'53"N; -117°00'34"W	
Project Watershed and Sub-Watershed: Watershed: Santa Ana River	
Sub-Watershed: San Jacinto Valley	
Gross Acres: 35.18	
APN(s): 432-030-012	
Map Book and Page No.: Farm Lot 128, MB 8/357	
PROJECT CHARACTERISTICS	
Proposed or Potential Land Use(s)	Single Family Residential
Proposed or Potential SIC Code(s)	N/A
Area of Impervious Project Footprint (SF)	751,108
Total Area of proposed Impervious Surfaces within the Project Footprint (SF)/or Replacement	751,108
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)	N/A
What is the Water Quality Design Storm Depth for the project?	0.70

Narrative: Tentative Tract 38107 is a proposed 215 lot single family subdivision on 38.15 acres, located at the southwest corner of Sanderson Avenue and Ramona Blvd. in San Jacinto. The minimum lot size in the subdivision is 4000 sf. The project proposes three landscape lots that will incorporate self-retaining landscaping. The project also includes a basin to mitigate overall water quality and storm water management in the development. The basin is an infiltration basin based on the site specific infiltration testing results in Appendix 3. The infiltration basin has been sized to mitigate all surfaces within the project, with the exception of the aforementioned self-retaining areas. The basin has also been sized to mitigate HCOC as the site is not located within the HCOC exemption area.

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.

Exhibits included in Appendix 1 are:

A-1 - Vicinity Map

A-2 – Regional Waters Map

A-3 – DMA Site Plan

A-4 – Post-Construction BMP Site Plan

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
San Jacinto River Reach 4	None	AGR-GWR-REC1-REC2-WARM-WILD	Not designated as RARE
Canyon Lake	Pathogens , Nutrients	MUN-AGR-GWR-REC1-REC2-WARM-WILD	Not designated as RARE
Lake Elsinore	Nutrients, PCB's, Organic Enrichment/ Dissolved Oxygen, Sediment Toxicity, Unknown Toxicity	REC-1-REC2-WARM-WILD	Not designated as RARE

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	☐ Y	☒ N
Western Riverside MSHCP Consistency Approval (e.g., JPR, DBESP)	☐ Y	☒ N
Other *(please list in the space below as required)*	☐ 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?

Existing site drainage pattern is west, northwest. The site has been conceptually designed to drain and discharge mitigated flows to the northwest property corner.

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

The property is regularly farmed and disked. There is no vegetation to preserve.

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

Natural infiltration capacity was preserved in the self-retaining landscape areas and infiltration basin.

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

To the greatest extent possible for a single family residential subdivision.

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

Runoff is dispersed to a retention basin at the northerly portion of the site to mitigate stormwater pollutants and hydraulic conditions of concern,

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
A/1	Landscape/Sidewalk	7,899	Self-Treating
A/2	Landscape/Sidewalk	6,542	Self-Treating
A/3	Landscape/Sidewalk	20,527	Self-Treating
A/4	Landscape/Sidewalk	17,386	Self-Treating
B/1	Landscape	55,321	Self-Retaining
B/2	Landscape	19,602	Self-Retaining
D/1	Roof	367,140	Drains to BMP
D/2	Asphalt	244,528	Drains to BMP
D/3	Concrete	139,440	Drains to BMP
D/4	Landscape	835,783	Drains to BMP

[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)
A/1	7,899	Drought Tolerant Landscape	Drip
A/2	6,542	Drought Tolerant Landscape	Drip
A/3	20,527	Drought Tolerant Landscape	Drip
A/4	17,386	Drought Tolerant Landscape	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]
B/1	Landscape	55,321	.70	N/A		
B/2	Landscape	19,602	.70	N/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	DMA name /ID	Area (square feet)	Ratio
	[A]		[B]	[C] = [A] x [B]		[D]	[C]/[D]
N/A							

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

DMA Name or ID	BMP Name or ID
D/1	Infiltration Basin
D/2	Infiltration Basin
D/3	Infiltration Basin
D/4	Infiltration Basin

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?		X
If Yes, list affected DMAs:		
…have any DMAs located within 100 feet of a water supply well?		X
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?		X
If Yes, list affected DMAs:		
…have measured in-situ infiltration rates of less than 1.6 inches / hour?		X
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?		X
If Yes, list affected DMAs:		
…geotechnical report identify other site-specific factors that would preclude effective and safe infiltration?		X
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

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	
D/1	☒	☐	☐	☐	☐
D/2	☒	☐	☐	☐	☐
D/3	☒	☐	☐	☐	☐
D/4	☒	☐	☐	☐	☐
	☐	☐	☐	☐	☐
	☐	☐	☐	☐	☐

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.

Insert narrative description here.

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	*Infiltration Basin*		
	[A]		[B]	[C]	[A] x [C]			
D/1	*367,140*	*Roof*	*1.0*	*0.89*	*327,488.9*	*Design Storm Depth (in)*	*Design Capture Volume,* V_{BMP} *(cubic feet)*	*Proposed Volume on Plans (cubic feet)*
D/2	*244,528*	*Asphalt*	*1.0*	*0.89*	*218,119*			
D/3	*139,440*	*Concrete*	*1.0*	*0.89*	*124,380.5*			
D/4	*835,783*	*Landscape*	*0.1*	*0.11*	*92,318.9*			
	1,586,891				762,307.3	0.70	44,467.9	***129,098***

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

[E] is obtained from Exhibit A in the WQMP Guidance Document

[G] is obtained from a design procedure sheet, such as in LID BMP Design Handbook and placed in Appendix 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.

List DMAs here.

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	INSERT VALUE	INSERT VALUE	INSERT VALUE
Volume (Cubic Feet)	INSERT VALUE	INSERT VALUE	INSERT VALUE

[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.

***2-Year, 24 Hour Storm volume detained onsite in basin**

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:

INSERT TEXT HERE

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
Onsite Storm Drain Inlets	Mark all inlets "only rain in the drain"	Maintain stencil. Provide storm water info to new homeowners. BMP SD-13
Landscape/Outdoor Pesticide Use	Landscaping design to minimize irrigation and runoff	Maintenance and homeowner education. Maintain landscaping using minimum or no pesticides. Provide IPM info to homeowner. BMP SD-10, SD-12, SC-73
Roof Gutters	N/A	Avoid roofing, gutters and trim made of copper or other unprotected metals that may leach into runoff.

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)
	To be included in the	**Final WQMP**	

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: City Community Facilities District

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

☐ Y ☒ N

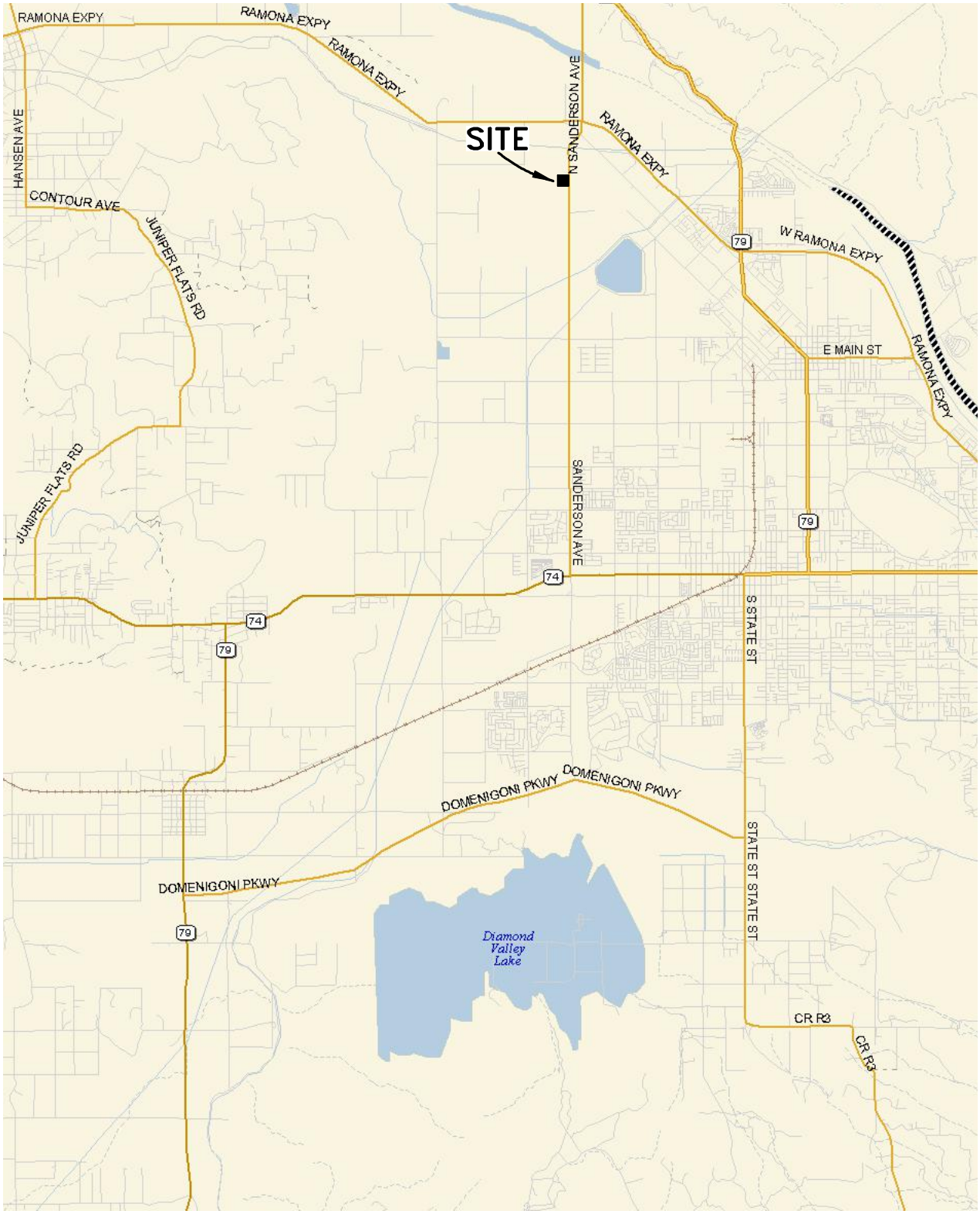
Include your Operation and Maintenance Plan and Maintenance Mechanism in Appendix 9. Additionally, include all pertinent forms of educational materials for those personnel that will be maintaining the proposed BMPs within this Project-Specific WQMP in Appendix 10.

To be included in the Final WQMP.

