

**County of San Diego**  
**PRIORITY DEVELOPMENT PROJECT (PDP) SWQMP**

**1434 MONTIEL ROAD**  
**PERMIT # / RECORD ID: PDS2022-TM-5648**

**1434 Montiel Road**  
**Escondido, CA 92606**

**ASSESSOR'S PARCEL NUMBER(S):**  
**228-171-16**

**ENGINEER OF WORK:**



*Daya Bettadapura*

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**Daya Bettadapura, RCE #46505**

**PREPARED FOR:**

**Shub Estates LLC**  
**10225 Barnes Canyon Road**  
**San Diego, CA 92121**  
**Tel.: (619) 297-8066**

**PDP SWQMP PREPARED BY:**

**ABI Engineering Consultants, Inc.**  
**1701 East Edinger Avenue, Suite A9**  
**Santa Ana, CA 92705**  
**(888) 220-5596**

**DATE OF SWQMP:**  
**March 10, 2026**

**PLANS PREPARED BY:**  
**ABI Engineering Consultants, Inc.**  
**1701 East Edinger Avenue, Suite A9**  
**Santa Ana, CA 92705**  
**(888) 220-5596**

**SWQMP APPROVED BY:**

**APPROVAL DATE:**





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

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



|                                      |                                                                                                                                  |                                                                                                                    |  |
|--------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|--|
| <b>Project Information</b>           |                                                                                                                                  | <b>Development type</b> <input checked="" type="checkbox"/> New development <input type="checkbox"/> Redevelopment |  |
| <b>Project Name</b>                  | Montiel Road                                                                                                                     |                                                                                                                    |  |
| <b>Project Address</b>               | 1434 Montiel Rd, Escondido, CA 92026                                                                                             |                                                                                                                    |  |
| <b>Assessor's Parcel # (APN)</b>     | 228-171-16                                                                                                                       |                                                                                                                    |  |
| <b>Permit # / Record ID</b>          | PDS2022-TM-5648                                                                                                                  |                                                                                                                    |  |
| <b>Project category (select one)</b> | <input type="checkbox"/> Commercial <input type="checkbox"/> Minor subdivision*                                                  |                                                                                                                    |  |
|                                      | <input type="checkbox"/> Industrial <input checked="" type="checkbox"/> Major subdivision*                                       |                                                                                                                    |  |
|                                      | <input type="checkbox"/> Single family residential lot <input type="checkbox"/> Multi-family residential*                        |                                                                                                                    |  |
|                                      | *If residential, is a Homeowners Association (HOA) proposed? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |                                                                                                                    |  |

|                                              |                                                        |               |                      |
|----------------------------------------------|--------------------------------------------------------|---------------|----------------------|
| <b>Project Applicant / Project Proponent</b> |                                                        |               |                      |
| <b>Name</b>                                  | Daniel Camargo                                         |               |                      |
| <b>Address</b>                               | 3990 Old Town Avenue, Suite C-107, San Diego, CA 92110 |               |                      |
| <b>Phone</b>                                 | (415) 419-4944                                         | <b>Email:</b> | dcamargo@noaainc.com |

|                                  |                                                         |               |                  |
|----------------------------------|---------------------------------------------------------|---------------|------------------|
| <b>SWQMP Preparer</b>            |                                                         |               |                  |
| <b>Name</b>                      | Daya Bettadapura, PE                                    |               |                  |
| <b>Company (if applicable)</b>   | ABI Engineering Consultants, Inc                        |               |                  |
| <b>Address</b>                   | 1701 East Edinger Avenue, Suite A9, Santa Ana, CA 92705 |               |                  |
| <b>Phone</b>                     | (888) 220-5596                                          | <b>Email:</b> | dayab@abieng.net |
| <b>PE Number (if applicable)</b> | C46505                                                  |               |                  |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| <b>Preparer's Certification</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                     |
| <p>I understand that the County of San Diego has adopted minimum requirements for managing urban runoff, including storm water, from land development activities, as described in the County of San Diego BMP Design Manual. The BMP Design Manual is a design manual for compliance with local County of San Diego Watershed Protection Ordinance (Sections 67.801 et seq.) and regional MS4 Permit (California Regional Water Quality Control Board San Diego Region Order No. R9-2013-0001, as amended by Order No. R9-2015-0001 and Order No. R9-2015-0100) requirements for storm water management.</p> <p>This SWQMP is intended to comply with applicable requirements of the BMP Design Manual. I certify that it has been completed to the best of my ability and accurately reflects the project being proposed and the applicable BMPs proposed to minimize the potentially negative impacts of this project's land development activities on water quality. I understand and acknowledge that the plan check review of this SWQMP by County staff is confined to a review and does not relieve me as the person in charge of overseeing the selection and design of storm water BMPs for this project, of my responsibilities for project design.</p> |                                                                                     |
| <b>Signature</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |  |
| <b>Date</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | March 11, 2026                                                                      |

|                                                                                      |                |
|--------------------------------------------------------------------------------------|----------------|
| <b>COUNTY ACCEPTED</b>                                                               |                |
| SWQMP Approved By:                                                                   | Approval Date: |
| <b>* NOTE* Approval does not constitute compliance with regulatory requirements.</b> |                |