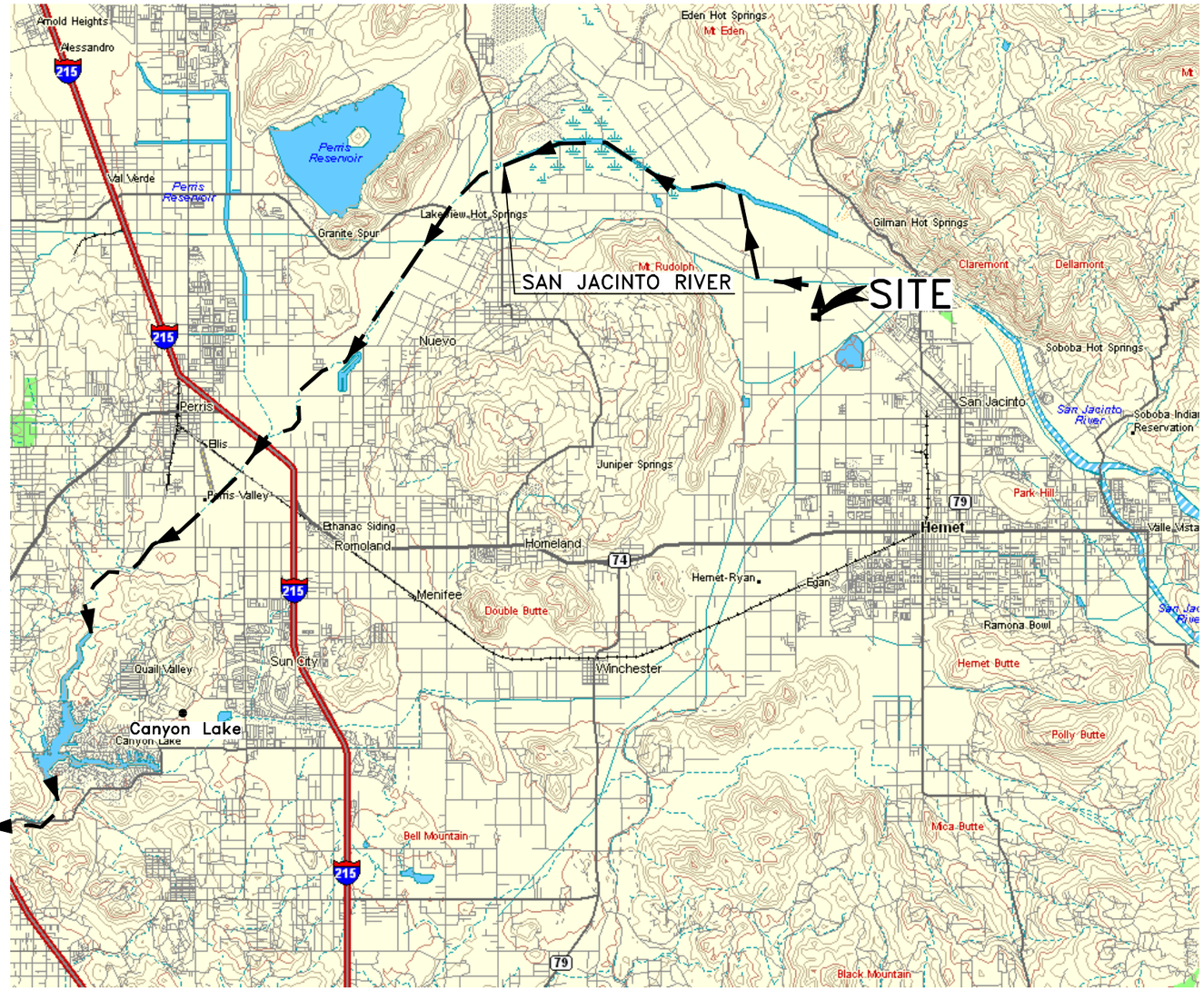
Appendix 1: Maps and Site Plans

Vicinity Map, Regional Waters Map and WQMP Site Plan

TENTATIVE TRACT 38107
WQMP – EXHIBIT A–1



VICINITY MAP



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WQMP EXHIBIT A-2

REGIONAL WATERS MAP

TENTATIVE TRACT 38107

CITY OF SAN JACINTO

P09-20-033
7-21-21

BLAINE A. WOMER
CIVIL ENGINEERING

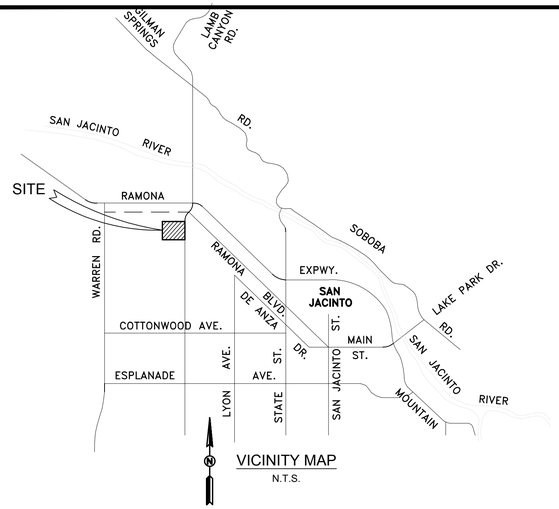
•PLANNING
•SURVEYING
•CIVIL ENGINEERING
•PUBLIC WORKS

Hemet, CA. 92544, 41555 E Florida Ave., Suite G, Phone (951)658-1727 Fax (951)658-9347
Park City, UT 84098, 5133 Cove Canyon Dr, #302, Phone (801)859-9755, Fax (801)261-2219

IN THE CITY OF SAN JACINTO, CALIFORNIA

DRAINAGE AREA MAP

TENTATIVE TRACT MAP NO. 38107



VICINITY MAP
N.T.S.

LEGEND

—1508— INDICATES EXISTING CONTOUR

SD INDICATES STORM DRAIN

INDICATES CONCRETE SURFACE

INDICATES ROOF

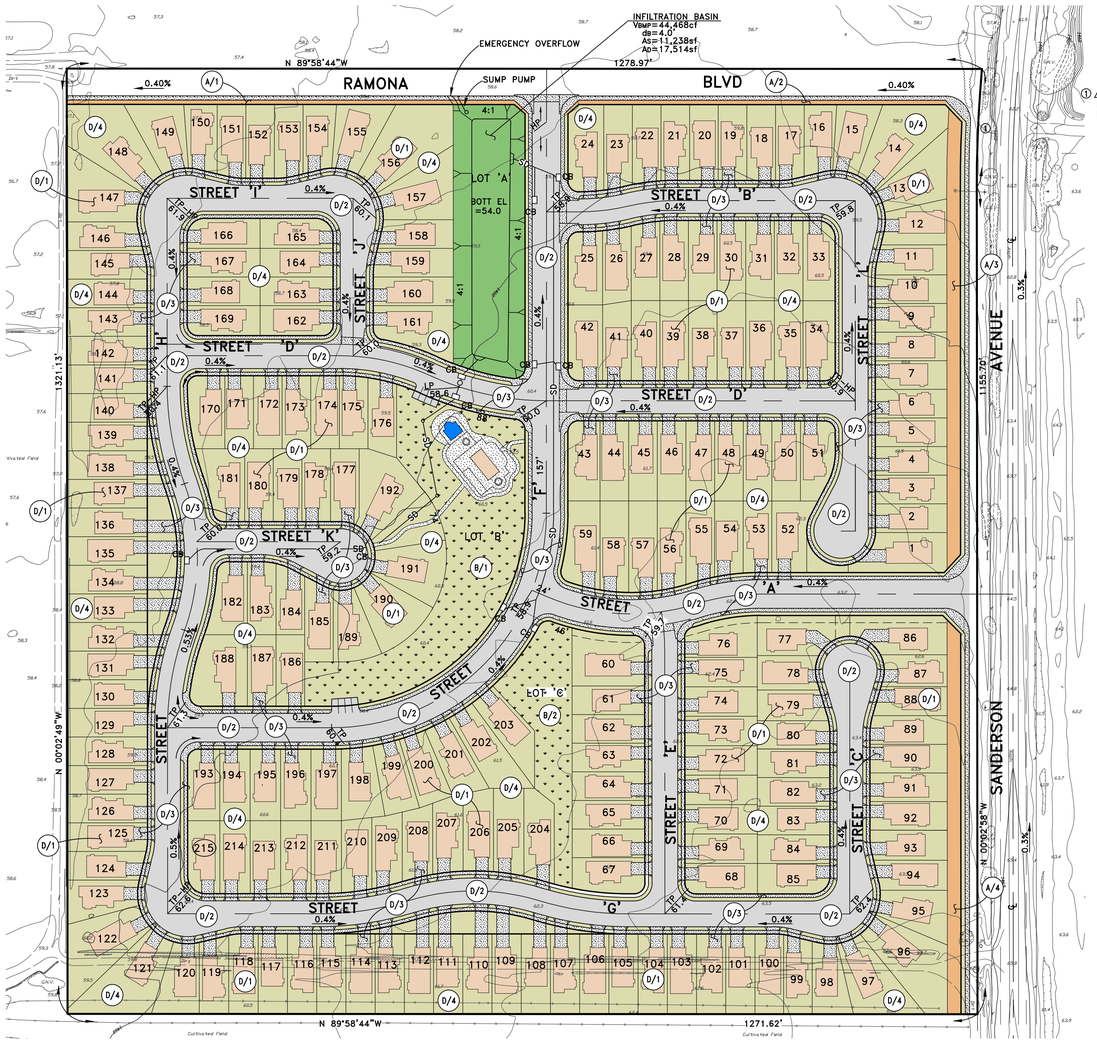
INDICATES LANDSCAPE SURFACE – DRAINS TO BMP

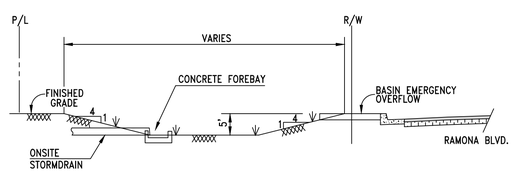
INDICATES ASPHALT SURFACE

INDICATES INFILTRATION BASIN

INDICATES LANDSCAPE SURFACE – SELF RETAINING

INDICATES LANDSCAPE SURFACE – SELF TREATING





INFILTRATION BASIN SECTION
NTS

DMA SUMMARY

IDENTIFIER	AREA (SF)	SURFACE TYPE	TREATMENT
A/1	7,899	LANDSCAPE/SIDEWALK	SELF-TREATING
A/2	6,542	LANDSCAPE/SIDEWALK	SELF-TREATING
A/3	20,527	LANDSCAPE/SIDEWALK	SELF-TREATING
A/4	17,386	LANDSCAPE/SIDEWALK	SELF-TREATING
B/1	55,321	LANDSCAPE	SELF-RETAINING
B/2	19,602	LANDSCAPE	SELF-RETAINING
D/1	367,140	ROOF	DRAINS TO BMP
D/2	244,528	ASPHALT	DRAINS TO BMP
D/3	139,440	CONCRETE	DRAINS TO BMP
D/4	835,783	LANDSCAPE	DRAINS TO BMP

NORTH

100 0 100 200 300

Scale: 1" = 100'

DIG ALERT
DIAL TOLL FREE
1-800-227-2600
AT LEAST TWO DAYS BEFORE YOU DIG
UNDERGROUND SERVICE ALERT OF SOUTHERN CALIFORNIA

DATE	BY	MARK	REVISIONS	APPR.	DATE
ENGINEER				CITY	

DESIGNED BY: DRAWN BY: CHECKED BY:

SEAL

REGISTERED PROFESSIONAL ENGINEER
BLAINE A. WORKER
No. 46354
CIVIL
STATE OF CALIFORNIA

PREPARED BY: DATE

R.C.E. NO.

SCALE

DATE

BENCHMARK:

CITY OF SAN JACINTO

TENTATIVE TRACT NO. 38107
DMA AREA MAP
EXHIBIT A-3

FOR W.O.

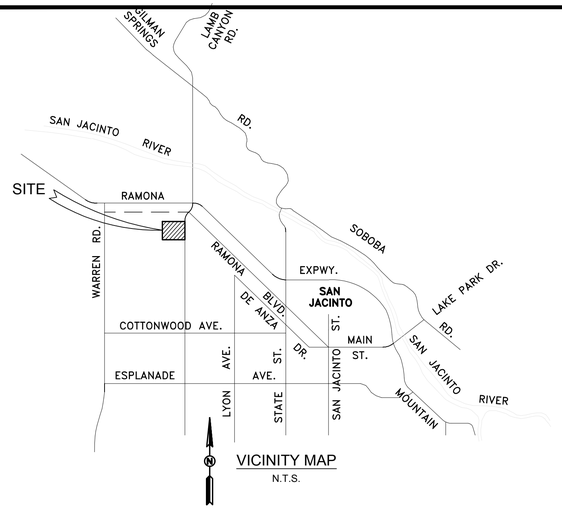
SHEET NO. 1 OF 1 SHEETS

FILE NO.

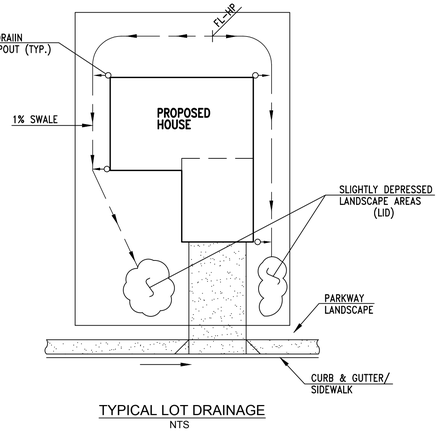
IN THE CITY OF SAN JACINTO, CALIFORNIA

TENTATIVE TRACT MAP NO. 38107

POST-CONSTRUCTION BMP SITE PLAN



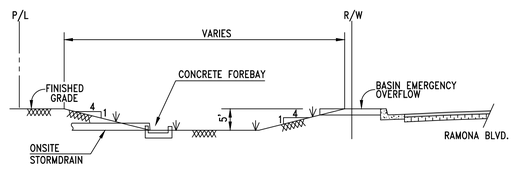
VICINITY MAP
N.T.S.



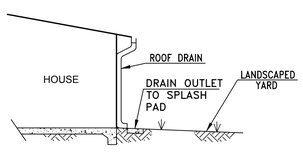
TYPICAL LOT DRAINAGE
NTS

LEGEND

- SD — INDICATES STORM DRAIN
- INDICATES ASPHALT SURFACE
- INDICATES INFILTRATION BASIN



INFILTRATION BASIN SECTION
NTS



ROOF DRAIN DETAIL
NTS

NORTH

100 0 100 200 300

Scale: 1" = 100'

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AT LEAST TWO DAYS BEFORE YOU DIG
UNDERGROUND SERVICE ALERT OF SOUTHERN CALIFORNIA

DATE	BY	MARK	REVISIONS	APPR.	DATE

ENGINEER
DESIGNED BY: DRAWN BY: CHECKED BY:
CITY

SEAL
REGISTERED PROFESSIONAL ENGINEER
BLAINE A. WOMER
No. 46354
CIVIL
STATE OF CALIFORNIA

PREPARED BY: DATE
R.C.E. NO.

SCALE
DATE
BENCHMARK:

CITY OF SAN JACINTO

TENTATIVE TRACT NO. 38107
POST-CONSTRUCTION BMP SITE PLAN
EXHIBIT A-4

FOR
W.O.

SHEET NO. 1 OF 1 SHEETS
FILE NO.

Appendix 2: Construction Plans

Grading and Drainage Plans

To be included in the Final WQMP

Appendix 3: Soils Information

Geotechnical Study and Other Infiltration Testing Data

South Shore Testing & Environmental

23811 Washington Ave, Suite C110, #112, Murrieta, CA 92562 E-mail: ss.testing@aol.com
Phone: (951) 239-3008 FAX: (951) 239-3122

June 29, 2021

Mr. Peter Kulmaticki
JD Pierce Company, Inc.
2222 Martin Street, #100
Irvine, California 92612

SUBJECT: **ONSITE STORMWATER INFILTRATION SYSTEM INVESTIGATION**
Proposed Single-Family Residential Development
Tentative Tract 38107
SWC of Sanderson Avenue and Ramona Boulevard (proposed)
City of San Jacinto, Riverside County, California
Work Order No. 1372101.01I

Dear Mr. Kulmaticki:

In accordance with your authorization, we have conducted percolation testing for the infiltration system for the proposed residential development. The purpose of our investigation was to provide rates for proposed infiltration systems. The infiltration test areas were performed on the westerly portion of the site adjacent to Elm Court. For our investigation, we were provided with a 100-scale Tentative Tract Map prepared by Blaine A. Wormer Civil Engineering of Hemet, California.

Site Description

The proposed residential tract and street improvements will occupy the entire subject site (APN: 432-030-012). The subject site is an ±38.15-acre rectangular parcel of land, which is located on the west side of Sanderson Avenue in the City of San Jacinto, Riverside County, California. The geographical relationships of the site and surrounding area are depicted on our Site Location Map, **Figure 1**.

The subject site appears to be vacant and utilized for agricultural development. Man-made improvements on the subject site include dirt access roads and irrigation systems around the perimeters of the property. Vegetation onsite consisted of a stubble of recently harvested grain crop and annual weeds and grasses around the perimeters of the property. Topographically, the subject site consists of relative flat terrain that slopes to the northwest at a less than 2% gradient to the northwest toward the San Jacinto River drainage.

Proposed Development

The proposed development consists of construction of a 200-lot residential tract with interior streets, and road improvements along Sanderson Avenue and the proposed new Ramona Boulevard.

Percolation Investigation

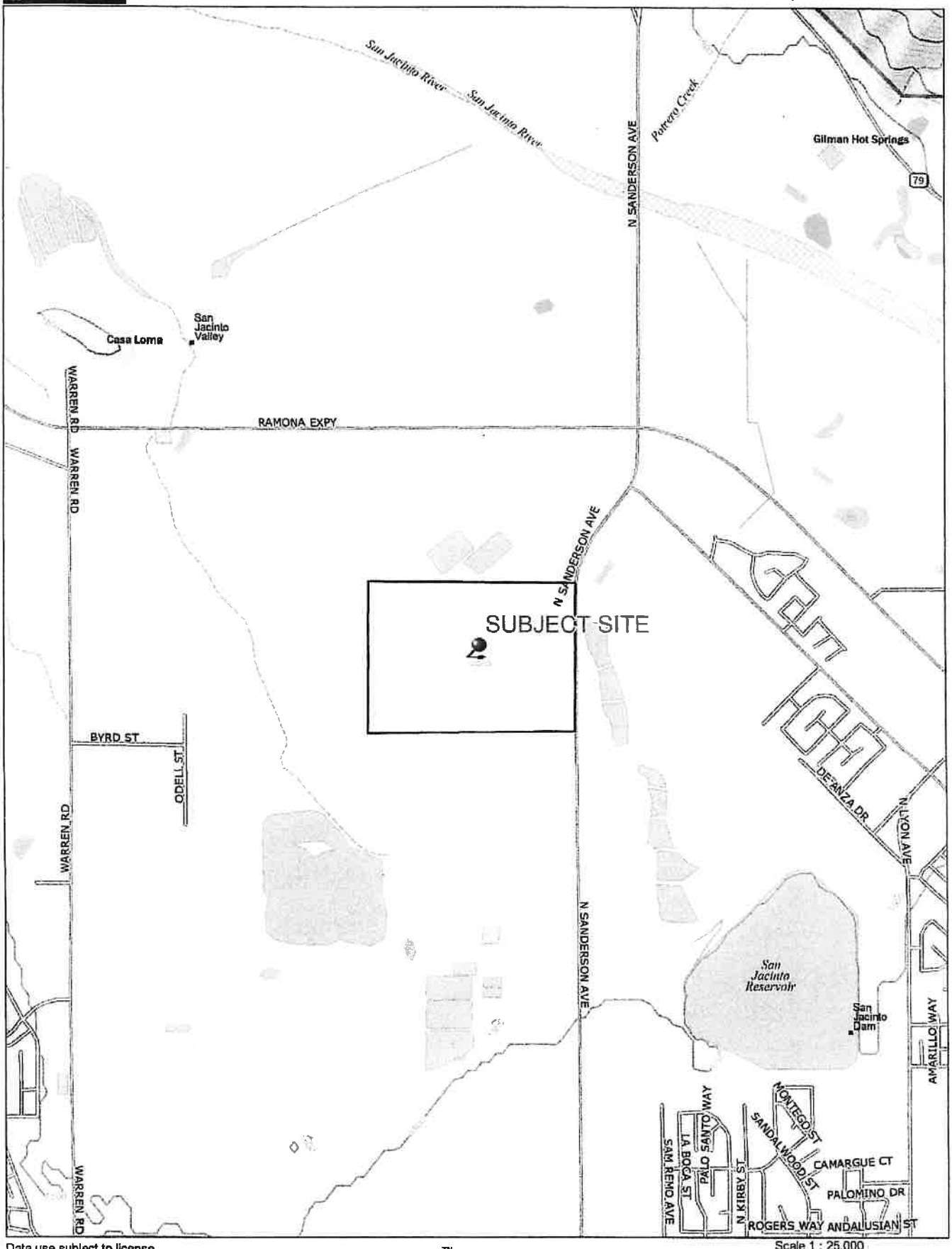
Percolation testing was conducted on May 27, 2021, on the central portion proposed as open areas. Six (6) tests were performed within the onsite alluvial sediments underlying the entire subject site (Dibblee, 2003). Six (6) exploratory trenches were advanced to a depth of 5-ft below the ground surface (bgs) with an infiltration test performed at the bottom of each trench. The alluvial sediments generally consist of sandy Silt (Unified Soils Classification -ML) that can be described as medium gray, sandy in part, slightly moist to moist, non-cohesive with minor fine roots in the upper 3-ft. Infiltration test trenches were advanced to a depth of 5-ft bgs utilizing a Case #580 Super M extenda-backhoe equipped with a 24-inch bucket. Our field personnel logged the exploratory trenches and a copies of our Exploratory Trench Logs are presented in **Appendix B**.

GROUNDWATER

Groundwater was not encountered within our exploratory trenches to the maximum depth explored of 5-ft bgs. Historic high groundwater underlying the subject site is anticipated to be at least 75-ft bgs (DWR, 1978). Minor fluctuations can and will likely occur in moisture or free water content of the soil owing to rainfall and irrigation over time.

SUMMARY OF TEST PROCEDURES

The testing procedure was performed in accordance with Riverside County Department of Environmental Health's "Local Management Program for Onsite Wastewater Treatment Systems", which became effective October 5, 2016 and the resulting perc rates were converted to infiltration rates utilizing the Porchet Method as outlined in the Riverside County Flood Control and Water Conservation District, "Design Handbook for Low Impact Development Best Management Practices" dated September 2011. The percolation tests were performed at a depth of 5-ft bgs. Owing to the fast rates the procedures for **Sandy** soils were followed.


DELORME
Topo North America™ 10
San Jacinto River
San Jacinto River
Potrero Creek
N SANDERSON AVE
Gilman Hot Springs
79
San Jacinto Valley
Casa Loma
WARREN RD
RAMONA EXPY
WARREN RD
N SANDERSON AVE
SUBJECT SITE
BYRD ST
ODELL ST
WARREN RD
DE ANZA DR
N LYON AVE
N SANDERSON AVE
San Jacinto Reservoir
San Jacinto Dam
AMARILLO WAY
MONTEGO ST
SAN REMO AVE
LA BOCA ST
PALO SANTO WAY
SANDALWOOD ST
N KIRBY ST
CAMARGUE CT
PALOMINO DR
ROGERS WAY
ANDALUSIAN ST
WARREN RD
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TN
MN (11.3°E)
Scale 1 : 25,000
1" = 2,083.3 ft

FIGURE 1

Conclusion

Testing indicated infiltration rates at 5-ft below existing grade within the young surficial sediments obtained rates of 3.3 and 5 minutes per-inch. The percolation rate was converted to infiltration rate utilizing the Porchet Method, depicted on conversion results, **Appendix C**. The average rate of the converted infiltration rates is 6.9-inch/hr. The rate provided does not include a safety factor. The test locations are presented on our Infiltration Test Location Map, **Plate 1**.

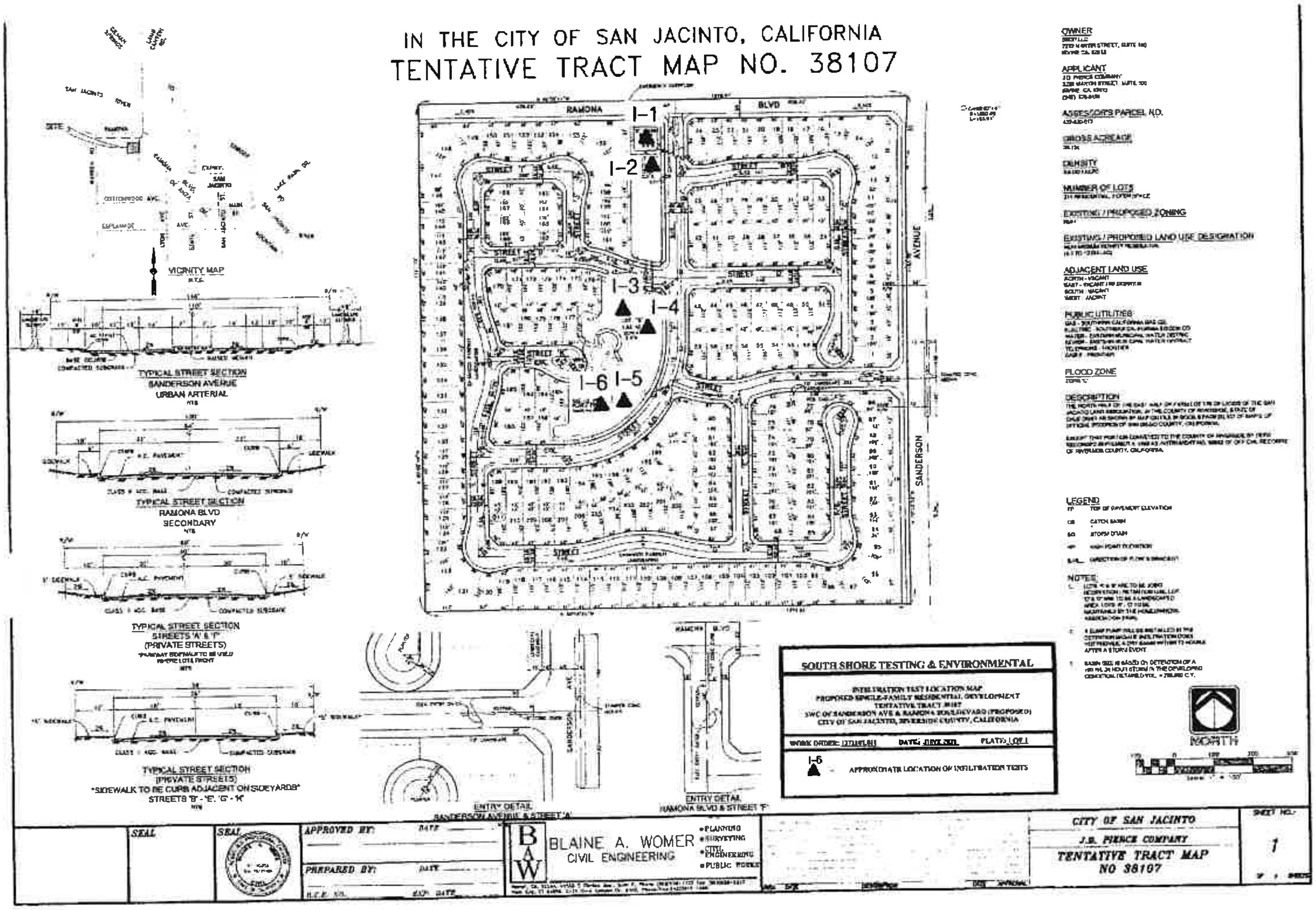
PERCOLATION TEST NO.	DEPTH OF TEST BELOW GRADE (In Feet)	INFILTRATION RATE (In/Hr.)
1	5.0	5.3
2	5.0	6.9
3	5.0	8.5
4	5.0	6.1
5	5.0	6.9
6	5.0	6.9

CLOSURE

It should be noted that infiltration rates determined by testing are ultimate rates based on short-duration field test results utilizing clear water. Infiltration rates can be affected by silt build-up, debris, degree of soil saturation, and other factors. An appropriate safety factor should be applied prior to use in design to account for subsoil inconsistencies, possible compaction related to site grading, and potential silting of the percolating soils. The safety factor should also be determined with consideration to other factors in the system design, particularly storm water volume estimates and the safety factors associated with those design components.