## Scope of SWQMP Submittal (Required)

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

### SWQMP Scope

- ☒ **a. SWQMP addresses the entire project**
- ☐ **b. SWQMP implements requirements of an earlier master SWQMP submittal**
- ☐ **c. First of multiple SWQMP submittals**

### Required Documentation

No additional documentation.

Include a copy of the previous submittal as **Attachment 4**.

Identify below the elements addressed in this submittal and in future submittals.

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

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

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

| No. | Date | Summary of Changes |
|-----|------|--------------------|
|-----|------|--------------------|

#### Preliminary Design / Planning / CEQA

|     |           |                   |
|-----|-----------|-------------------|
| 1   | 3/10/2026 | Initial Submittal |
| 2   | Date      | Summary of Change |
| 3   | Date      | Summary of Change |
| No. | Date      | Summary of Change |

#### Final Design

|     |      |                   |
|-----|------|-------------------|
| 1   | Date | Initial Submittal |
| 2   | Date | Summary of Change |
| 3   | Date | Summary of Change |
| No. | Date | Summary of Change |

#### Plan Changes

|     |      |                   |
|-----|------|-------------------|
| 1   | Date | Initial Submittal |
| 2   | Date | Summary of Change |
| 3   | Date | Summary of Change |
| No. | Date | Summary of Change |

## General Directions

Note: These directions may be omitted from the print version of the SWQMP submittal.

### 1. Scope of SWQMP Submittal and Submittal Record (inside front cover)

Use the **Submittal Scope** table to document the scope of activities covered under this SWQMP Form. Select one of the three options presented.

- **SWQMP addresses the entire project.** If this SWQMP form addresses the entire project from start to finish, additional documentation of the project scope is not required.
- **SWQMP implements requirements of an earlier master SWQMP submittal.** If this SWQMP Form implements requirements identified in an earlier master SWQMP Form, documentation of those earlier requirements must be provided. Include a copy of the previous submittal as **Attachment 4.**
- **First of multiple SWQMP submittals.** If this is the first of multiple SWQMP submittals, use the spaces provided under Part c to identify and briefly describe which project elements are addressed in this submittal and which ones will be addressed in future submittals. For example, this PDP addresses only streets and roads, but individual lots will be documented in future submittals.

Use the **Submittal Record** table to list the dates of any updates to the SWQMP or construction plans. Briefly describe key changes from previous versions. If responding to plan check comments, note this in the entry and attach the responses as applicable.

### 2. PDP SWQMP Submittal Checklist

The checklist on Page 1 summarizes the tables and attachments to be included with this PDP SWQMP submittal. It should be filled out after completing the remainder of the form. Tables and attachments with boxes already checked (☑) are required for all projects. All tables are required. The applicability of attachments not already checked will be identified during the completion of this form.

### 3. Attachment 1: Stormwater Intake Form

Submit a copy of your completed **Storm Water Intake Form** as **Attachment 1.**

### 4. Tables 1, 2, and 3: Baseline Site Design and Source Control BMPs

**Table 1 Completion:** Complete **Table 1** to document existing and proposed site features and the BMPs to be implemented for them. All BMPs must be implemented **where applicable and feasible**. Applicability is generally assumed if a feature exists or is proposed.

**Table 2 Completion:** **Table 2** is not required for Small Residential Projects. Applicants should check the box at the top of the table to confirm it does not apply.

*Small Residential Projects* are those requiring *either*: a Building Permit, Minor Residential Grading Permit, or Site Plan Permit for a single family home; *or* a Tentative Parcel Map Permit for up to 4 single family homes and a remainder parcel.

All other projects must complete **Table 2** to identify applicable requirements for documenting pollutant-generating sources/ features and source control BMPs.

BMPs must be implemented for **Table 1** and **2** features **where feasible**. Leaving the box for a BMP unchecked means it will not be implemented (either partially or fully) either because it is inapplicable or infeasible. Explanations must be provided in **Table 3**. Tables 1 and 2 both provide specific instructions on when explanations are required.



## 5. Attachment 5: Existing Site and Drainage Description

Complete **Attachment 5** to provide a description of (1) the existing pre-development condition of the site, and (2) existing and proposed drainage conditions for the site. If required, include a copy of the site Drainage Study with Attachment 5.