LIMITATIONS

The tested rates are representative for the areas and soil types tested. Should the systems be moved, or the exposed soil types are found to different within the proposed systems, the approved infiltration rates may not apply. Our investigation was performed using the degree of care and skill ordinarily exercised, under similar circumstances, by reputable Geotechnical Engineers and Geologists practicing in this or similar localities. No other warranty, expressed or implied, is made as to the conclusions and professional advice included in this report.



IN THE CITY OF SAN JACINTO, CALIFORNIA
TENTATIVE TRACT MAP NO. 38107
RAMONA
BLVD
SANDERSON
AVENUE
I-1
I-2
I-3
I-4
I-5
I-6
VICINITY MAP
TYPICAL STREET SECTION
SANDERSON AVENUE
URBAN ARTERIAL
TYPICAL STREET SECTION
RAMONA BLVD
SECONDARY
TYPICAL STREET SECTION
STREETS 'A' & 'F'
(PRIVATE STREETS)
TYPICAL STREET SECTION
(PRIVATE STREETS)
"SIDEWALK TO BE CURB ADJACENT ON SIDEYARDS"
STREETS 'B' - 'E', 'G' - 'K'
ENTRY DETAIL
SANDERSON AVENUE & STREET 'A'
ENTRY DETAIL
RAMONA BLVD & STREET 'F'
OWNER
APPLICANT
ASSESSOR'S PARCEL NO.
GROSS ACREAGE
DENSITY
NUMBER OF LOTS
EXISTING / PROPOSED ZONING
EXISTING / PROPOSED LAND USE DESIGNATION
ADJACENT LAND USE
PUBLIC UTILITIES
FLOOD ZONE
DESCRIPTION
LEGEND
NOTES
NORTH
SOUTH SHORE TESTING & ENVIRONMENTAL
I-6
APPROXIMATE LOCATION OF INFILTRATION TESTS
SEAL
APPROVED BY:
PREPARED BY:
BLAINE A. WOMER
CIVIL ENGINEERING
CITY OF SAN JACINTO
J.D. PIERCE COMPANY
TENTATIVE TRACT MAP
NO 38107
SHEET NO.
1

The report is issued with the understanding that it is used only by the owner and it is the sole responsibility of the owner or their representative to ensure that the information and recommendations contained herein are brought to the attention of the architect, engineer, and appropriate jurisdictional agency for the project and incorporated into the plans; and the necessary steps are taken to see that the contractor and subcontractors carry out such recommendations contained herein during construction and in the field.

The samples taken and used for testing and the observations made are believed representative; however, soil and geologic conditions can vary significantly between test locations. The evaluation or identification of the potential presence of hazardous or corrosive materials was not part of the scope of services provided by **South Shore Testing & Environmental**, or its assigns.

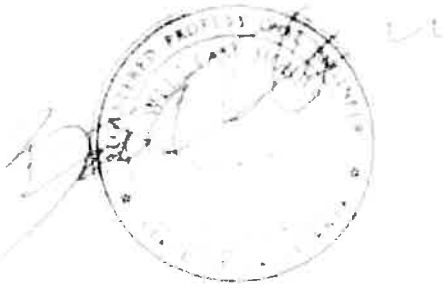
The findings of this report are valid as of the present date. However, changes in the condition of a property can occur with the passage of time, whether due to natural processes or the works of man on this or adjacent properties. In addition, changes in applicable or appropriate standards may occur, whether they result from legislation or the broadening of knowledge. Accordingly, the findings of this report may be invalidated wholly or partially by changes outside our control. Therefore, this report is subject to review and revision as changed conditions are identified. The firm that performed the geotechnical investigation for this project should be retained to provide testing observation services during construction to maintain continuity of geotechnical interpretation and to check that the recommendations presented herein are implemented during construction of improvements.

If another geotechnical firm is selected to perform the testing and observation services during construction operations, that firm should prepare a letter indicating their intent to assume the responsibilities of project geotechnical engineer of record. Selection of another firm to perform any of the recommended activities or failure to retain the undersigned to perform the recommended activities wholly absolves **South Shore Testing & Environmental**, the undersigned, and its assigns from any and all liability arising directly or indirectly from any aspects of this project.

We appreciate the opportunity to be of service. Limitations and conditions contained in reference documents are considered in full force and applicable. If you have any questions, please do not hesitate to call our office.

Respectfully Submitted,

South Shore Testing & Environmental



John P. Frey
Project Manager

William C. Hobbs, RCE 42265
Civil Engineer

ATTACHMENTS
Plate 1 – Infiltration Test Location Map
Appendix A –References
Appendix B – Exploratory Trench Logs
Appendix C- Porchet Conversion Results

APPENDIX A

References

REFERENCES

Blaine A. Wormer, Undated, "Tentative Tract Map No. 38107 in the City of San Jacinto, California", Sheet 1 of 1, Scale: 1" = 100'.

CDM Smith, Inc. 2013, "Technical Guidance Document for Water Quality Management Plans" dated June 7, 2013.

County of Riverside GIS Website, 2021.

Department of Water Resources Website, 2021, "Groundwater Data Section".

Department of Water Resources, Southern District, April 1978, "Water Resources Evaluation of the San Jacinto Area, District Report".

Dibblee, Thomas W., Jr., 2003, "Geologic Map of the Lakeview Quadrangle, Riverside County, California", Dibblee Geology Center Map #DF-115, Scale: 1" = 2,000'.

Riverside County Flood Control and Water Conservation District, 2011, "Design Handbook for Low Impact Development Best Management Practices" dated 9, 2011.

APPENDIX B

Exploratory Trench Logs

LOGGED BY: JPF	METHOD OF EXCAVATION: CASE #580 SUPER M EXTENDA BACKHOE EQUIPPED W/ 24" BUCKET ELEVATION: ± 1518	DATE OBSERVED: 5/27/21 LOCATION: SEE PLATE 1

DEPTH (FT)	CLASSIF	BLOWS	UNDISTURBED SAMPLE	BULK SAMPLE	MOISTURE CONTENT(%)	INPLACE DRY DENSITY (PCF)	TEST PIT NO._1____ DESCRIPTION	SOIL TEST
5				V I I I A			**SURFICAL ALLUVIAL SEDIMENTS** SANDY SILT (ML): MEDIUM GRAY, FINE GRAINED, LENSES OF COARSE GRAINED, SLIGHTLY MOIST TO MOIST, NOW COHESIVE, EASY EXCAVATION, MINOR FINE ROOTS TO 3 -FT, EASY EXCAVATION	SIEVE ANALYSIS INFILTRATION TEST @ 5-FT
							TOTAL DEPTH = 5' **NO GROUNDWATER**	
10								
15								
25								
30								
35								

JOB NO: 1372101.01i	LOG OF BORING	FIGURE: T-1

OGGED BY: JPF

METHOD OF EXCAVATION: CASE #580 SUPER M EXTENDA BACKHOE EQUIPPED W/ 24" BUCKET
ELEVATION: ±

DATE OBSERVED: 5/27/21

LOCATION: SEE PLATE 1

DEPTH (FEET)	CLASSIFIC	BLOWS/F	UNDISTURBED SAMPLE	BULK SAMPLE	MOISTURE CONTENT(%)	INPLACE DRY DENSITY (PCF)
5						
10						
15						
20						
25						
30						
35						

TEST PIT NO._2____

DESCRIPTION

SURFICAL ALLUVIAL SEDIMENTS

SANDY SILT (ML): MEDIUM GRAY,VERY FINE GRAINED, OCCANSIONAL LENSES OF MEDIUM TO COARSE, SLIGHTLY MOIST, NUMEROUS FINE ROOTS TO 3-FT, NON COHESIVE, EASY EXCAVATION

TOTAL DEPTH = 5'
NO GROUNDWATER

SOIL TEST

JOB NO: 1372101.01i

LOG OF BORING

FIGURE: T-2

LOGGED BY: JPF	METHOD OF EXCAVATION: CASE #580 SUPER M EXTENDA BACKHOE EQUIPPED W/ 24" BUCKET ELEVATION: ±	DATE OBSERVED: 5/27/21 LOCATION: SEE PLATE 1

DEPTH (F	CLASSIF	BLOWS/	UNDISTURBED SAMPLE	BULK SAMPLE	MOISTURE CONTENT(%)	INPLACE DRY DENSITY (PCF)	TEST PIT NO._3____ DESCRIPTION	SOIL TEST
							SURFICAL ALLUVIAL SEDIMENTS SANDY SILT (ML): MEDIUM GRAY, FINE GRAINED, OCCANSIONAL LENSES OF MEDIUM TO COARSE GRAINED SAND, SLIGHTLY MOIST, EASY EXCAVATION	
5								INFILTRATION TEST
							TOTAL DEPTH = 5' **NO GROUNDWATER**	
10								
15								
25								
30								
35								

JOB NO: 1372101.01i	LOG OF BORING	FIGURE: T-3

OGGED BY: JPF

METHOD OF EXCAVATION: CASE #580 SUPER M EXTENDA BACKHOE EQUIPPED W/ 24" BUCKET
ELEVATION: ±

DATE OBSERVED: 5/27/21

LOCATION: SEE PLATE 1

DEPTH IN FEET	CLASSIFIC	BLOWS/F	UNDISTURBED SAMPLE	BULK SAMPLE	MOISTURE CONTENT(%)	INPLACE DRY DENSITY (PCF)

TEST PIT NO._4____

DESCRIPTION

SURFICAL ALLUVIAL SEDIMENTS

SANDY SILT (ML): MEDIUM GRAY, MINOR FINE SAND, POORLY GRADED, SLIGHTLY MOIST TO MOIST, NON COHESIVE, EASY EXCAVATION

TOTAL DEPTH = 5'
NO GROUNDWATER

SOIL TEST

INFILTRATION TEST

JOB NO: 1372101.01i

LOG OF BORING

FIGURE: T-4

LOGGED BY: JPF	METHOD OF EXCAVATION: CASE #580 SUPER M EXTENDA BACKHOE EQUIPPED W/ 24" BUCKET ELEVATION: ±	DATE OBSERVED: 5/27/21 LOCATION: SEE PLATE 1

DEPTH (FEET)	CLASSIFIC	BLOWS/F	UNDISTURBED SAMPLE	BULK SAMPLE	MOISTURE CONTENT(%)	INPLACE DRY DENSITY (PCF)	TEST PIT NO._5____ DESCRIPTION	SOIL TEST
5							**SURFICAL ALLUVIAL SEDIMENTS** SANDY SILT (ML): MEDIUM GRAY, SANDY IN PART, NON COHESIVE, LOOSE TO MEDIUM DENSE, SLIGHTLY MOIST TO MOIST, EASY EXCATION	INFILTRATION TEST @5'
10							**TOTAL DEPTH = 5'** **NO GROUNDWATER**	
15								
20								
25								
30								
35								

JOB NO: 1372101.01i	LOG OF BORING	FIGURE: T-5

LOGGED BY: JPF	METHOD OF EXCAVATION: CASE #580 SUPER M EXTENDA BACKHOE EQUIPPED W/ 24" BUCKET ELEVATION: ±	DATE OBSERVED: 5/27/21 LOCATION: SEE PLATE 1

CLASSIFIC	BLOWS/	UNDISTURBED SAMPLE	BULK SAMPLE	MOISTURE CONTENT(%)	INPLACE DRY DENSITY (PCF)	TEST PIT NO._6____ DESCRIPTION	SOIL TEST
						SURFICAL ALLUVIAL SEDIMENTS SANDY SILT (ML): MEDIUM GRAY, MINOR FINE SAND GRAINS, OCCASIONAL LENSES OF COARSE SAND, SLIGHTLY MOIST TO MOIST, LOOSE TOP 3-4FT, DENSITY INCREASING WITH DEPTH, NON COHESIVE	INFILTRATION TEST @5'
						TOTAL DEPTH = 5' **NO GROUNDWATER**	

JOB NO: 1372101.01i	LOG OF BORING	FIGURE: T-6

APPENDIX C

Porchet Conversion Results

Porchet Method - Conversion of Percolation Rate to Infiltration Rate	Perc Test No. I-1	Legend:	Required Entries / Calculated Cells

Company Name: JD Pierce, Tract 38107 Date: 6-2-21

Designed by: JPF County/City Case No: CUP 137210101 OIC

Percolation Conversion to Infiltration Rate

The conversion equation is used:

$$I_t\,(in/hr) = \frac{\Delta H(in) \times 60\ (min/hr) \times r(in)}{\Delta t(min) \times [r(in) + 2H_{avg}(in)]}$$

If test hole is round - Enter radius here ⟶ r = 8 inches

If test hole is square - Enter average side width below

w = 9.00 inches I_{eq} = ~~inches~~

Time interval	Δt = 10	minutes
Initial height of water during selected time interval	H_o = 6	inches
Final height of water during selected time interval	H_f = 4	inches
Change in height of water during selected time interval	ΔH = 2	inches
Average head height over the selected time interval	H_{avg} = 5	inches
Converted infiltration rate per test data	I_t = 5.3	inches/hour

Comments

$$\frac{(2)(60) \times 8}{10 \times 8 + (2)(5)} = \frac{960}{180} = 5.3$$

Porchet Method - Conversion of Percolation Rate to Infiltration Rate	Perc Test No. I-2	Legend:	Required Entries
			Calculated Cells

Company Name: JD Pierce / Tract 38107 — Date: 6-2-21

Designed by: JPF — County/City Case No: WO 13721101.01

Percolation Conversion to Infiltration Rate

The conversion equation is used:

$$I_t\,(in/hr) = \frac{\Delta H(in) \times 60\ (min/hr) \times r(in)}{\Delta t(min) \times [r(in) + 2H_{avg}(in)]}$$

If test hole is round - Enter radius here ⟶ r = 8 inches

If test hole is square - Enter average side width below

w = 9.00 inches — ~~r_{eq} = inches~~

Time interval	Δt =	10 minutes
Initial height of water during selected time interval	H_0 =	6 inches
Final height of water during selected time interval	H_f =	3.5 inches
Change in height of water during selected time interval	ΔH =	2.5 inches
Average head height over the selected time interval	H_{avg} =	4.75 inches
Converted infiltration rate per test data	I_t =	6.9 inches/hour

Comments

$$\frac{(2.5)(60) \times 8}{10 \times 8 + (2)(4.75)} = \frac{1200}{175} = 6.9$$

Porchet Method - Conversion of Percolation Rate to Infiltration Rate	Perc Test No: I3	Legend:	Required Entries / Calculated Cells

Company Name: JD Pierce — Date: 6-2-21

Designed by: JPC — County/City Case No: WO 137210 I.O.I.T.

Percolation Conversion to Infiltration Rate

The conversion equation is used:

$$I_t\,(in/hr) = \frac{\Delta H(in) \times 60\ (min/hr) \times r(in)}{\Delta t(min) \times [r(in) + 2H_{avg}(in)]}$$

If test hole is round - Enter radius here ⟶	r =	8	inches
If test hole is square - Enter average side width below			
w = 9.00 inches	~~Leq~~	~~2~~	~~inches~~
Time interval	Δt =	10	minutes
Initial height of water during selected time interval	H_o =	6	inches
Final height of water during selected time interval	H_f =	3.0	inches
Change in height of water during selected time interval	ΔH =	3.0	inches
Average head height over the selected time interval	H_{avg} =	4.5	inches
Converted infiltration rate per test data	I_t =	8.5	inches/hour

Comments

$$\frac{(3)(60) \times 8}{10 \times 8 + 2(4.5)} = \frac{1440}{170} = 8.5$$

Porchet Method - Conversion of Percolation Rate to Infiltration Rate	Perc Test No. T-4	Legend:	Required Entries / Calculated Cells

Company Name: JD Pierce Tract 38107 Date: 6-2-21

Designed by: JPF County/City Case No: WO 137 2101 01E

Percolation Conversion to Infiltration Rate

The conversion equation is used:

$$I_t\,(\text{in/hr}) = \frac{\Delta H(\text{in}) \times 60\ (\text{min/hr}) \times r(\text{in})}{\Delta t(\text{min}) \times [r(\text{in}) + 2H_{avg}(\text{in})]}$$

If test hole is round - Enter radius here ⟶ r = 8 inches

If test hole is square - Enter average side width below

w = 9.00 inches ~~r_{eq}~~ = 2 inches

Time interval	Δt =	10 minutes
Initial height of water during selected time interval	H_o =	6 inches
Final height of water during selected time interval	H_f =	3.75 inches
Change in height of water during selected time interval	ΔH =	2.25 inches
Average head height over the selected time interval	H_{avg} =	4.875 inches
Converted infiltration rate per test data	I_t =	6.1 inches/hour

Comments

$$\frac{(2.25)(60)(8)}{10 \times 8 + 2(4.875)} \quad \frac{1080}{177.5} \quad 6.1$$

Porchet Method - Conversion of Percolation Rate to Infiltration Rate	Perc Test No. I 5	Legend:	Required Entries / Calculated Cells

Company Name: JD Pierce - Tract 38107 Date: 6-2-21

Designed by: JPF County/City Case No: WO 13721.01, 0 CT

Percolation Conversion to Infiltration Rate

The conversion equation is used:

$$I_t\,(\text{in/hr}) = \frac{\Delta H(\text{in}) \times 60\ (\text{min/hr}) \times r(\text{in})}{\Delta t(\text{min}) \times [r(\text{in}) + 2H_{avg}(\text{in})]}$$

If test hole is round - Enter radius here ⟶ r = 5 inches

If test hole is square - Enter average side width below

w = 9.00 inches ~~r_{eq} = 2~~ ~~inches~~

Time interval	Δt = 10	minutes
Initial height of water during selected time interval	H_o = 6	inches
Final height of water during selected time interval	H_f = 3.5	inches
Change in height of water during selected time interval	ΔH = 2.5	inches
Average head height over the selected time interval	H_{avg} = 4.75	inches
Converted infiltration rate per test data	I_t = 6.9	inches/hour

Comments

$$\frac{(2.5)(60)(8)}{10 \times 8 + 2(4.75)} = \frac{1200}{175} = 6.9$$

Porchet Method - Conversion of Percolation Rate to Infiltration Rate	Perc Test No. T6	Legend:	Required Entries / Calculated Cells

Company Name: JD Price - Tract 38107 Date: 6-2-21

Designed by: JPF County/City Case No: 60137 2101, 21T

Percolation Conversion to Infiltration Rate

The conversion equation is used:

$$I_t\,(\text{in/hr}) = \frac{\Delta H(\text{in}) \times 60\ (\text{min/hr}) \times r(\text{in})}{\Delta t(\text{min}) \times [r(\text{in}) + 2H_{avg}(\text{in})]}$$

If test hole is round - Enter radius here ⟶ r = 8 inches

If test hole is square - Enter average side width below

w = 9.00 inches r_{eq} = ~~inches~~

Time interval	Δt =	10 minutes
Initial height of water during selected time interval	H_o =	6 inches
Final height of water during selected time interval	H_f =	3.5 inches
Change in height of water during selected time interval	ΔH =	2.5 inches
Average head height over the selected time interval	H_{avg} =	4.75 inches
Converted infiltration rate per test data	I_t =	6.9 inches/hour

Comments

$$\frac{(2.5)(60)(8)}{10 \times 8 + (2)(4.75)} = \frac{1200}{175} = 6.9$$

Appendix 4: Historical Site Conditions

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

Not available at this time

Appendix 5: LID Infeasibility

LID Technical Infeasibility Analysis

Not Applicable

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: BLAINE A WOMER CIVIL ENGINEERING — Date: 7/14/2021

Designed by: BAW — Case No: TTM 38107

Company Project Number/Name: TENTATIVE TRACT 38107

BMP Identification

BMP NAME / ID: INFILTRATION BASIN

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}= 0.70 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)
D\1	367140	Roofs	1	0.89	327488.9			
D\2	244528	Concrete or Asphalt	1	0.89	218119			
D\3	139440	Concrete or Asphalt	1	0.89	124380.5			
D\4	835783	Ornamental Landscaping	0.1	0.11	92318.9			
	1586891	Total			762307.3	0.70	44467.9	129098

Notes:

Infiltration Basin - Design Procedure (Rev. 03-2012)	BMP ID	Legend:	Required Entries / Calculated Cells

Company Name: WOMER — Date: 7/14/2021

Designed by: BAW — County/City Case No.: TTM 38107

Design Volume

a) Tributary area (BMP subarea)	A_T =	36.4	acres
b) Enter V_{BMP} determined from Section 2.1 of this Handbook	V_{BMP}=	44,951	ft^3

Maximum Depth

a) Infiltration rate	I =	5.3	in/hr
b) Factor of Safety (See Table 1, Appendix A: "Infiltration Testing" from this BMP Handbook)	FS =	3	
c) Calculate D_1 $D_1 = \frac{I\ (in/hr) \times 72\ hrs}{12\ (in/ft) \times FS}$	D_1 =	10.6	ft
d) Enter the depth of freeboard (at least 1 ft)		1	ft
e) Enter depth to historic high ground water (measured from **top** of basin)		200	ft
f) Enter depth to top of bedrock or impermeable layer (measured from **top** of basin)		300	ft
g) D_2 is the smaller of: Depth to groundwater - (10 ft + freeboard) and Depth to impermeable layer - (5 ft + freeboard)	D_2 =	189.0	ft
h) D_{MAX} is the smaller value of D_1 and D_2 but shall not exceed 5 feet	D_{MAX} =	10.6	ft

Basin Geometry

a) Basin side slopes (no steeper than 4:1)	z =	4	:1
b) Proposed basin depth (excluding freeboard)	d_B =	4	ft
c) Minimum bottom surface area of basin ($A_S = V_{BMP}/d_B$)	A_S =	11238	ft^2
d) Proposed Design Surface Area	A_D =	17514	ft^2

Forebay

a) Forebay volume (minimum 0.5% V_{BMP})	Volume =	225	ft^3
b) Forebay depth (height of berm/splashwall. 1 foot min.)	Depth =	2	ft
c) Forebay surface area (minimum)	Area =	112	ft^2
d) Full height notch-type weir	Width (W) =	6.0	in

s:

Appendix 7: Hydromodification

Supporting Detail Relating to Hydrologic Conditions of Concern

U n i t H y d r o g r a p h A n a l y s i s

Study date 07/15/21 File: TTM381072YR24HRUNDEV242.out

++

Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

Program License Serial Number 4061

English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used

English Units used in output format

TENTATIVE TRACT 38107
HCOC HYDROLOGY
2 YEAR, 24 HOUR STORM
UNDEVELOPED CONDITION

Drainage Area = 38.20(Ac.) = 0.060 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 38.00(Ac.) = 0.059 Sq. Mi.
Length along longest watercourse = 1820.00(Ft.)
Length along longest watercourse measured to centroid = 930.00(Ft.)
Length along longest watercourse = 0.345 Mi.
Length along longest watercourse measured to centroid = 0.176 Mi.
Difference in elevation = 6.50(Ft.)
Slope along watercourse = 18.8571 Ft./Mi.
Average Manning's 'N' = 0.030
Lag time = 0.142 Hr.
Lag time = 8.53 Min.
25% of lag time = 2.13 Min.
40% of lag time = 3.41 Min.
Unit time = 15.00 Min.
Duration of storm = 24 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
38.00	1.80	68.40

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
38.00	4.50	171.00

STORM EVENT (YEAR) = 2.00
Area Averaged 2-Year Rainfall = 1.800(In)

Area Averaged 100-Year Rainfall = 4.500(In)

Point rain (area averaged) = 1.800(In)
Areal adjustment factor = 99.99 %
Adjusted average point rain = 1.800(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
38.200	82.00	0.000

Total Area Entered = 38.20(Ac.)

RI AMC2	RI AMC-1	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
82.0	65.8	0.407	0.000	0.407	1.000	0.407
					Sum (F) =	0.407

Area averaged mean soil loss (F) (In/Hr) = 0.407
Minimum soil loss rate ((In/Hr)) = 0.204
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.900

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.250	175.913	38.908	14.979
2	0.500	351.827	45.082	17.356
3	0.750	527.740	9.852	3.793
4	1.000	703.654	4.080	1.571
5	1.250	879.567	2.078	0.800
		Sum =	100.000 Sum=	38.498

The following loss rate calculations reflect use of the minimum calculated loss rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1 0.25	0.20	0.014	(0.719)	0.013	0.001
2 0.50	0.30	0.022	(0.711)	0.019	0.002
3 0.75	0.30	0.022	(0.703)	0.019	0.002
4 1.00	0.40	0.029	(0.694)	0.026	0.003
5 1.25	0.30	0.022	(0.686)	0.019	0.002
6 1.50	0.30	0.022	(0.678)	0.019	0.002
7 1.75	0.30	0.022	(0.670)	0.019	0.002
8 2.00	0.40	0.029	(0.662)	0.026	0.003
9 2.25	0.40	0.029	(0.654)	0.026	0.003
10 2.50	0.40	0.029	(0.646)	0.026	0.003
11 2.75	0.50	0.036	(0.638)	0.032	0.004
12 3.00	0.50	0.036	(0.630)	0.032	0.004
13 3.25	0.50	0.036	(0.622)	0.032	0.004
14 3.50	0.50	0.036	(0.615)	0.032	0.004
15 3.75	0.50	0.036	(0.607)	0.032	0.004
4.00	0.60	0.043	(0.599)	0.039	0.004
4.25	0.60	0.043	(0.592)	0.039	0.004

18	4.50	0.70	0.050	(0.584)	0.045	0.005
19	4.75	0.70	0.050	(0.577)	0.045	0.005
)	5.00	0.80	0.058	(0.569)	0.052	0.006
1	5.25	0.60	0.043	(0.562)	0.039	0.004
22	5.50	0.70	0.050	(0.555)	0.045	0.005
23	5.75	0.80	0.058	(0.547)	0.052	0.006
24	6.00	0.80	0.058	(0.540)	0.052	0.006
25	6.25	0.90	0.065	(0.533)	0.058	0.006
26	6.50	0.90	0.065	(0.526)	0.058	0.006
27	6.75	1.00	0.072	(0.519)	0.065	0.007
28	7.00	1.00	0.072	(0.512)	0.065	0.007
29	7.25	1.00	0.072	(0.505)	0.065	0.007
30	7.50	1.10	0.079	(0.498)	0.071	0.008
31	7.75	1.20	0.086	(0.491)	0.078	0.009
32	8.00	1.30	0.094	(0.484)	0.084	0.009
33	8.25	1.50	0.108	(0.478)	0.097	0.011
34	8.50	1.50	0.108	(0.471)	0.097	0.011
35	8.75	1.60	0.115	(0.464)	0.104	0.012
36	9.00	1.70	0.122	(0.458)	0.110	0.012
37	9.25	1.90	0.137	(0.451)	0.123	0.014
38	9.50	2.00	0.144	(0.445)	0.130	0.014
39	9.75	2.10	0.151	(0.439)	0.136	0.015
40	10.00	2.20	0.158	(0.432)	0.143	0.016
41	10.25	1.50	0.108	(0.426)	0.097	0.011
42	10.50	1.50	0.108	(0.420)	0.097	0.011
43	10.75	2.00	0.144	(0.414)	0.130	0.014
44	11.00	2.00	0.144	(0.408)	0.130	0.014
45	11.25	1.90	0.137	(0.402)	0.123	0.014
46	11.50	1.90	0.137	(0.396)	0.123	0.014
47	11.75	1.70	0.122	(0.390)	0.110	0.012
48	12.00	1.80	0.130	(0.384)	0.117	0.013
`	12.25	2.50	0.180	(0.378)	0.162	0.018
	12.50	2.60	0.187	(0.373)	0.168	0.019
51	12.75	2.80	0.202	(0.367)	0.181	0.020
52	13.00	2.90	0.209	(0.362)	0.188	0.021
53	13.25	3.40	0.245	(0.356)	0.220	0.024
54	13.50	3.40	0.245	(0.351)	0.220	0.024
55	13.75	2.30	0.166	(0.345)	0.149	0.017
56	14.00	2.30	0.166	(0.340)	0.149	0.017
57	14.25	2.70	0.194	(0.335)	0.175	0.019
58	14.50	2.60	0.187	(0.330)	0.168	0.019
59	14.75	2.60	0.187	(0.325)	0.168	0.019
60	15.00	2.50	0.180	(0.320)	0.162	0.018
61	15.25	2.40	0.173	(0.315)	0.156	0.017
62	15.50	2.30	0.166	(0.310)	0.149	0.017
63	15.75	1.90	0.137	(0.305)	0.123	0.014
64	16.00	1.90	0.137	(0.301)	0.123	0.014
65	16.25	0.40	0.029	(0.296)	0.026	0.003
66	16.50	0.40	0.029	(0.292)	0.026	0.003
67	16.75	0.30	0.022	(0.287)	0.019	0.002
68	17.00	0.30	0.022	(0.283)	0.019	0.002
69	17.25	0.50	0.036	(0.279)	0.032	0.004
70	17.50	0.50	0.036	(0.274)	0.032	0.004
71	17.75	0.50	0.036	(0.270)	0.032	0.004
72	18.00	0.40	0.029	(0.266)	0.026	0.003
73	18.25	0.40	0.029	(0.262)	0.026	0.003
74	18.50	0.40	0.029	(0.259)	0.026	0.003
75	18.75	0.30	0.022	(0.255)	0.019	0.002
76	19.00	0.20	0.014	(0.251)	0.013	0.001
	19.25	0.30	0.022	(0.248)	0.019	0.002
	19.50	0.40	0.029	(0.244)	0.026	0.003

79	19.75	0.30	0.022	(0.241)	0.019	0.002
80	20.00	0.20	0.014	(0.238)	0.013	0.001
81	20.25	0.30	0.022	(0.234)	0.019	0.002
82	20.50	0.30	0.022	(0.231)	0.019	0.002
83	20.75	0.30	0.022	(0.229)	0.019	0.002
84	21.00	0.20	0.014	(0.226)	0.013	0.001
85	21.25	0.30	0.022	(0.223)	0.019	0.002
86	21.50	0.20	0.014	(0.221)	0.013	0.001
87	21.75	0.30	0.022	(0.218)	0.019	0.002
88	22.00	0.20	0.014	(0.216)	0.013	0.001
89	22.25	0.30	0.022	(0.214)	0.019	0.002
90	22.50	0.20	0.014	(0.212)	0.013	0.001
91	22.75	0.20	0.014	(0.210)	0.013	0.001
92	23.00	0.20	0.014	(0.208)	0.013	0.001
93	23.25	0.20	0.014	(0.207)	0.013	0.001
94	23.50	0.20	0.014	(0.206)	0.013	0.001
95	23.75	0.20	0.014	(0.205)	0.013	0.001
96	24.00	0.20	0.014	(0.204)	0.013	0.001

(Loss Rate Not Used)

Sum = 100.0 Sum = 0.7

Flood volume = Effective rainfall 0.18(In)
times area 38.2(Ac.)/[(In)/(Ft.)] = 0.6(Ac.Ft)
Total soil loss = 1.62(In)
Total soil loss = 5.157(Ac.Ft)
Total rainfall = 1.80(In)
Flood volume = 24958.0 Cubic Feet
Total soil loss = 224622.2 Cubic Feet

Peak flow rate of this hydrograph = 0.918(CFS)

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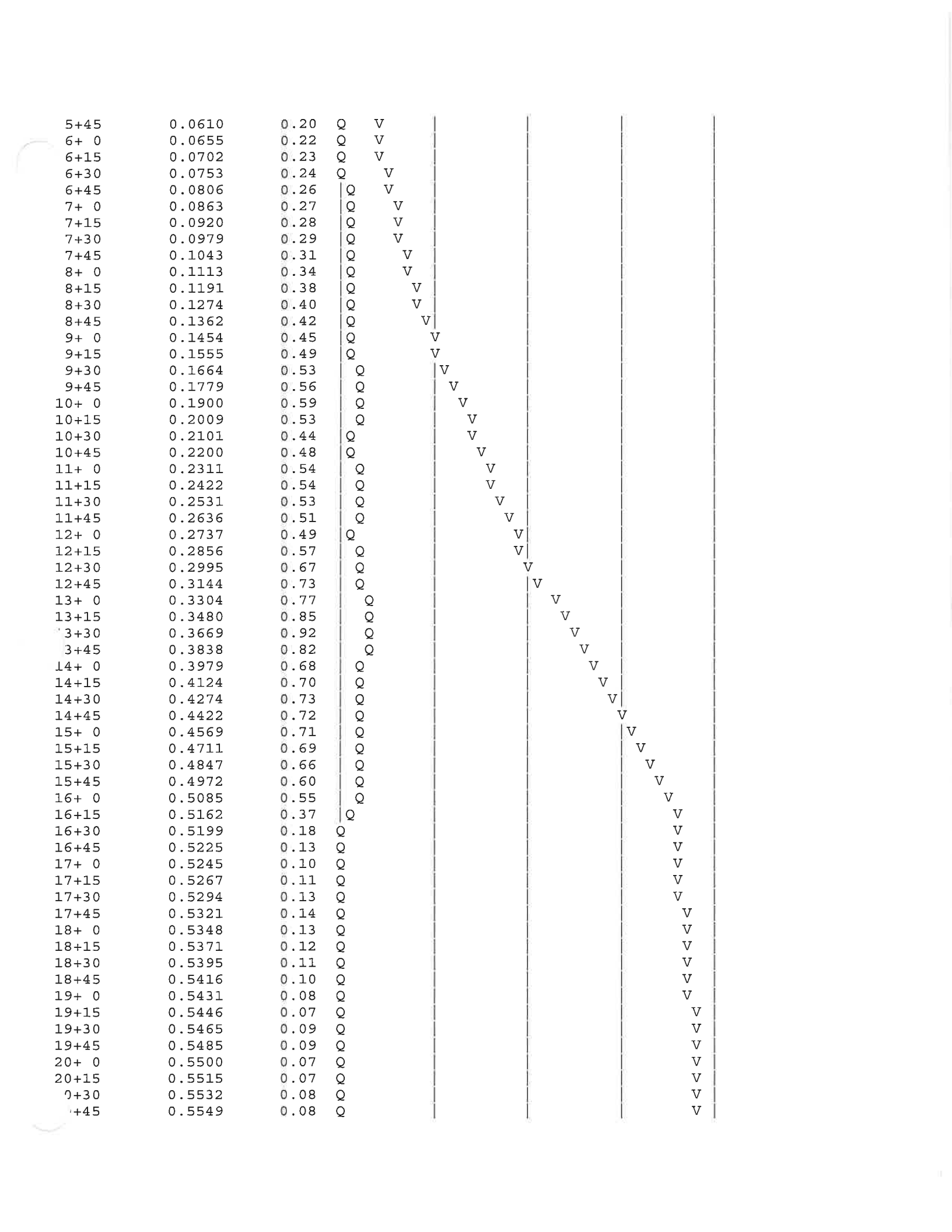
24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 15 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+15	0.0004	0.02	Q				
0+30	0.0016	0.06	Q				
0+45	0.0032	0.08	Q				
1+ 0	0.0051	0.09	Q				
1+15	0.0070	0.10	Q				
1+30	0.0088	0.09	Q				
1+45	0.0106	0.08	Q				
2+ 0	0.0125	0.09	Q				
2+15	0.0147	0.11	QV				
2+30	0.0170	0.11	QV				
2+45	0.0195	0.12	QV				
3+ 0	0.0222	0.13	QV				
3+15	0.0251	0.14	QV				
3+30	0.0279	0.14	QV				
3+45	0.0308	0.14	Q V				
4+ 0	0.0339	0.15	Q V				
4+15	0.0372	0.16	Q V				
4+30	0.0408	0.18	Q V				
4+45	0.0448	0.19	Q V				
5+ 0	0.0490	0.20	Q V				
5+15	0.0530	0.20	Q V				
+30	0.0568	0.18	Q V				



21+ 0	0.5564	0.07	Q	|	|	|	V |
21+15	0.5578	0.07	Q	|	|	|	V |
21+30	0.5593	0.07	Q	|	|	|	V|
21+45	0.5607	0.07	Q	|	|	|	V|
22+ 0	0.5621	0.07	Q	|	|	|	V|
22+15	0.5636	0.07	Q	|	|	|	V|
22+30	0.5650	0.07	Q	|	|	|	V|
22+45	0.5662	0.06	Q	|	|	|	V|
23+ 0	0.5674	0.06	Q	|	|	|	V|
23+15	0.5685	0.06	Q	|	|	|	V|
23+30	0.5697	0.06	Q	|	|	|	V|
23+45	0.5708	0.06	Q	|	|	|	V|
24+ 0	0.5720	0.06	Q	|	|	|	V|
24+15	0.5727	0.03	Q	|	|	|	V|
24+30	0.5729	0.01	Q	|	|	|	V|
24+45	0.5729	0.00	Q	|	|	|	V|
25+ 0	0.5730	0.00	Q	|	|	|	V|

U n i t H y d r o g r a p h A n a l y s i s

Study date 07/15/21 File: 381072YR24HRDEV242.out

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Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

Program License Serial Number 4061

English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used

English Units used in output format

TENTATIVE TRACT 38107
HCOC HYDROLOGY
2 YEAR, 24 HOUR STORM
DEVELOPED CONDTION

Drainage Area = 38.20(Ac.) = 0.060 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 38.20(Ac.) = 0.060 Sq. Mi.
Length along longest watercourse = 1550.00(Ft.)
Length along longest watercourse measured to centroid = 630.00(Ft.)
Length along longest watercourse = 0.294 Mi.
Length along longest watercourse measured to centroid = 0.119 Mi.
Difference in elevation = 3.60(Ft.)
Slope along watercourse = 12.2632 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time = 0.063 Hr.
Lag time = 3.75 Min.
25% of lag time = 0.94 Min.
40% of lag time = 1.50 Min.
Unit time = 15.00 Min.
Duration of storm = 24 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
38.20	1.80	68.76

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
38.20	4.50	171.90

STORM EVENT (YEAR) = 2.00
Area Averaged 2-Year Rainfall = 1.800(In)

Area Averaged 100-Year Rainfall = 4.500(In)

Point rain (area averaged) = 1.800(In)
Areal adjustment factor = 99.99 %
Adjusted average point rain = 1.800(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
38.200	62.50	0.600

Total Area Entered = 38.20(Ac.)

RI AMC2	RI AMC-1	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
62.5	42.5	0.645	0.600	0.297	1.000	0.297
					Sum (F) =	0.297

Area averaged mean soil loss (F) (In/Hr) = 0.297
Minimum soil loss rate ((In/Hr)) = 0.148
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.420

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.250	399.575	65.056	25.045
2	0.500	799.151	32.202	12.397
3	0.750	1198.726	2.742	1.056
			Sum = 100.000	Sum= 38.498

The following loss rate calculations reflect use of the minimum calculated loss rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit Time	(Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.25	0.20	0.014	(0.524)	0.006	0.008
2	0.50	0.30	0.022	(0.518)	0.009	0.013
3	0.75	0.30	0.022	(0.512)	0.009	0.013
4	1.00	0.40	0.029	(0.506)	0.012	0.017
5	1.25	0.30	0.022	(0.500)	0.009	0.013
6	1.50	0.30	0.022	(0.494)	0.009	0.013
7	1.75	0.30	0.022	(0.488)	0.009	0.013
8	2.00	0.40	0.029	(0.483)	0.012	0.017
9	2.25	0.40	0.029	(0.477)	0.012	0.017
10	2.50	0.40	0.029	(0.471)	0.012	0.017
11	2.75	0.50	0.036	(0.465)	0.015	0.021
12	3.00	0.50	0.036	(0.459)	0.015	0.021
13	3.25	0.50	0.036	(0.454)	0.015	0.021
14	3.50	0.50	0.036	(0.448)	0.015	0.021
15	3.75	0.50	0.036	(0.442)	0.015	0.021
16	4.00	0.60	0.043	(0.437)	0.018	0.025
17	4.25	0.60	0.043	(0.431)	0.018	0.025
	4.50	0.70	0.050	(0.426)	0.021	0.029
	4.75	0.70	0.050	(0.420)	0.021	0.029

20	5.00	0.80	0.058	(0.415)	0.024	0.033
21	5.25	0.60	0.043	(0.410)	0.018	0.025
22	5.50	0.70	0.050	(0.404)	0.021	0.029
23	5.75	0.80	0.058	(0.399)	0.024	0.033
24	6.00	0.80	0.058	(0.394)	0.024	0.033
25	6.25	0.90	0.065	(0.388)	0.027	0.038
26	6.50	0.90	0.065	(0.383)	0.027	0.038
27	6.75	1.00	0.072	(0.378)	0.030	0.042
28	7.00	1.00	0.072	(0.373)	0.030	0.042
29	7.25	1.00	0.072	(0.368)	0.030	0.042
30	7.50	1.10	0.079	(0.363)	0.033	0.046
31	7.75	1.20	0.086	(0.358)	0.036	0.050
32	8.00	1.30	0.094	(0.353)	0.039	0.054
33	8.25	1.50	0.108	(0.348)	0.045	0.063
34	8.50	1.50	0.108	(0.343)	0.045	0.063
35	8.75	1.60	0.115	(0.338)	0.048	0.067
36	9.00	1.70	0.122	(0.334)	0.051	0.071
37	9.25	1.90	0.137	(0.329)	0.057	0.079
38	9.50	2.00	0.144	(0.324)	0.060	0.084
39	9.75	2.10	0.151	(0.320)	0.063	0.088
40	10.00	2.20	0.158	(0.315)	0.067	0.092
41	10.25	1.50	0.108	(0.311)	0.045	0.063
42	10.50	1.50	0.108	(0.306)	0.045	0.063
43	10.75	2.00	0.144	(0.302)	0.060	0.084
44	11.00	2.00	0.144	(0.297)	0.060	0.084
45	11.25	1.90	0.137	(0.293)	0.057	0.079
46	11.50	1.90	0.137	(0.288)	0.057	0.079
47	11.75	1.70	0.122	(0.284)	0.051	0.071
48	12.00	1.80	0.130	(0.280)	0.054	0.075
49	12.25	2.50	0.180	(0.276)	0.076	0.104
50	12.50	2.60	0.187	(0.272)	0.079	0.109
51	12.75	2.80	0.202	(0.268)	0.085	0.117
52	13.00	2.90	0.209	(0.264)	0.088	0.121
53	13.25	3.40	0.245	(0.260)	0.103	0.142
54	13.50	3.40	0.245	(0.256)	0.103	0.142
55	13.75	2.30	0.166	(0.252)	0.070	0.096
56	14.00	2.30	0.166	(0.248)	0.070	0.096
57	14.25	2.70	0.194	(0.244)	0.082	0.113
58	14.50	2.60	0.187	(0.240)	0.079	0.109
59	14.75	2.60	0.187	(0.237)	0.079	0.109
60	15.00	2.50	0.180	(0.233)	0.076	0.104
61	15.25	2.40	0.173	(0.230)	0.073	0.100
62	15.50	2.30	0.166	(0.226)	0.070	0.096
63	15.75	1.90	0.137	(0.223)	0.057	0.079
64	16.00	1.90	0.137	(0.219)	0.057	0.079
65	16.25	0.40	0.029	(0.216)	0.012	0.017
66	16.50	0.40	0.029	(0.213)	0.012	0.017
67	16.75	0.30	0.022	(0.209)	0.009	0.013
68	17.00	0.30	0.022	(0.206)	0.009	0.013
69	17.25	0.50	0.036	(0.203)	0.015	0.021
70	17.50	0.50	0.036	(0.200)	0.015	0.021
71	17.75	0.50	0.036	(0.197)	0.015	0.021
72	18.00	0.40	0.029	(0.194)	0.012	0.017
73	18.25	0.40	0.029	(0.191)	0.012	0.017
74	18.50	0.40	0.029	(0.188)	0.012	0.017
75	18.75	0.30	0.022	(0.186)	0.009	0.013
76	19.00	0.20	0.014	(0.183)	0.006	0.008
77	19.25	0.30	0.022	(0.180)	0.009	0.013
78	19.50	0.40	0.029	(0.178)	0.012	0.017
	19.75	0.30	0.022	(0.176)	0.009	0.013
	20.00	0.20	0.014	(0.173)	0.006	0.008

81	20.25	0.30	0.022	(0.171)	0.009	0.013
82	20.50	0.30	0.022	(0.169)	0.009	0.013
83	20.75	0.30	0.022	(0.167)	0.009	0.013
84	21.00	0.20	0.014	(0.165)	0.006	0.008
85	21.25	0.30	0.022	(0.163)	0.009	0.013
86	21.50	0.20	0.014	(0.161)	0.006	0.008
87	21.75	0.30	0.022	(0.159)	0.009	0.013
88	22.00	0.20	0.014	(0.157)	0.006	0.008
89	22.25	0.30	0.022	(0.156)	0.009	0.013
90	22.50	0.20	0.014	(0.154)	0.006	0.008
91	22.75	0.20	0.014	(0.153)	0.006	0.008
92	23.00	0.20	0.014	(0.152)	0.006	0.008
93	23.25	0.20	0.014	(0.151)	0.006	0.008
94	23.50	0.20	0.014	(0.150)	0.006	0.008
95	23.75	0.20	0.014	(0.149)	0.006	0.008
96	24.00	0.20	0.014	(0.149)	0.006	0.008

(Loss Rate Not Used)

Sum = 100.0 Sum = 4.2

Flood volume = Effective rainfall 1.04(In)
times area 38.2(Ac.)/[(In)/(Ft.)] = 3.3(Ac.Ft)
Total soil loss = 0.76(In)
Total soil loss = 2.406(Ac.Ft)
Total rainfall = 1.80(In)
Flood volume = 144756.5 Cubic Feet
Total soil loss = 104823.7 Cubic Feet

Peak flow rate of this hydrograph = 5.447(CFS)

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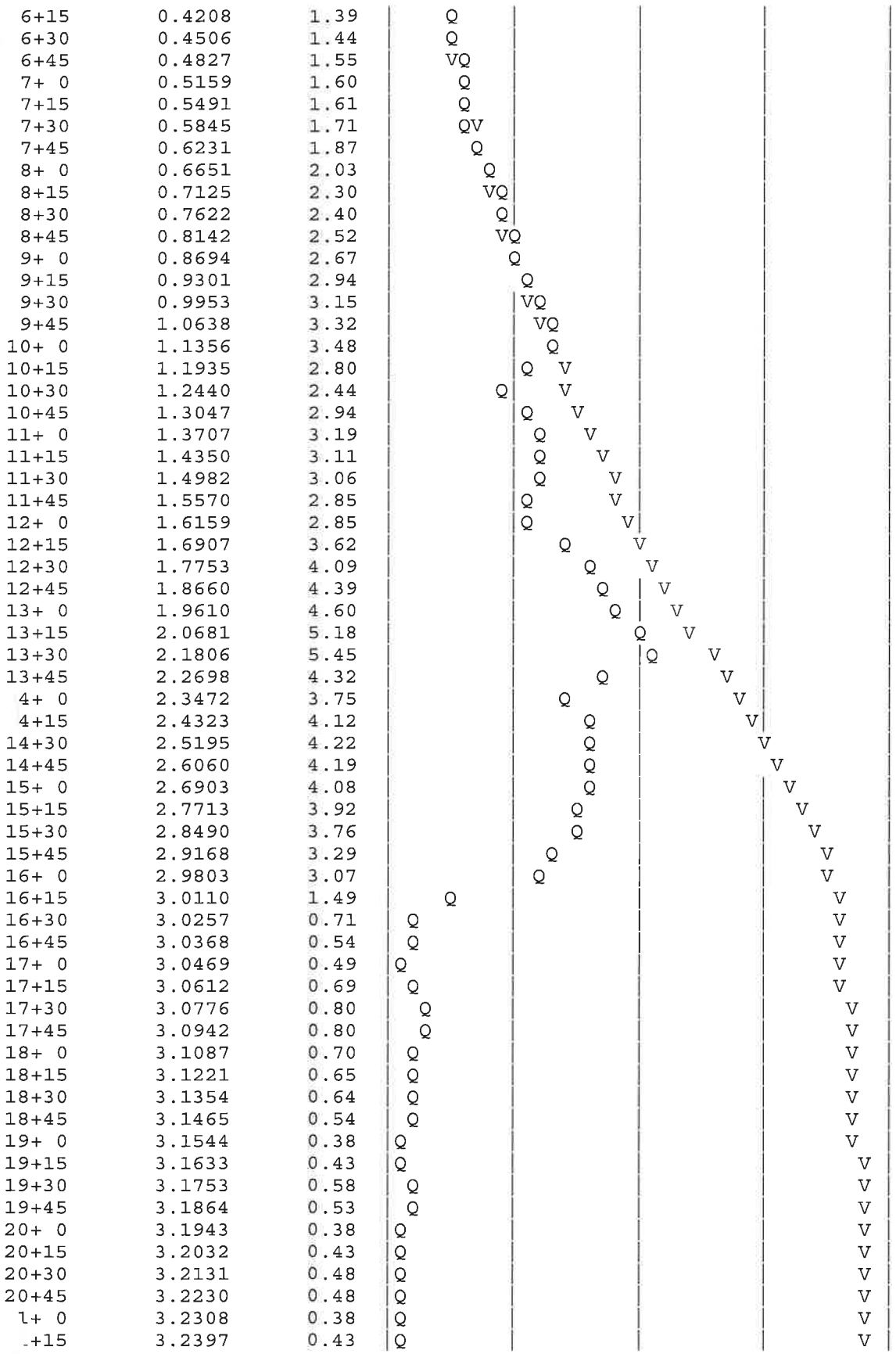
24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 15 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+15	0.0043	0.21	Q				
0+30	0.0129	0.42	VQ				
0+45	0.0228	0.48	VQ				
1+ 0	0.0350	0.59	V Q				
1+15	0.0460	0.53	V Q				
1+30	0.0561	0.49	VQ				
1+45	0.0660	0.48	VQ				
2+ 0	0.0782	0.59	V Q				
2+15	0.0914	0.64	VQ				
2+30	0.1047	0.64	VQ				
2+45	0.1201	0.75	VQ				
3+ 0	0.1366	0.80	V Q				
3+15	0.1532	0.80	V Q				
3+30	0.1699	0.80	VQ				
3+45	0.1865	0.80	VQ				
4+ 0	0.2053	0.91	VQ				
4+15	0.2251	0.96	VQ				
4+30	0.2472	1.07	V Q				
4+45	0.2704	1.12	VQ				
5+ 0	0.2958	1.23	VQ				
5+15	0.3180	1.07	VQ				
5+30	0.3403	1.08	Q				
5+45	0.3656	1.23	Q				
6+ 0	0.3921	1.28	VQ				



21+30	3.2474	0.37	Q				V
21+45	3.2563	0.43	Q				V
22+ 0	3.2641	0.37	Q				V
22+15	3.2730	0.43	Q				V
22+30	3.2807	0.37	Q				V
22+45	3.2874	0.33	Q				V
23+ 0	3.2941	0.32	Q				V
23+15	3.3007	0.32	Q				V
23+30	3.3074	0.32	Q				V
23+45	3.3140	0.32	Q				V
24+ 0	3.3206	0.32	Q				V
24+15	3.3230	0.11	Q				V
24+30	3.3232	0.01	Q				V

Appendix 8: Source Control

Pollutant Sources/Source Control Checklist

STORMWATER POLLUTANT SOURCES/SOURCE CONTROL CHECKLIST

How to use this worksheet (also see instructions in Section G of the WQMP Template):

1. Review Column 1 and identify which of these potential sources of stormwater pollutants apply to your site. Check each box that applies.
2. Review Column 2 and incorporate all of the corresponding applicable BMPs in your WQMP Exhibit.
3. Review Columns 3 and 4 and incorporate all of the corresponding applicable permanent controls and operational BMPs in your WQMP. Use the format shown in Table G.1on page 23 of this WQMP Template. Describe your specific BMPs in an accompanying narrative, and explain any special conditions or situations that required omitting BMPs or substituting alternative BMPs for those shown here.

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 **Potential Sources of Runoff Pollutants**	2 **Permanent Controls—Show on WQMP Drawings**	3 **Permanent Controls—List in WQMP Table and Narrative**	4 **Operational BMPs—Include in WQMP Table and Narrative**
☒ **A.** On-site storm drain inlets	☒ Locations of 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. ☒ See 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 drains."
☐ **B.** Interior floor drains and elevator shaft sump pumps		☐ State that interior floor drains and elevator shaft sump pumps will be plumbed to sanitary sewer.	☐ Inspect and maintain drains to prevent blockages and overflow.
☐ **C.** Interior parking garages		☐ State that parking garage floor drains will be plumbed to the sanitary sewer.	☐ Inspect and maintain drains to prevent blockages and overflow.

STORMWATER POLLUTANT SOURCES/SOURCE CONTROL CHECKLIST

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☐ **D1.** Need for future indoor & structural pest control		☐ Note building design features that discourage entry of pests.	☐ Provide Integrated Pest Management information to owners, lessees, and operators.
☒ **D2.** Landscape/ Outdoor Pesticide Use	☐ Show locations of native trees or areas of shrubs and ground cover to be undisturbed and retained. ☒ Show self-retaining landscape areas, if any. ☒ Show stormwater treatment and hydrograph modification management BMPs. (See instructions in Chapter 3, Step 5 and guidance in Chapter 5.)	State that final landscape plans will accomplish all of 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. ☐ See applicable operational BMPs in "What you should know for.....Landscape and Gardening" at http://rcflood.org/stormwater/Error! Hyperlink reference not valid. ☒ Provide IPM information to new owners, lessees and operators.

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❑ **E.** Pools, spas, ponds, decorative fountains, and other water features.	❑ Show location of water feature and a sanitary sewer cleanout in an accessible area within 10 feet. (Exception: Public pools must be plumbed according to County Department of Environmental Health Guidelines.)	If the Co-Permittee requires pools to be plumbed to the sanitary sewer, place a note on the plans and state in the narrative that this connection will be made according to local requirements.	❑ See applicable operational BMPs in "Guidelines for Maintaining Your Swimming Pool, Jacuzzi and Garden Fountain" at http://rcflood.org/stormwater/
❑ **F.** Food service	❑ For restaurants, grocery stores, and other food service operations, show location (indoors or in a covered area outdoors) of a floor sink or other area for cleaning floor mats, containers, and equipment. ❑ On the drawing, show a note that this drain will be connected to a grease interceptor before discharging to the sanitary sewer.	❑ Describe the location and features of the designated cleaning area. ❑ Describe the items to be cleaned in this facility and how it has been sized to insure that the largest items can be accommodated.	❑ See the brochure, "The Food Service Industry Best Management Practices for: Restaurants, Grocery Stores, Delicatessens and Bakeries" at http://rcflood.org/stormwater/ Provide this brochure to new site owners, lessees, and operators.
❑ **G.** Refuse areas	❑ Show where site refuse and recycled materials will be handled and stored for pickup. See local municipal requirements for sizes and other details of refuse areas. ❑ If dumpsters or other receptacles are outdoors, show how the designated area will be covered, graded, and paved to prevent run-on and show locations of berms to prevent runoff from the area. ❑ Any drains from dumpsters, compactors, and tallow bin areas shall be connected to a grease removal device before discharge to sanitary sewer.	❑ State how site refuse will be handled and provide supporting detail to what is shown on plans. ❑ State that signs will be posted on or near dumpsters with the words "Do not dump hazardous materials here" or similar.	❑ State how the following will be implemented: Provide adequate number of receptacles. Inspect receptacles regularly; repair or replace leaky receptacles. Keep receptacles covered. Prohibit/prevent dumping of liquid or hazardous wastes. Post "no hazardous materials" signs. Inspect and pick up litter daily and clean up spills immediately. Keep spill control materials available on-site. See Fact Sheet SC-34, "Waste Handling and Disposal" in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com

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❑ **H.** Industrial processes.	❑ Show process area.	❑ **If industrial processes are to be located on site, state: "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/

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❑ **I.** Outdoor storage of equipment or materials. (See rows J and K for source control measures for vehicle cleaning, repair, and maintenance.)	❑ Show any outdoor storage areas, including how materials will be covered. Show how areas will be graded and bermed to prevent run-on or run-off from area. ❑ Storage of non-hazardous liquids shall be covered by a roof and/or drain to the sanitary sewer system, and be contained by berms, dikes, liners, or vaults. ❑ Storage of hazardous materials and wastes must be in compliance with the local hazardous materials ordinance and a Hazardous Materials Management Plan for the site.	Include a detailed description of materials to be stored, storage areas, and structural features to prevent pollutants from entering storm drains. Where appropriate, reference documentation of compliance with the requirements of Hazardous Materials Programs for: ▪ Hazardous Waste Generation ▪ Hazardous Materials Release Response and Inventory ▪ California Accidental Release (CalARP) ▪ Aboveground Storage Tank ▪ Uniform Fire Code Article 80 Section 103(b) & (c) 1991 ▪ Underground Storage Tank www.cchealth.org/groups/hazmat/	❑ See the Fact Sheets SC-31, "Outdoor Liquid Container Storage" and SC-33, "Outdoor Storage of Raw Materials " in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com

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❑ **J.** Vehicle and Equipment Cleaning	❑ Show on drawings as appropriate: **(1) Commercial/industrial facilities having vehicle/equipment cleaning needs shall either provide a covered, bermed area for washing activities or discourage vehicle/equipment washing by removing hose bibs and installing signs prohibiting such uses.** **(2) Multi-dwelling complexes shall have a paved, bermed, and covered car wash area (unless car washing is prohibited on-site and hoses are provided with an automatic shut-off to discourage such use).** **(3) Washing areas for cars, vehicles, and equipment shall be paved, designed to prevent run-on to or runoff from the area, and plumbed to drain to the sanitary sewer.** **(4) Commercial car wash facilities shall be designed such that no runoff from the facility is discharged to the storm drain system. Wastewater from the facility shall discharge to the sanitary sewer, or a wastewater reclamation system shall be installed.**	❑ **If a car wash area is not provided, describe any measures taken to discourage on-site car washing and explain how these will be enforced.**	**Describe operational measures to implement the following (if applicable):** ❑ **Washwater from vehicle and equipment washing operations shall not be discharged to the storm drain system.** Refer to "Outdoor Cleaning Activities and Professional Mobile Service Providers" for many of the Potential Sources of Runoff Pollutants categories below. Brochure can be found at http://rcflood.org/stormwater/ ❑**Car dealerships and similar may rinse cars with water only.**

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❑ **K.** Vehicle/Equipment Repair and Maintenance	❑ Accommodate all vehicle equipment repair and maintenance indoors. Or designate an outdoor work area and design the area to prevent run-on and runoff of stormwater. ❑ Show secondary containment for exterior work areas where motor oil, brake fluid, gasoline, diesel fuel, radiator fluid, acid-containing batteries or other hazardous materials or hazardous wastes are used or stored. Drains shall not be installed within the secondary containment areas. ❑ Add a note on the plans that states either (1) there are no floor drains, or (2) floor drains are connected to wastewater pretreatment systems prior to discharge to the sanitary sewer and an industrial waste discharge permit will be obtained.	❑ State that no vehicle repair or maintenance will be done outdoors, or else describe the required features of the outdoor work area. ❑ State that there are no floor drains or if there are floor drains, note the agency from which an industrial waste discharge permit will be obtained and that the design meets that agency's requirements. ❑ State that there are no tanks, containers or sinks to be used for parts cleaning or rinsing or, if there are, note the agency from which an industrial waste discharge permit will be obtained and that the design meets that agency's requirements.	In the Stormwater Control Plan, note that all of the following restrictions apply to use the site: ❑ No person shall dispose of, nor permit the disposal, directly or indirectly of vehicle fluids, hazardous materials, or rinsewater from parts cleaning into storm drains. ❑ No vehicle fluid removal shall be performed outside a building, nor on asphalt or ground surfaces, whether inside or outside a building, except in such a manner as to ensure that any spilled fluid will be in an area of secondary containment. Leaking vehicle fluids shall be contained or drained from the vehicle immediately. ❑ No person shall leave unattended drip parts or other open containers containing vehicle fluid, unless such containers are in use or in an area of secondary containment. Refer to "Automotive Maintenance & Car Care Best Management Practices for Auto Body Shops, Auto Repair Shops, Car Dealerships, Gas Stations and Fleet Service Operations". Brochure can be found at http://rcflood.org/stormwater/ Refer to Outdoor Cleaning Activities and Professional Mobile Service Providers for many of the Potential Sources of Runoff Pollutants categories below. Brochure can be found at http://rcflood.org/stormwater/

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❑ **L.** Fuel Dispensing Areas	❑ Fueling areas[6] shall have impermeable floors (i.e., portland cement concrete or equivalent smooth impervious surface) that are: a) graded at the minimum slope necessary to prevent ponding; and b) separated from the rest of the site by a grade break that prevents run-on of stormwater to the maximum extent practicable. ❑ Fueling areas shall be covered by a canopy that extends a minimum of ten feet in each direction from each pump. [Alternative: The fueling area must be covered and the cover's minimum dimensions must be equal to or greater than the area within the grade break or fuel dispensing area[1].] The canopy [or cover] shall not drain onto the fueling area.		❑ The property owner shall dry sweep the fueling area routinely. ❑ See the Fact Sheet SD-30 , "Fueling Areas" in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com

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

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❑ **M.** Loading Docks	❑ Show a preliminary design for the loading dock area, including roofing and drainage. Loading docks shall be covered and/or graded to minimize run-on to and runoff from the loading area. Roof downspouts shall be positioned to direct stormwater away from the loading area. Water from loading dock areas shall be drained to the sanitary sewer, or diverted and collected for ultimate discharge to the sanitary sewer. ❑ 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 install door skirts (cowling) at each bay that enclose the end of the trailer.		❑ 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

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☐ **N.** Fire Sprinkler Test Water		☐ Provide a means to drain fire sprinkler test water to the sanitary sewer.	☐ See the note in Fact Sheet SC-41, "Building and Grounds Maintenance," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com
O. Miscellaneous Drain or Wash Water or Other Sources ☐ Boiler drain lines ☐ Condensate drain lines ☐ Rooftop equipment ☐ Drainage sumps ☒ Roofing, gutters, and trim. ☐ 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 system. ☐ Rooftop equipment with potential to produce pollutants shall be roofed and/or have secondary containment. ☐ Any drainage sumps on-site shall feature a sediment sump to reduce the quantity of sediment in pumped water. ☒ Avoid roofing, gutters, and trim made of copper or other unprotected metals that may leach into runoff. Include controls for other sources as specified by local reviewer.	

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❑ **P.** Plazas, sidewalks, and parking lots.			❑ 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 a storm drain.

Appendix 9: O&M

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

To be included in the Final WQMP

Appendix 10: Educational Materials

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

To be included in the Final WQMP