## 6. Structural Performance Standards

Determine which Structural Performance Standards apply to the PDP, where they apply, and which compliance strategies you will use to satisfy them. Record your selections in **Table 4** as follows.

**Table 4, Part A.1, Selection of Standards:** First select the standards that apply to the project.

- *Pollutant control plus hydromodification* Select if the PDP is not exempt from hydromodification management requirements. It must satisfy both the Pollutant Control Performance Standard (BMPDM Section 2.2) and the Hydromodification Management Performance Standard (BMPDM Section 2.3).
- *Pollutant control only* Select if the PDP is exempt from hydromodification management requirements per BMPDM Section 6.1. Document the exemption in **Attachment 9**.
- *Green Streets PDP Exemption* Select if a portion of the PDP is exempt from hydromodification management requirements per BMPDM Section 1.4.3. Document the exemption in **Attachment 13**.

**Table 4, Part A.2, Application of Standards:** Next indicate where on the site the standards apply.

- If this is a **New Development Project**, the standards apply to all impervious surfaces on the site.
- If this is a **Redevelopment Project**, their applicability will depend on the ratio of created or replaced impervious areas to existing impervious areas (see BMPDM Section 1.7). Complete the calculations in the table to determine your obligation. The **percent (%) impervious created or replaced (c)** is determined by dividing the **impervious area created or replaced (b)** by the **existing impervious area (a)** and multiplying the result by 100.
  - **If c is 50% or more:** The standards apply to all impervious surfaces on the site (a + b).
  - **If c is less than 50%:** The standards apply only to created or replaced impervious surfaces (b only).

**Table 4, Part B.1: Summary of Required Attachments (1 through 5)**

Use this part of the table to summarize which of Attachments 1 through 5 will be included with the SWQMP submittal. If you are completing an **electronic version** of this form, your selections will be automatically recorded based on your previous input. If you are completing a **hard copy** of this form, you must manually select Attachments 3 and 4 as applicable (see pages 4 and 6). Note that Attachments 1, 2, and 5 are required for all projects.

**Table 4, Part B.2: Selection of Compliance Strategies**

Complete Part B.2 to document which compliance options will be used to satisfy the applicable standards for the site. Before doing so, you must determine which option will be used for each DMA. The following four potential design options are presented in detail in BMPDM Chapters 5, 6 and Appendix K.

1. **Self-mitigating DMAs** (BMPDM Section 5.2.1)
2. **De Minimis DMAs** (BMPDM Section 5.2.2)
3. **Self-retaining DMAs** (BMPDM Section 5.2.3)
4. **Structural BMPs**
  - Pollutant Control BMPs (BMPDM Sections 5.3, 5.4, App K)
  - Hydromodification BMPs (BMPDM Chapter 6)

- Alternative Compliance Project (BMPDM Section 1.8)

Only one compliance option may be used per individual DMA. Regardless of which option is selected for any DMA, it must fully satisfy the applicable standard(s) determined in Part A.1.

On the left side of Part B, check the applicable boxes for each compliance option to be used.

## **7. Summary of Additional Required Attachments (6 through 13)**

You must complete and submit each attachment identified for the compliance options selected. Applicable attachments are listed to the right of each compliance option. If you are completing an **electronic version** of this form, the required attachments for each design option will automatically be selected when you choose the compliance option. As noted above, these selections will also be recorded on the PDP SWQMP Submittal Checklist (Page 1). If you are completing a **hard copy** of this form, you will need to manually check the boxes for each applicable attachment on both pages.

Note that Attachment 9 (Critical Coarse Sediment Yield Areas) is required for all PDPs. If the PDP is exempt from hydromodification requirements, the exemption must be documented in Attachment 9.

Note that Attachment 13 (Green Streets PDP Exempt Form) is required for projects that propose a mix of Green Street Surfaces and Non-Green Street Surfaces, thus applying both the PDP Performance standards and Green Street Performance Standards.

Projects that exclusively propose Green Street Surfaces are required to complete a Green Streets PDP Exempt SWQMP.

## **8. Table 5: Critical Coarse Sediment Yield Area Requirements**

Complete **Table 5** to select a compliance pathway for addressing Critical Coarse Sediment Yield Area (CCSYA) requirements for the PDP. See BMPDM Appendix H for additional description of requirements and options. Document Table 5 selections, including hydromodification management exemptions, in **Attachment 9**.

## **9. Tables 6 and 7: Temporary Construction Phase BMPs**

Complete **Table 6** to document the minimum construction BMPs to be implemented for the project. Each BMP must be implemented **where applicable and feasible**. At least one BMP must be selected for each construction activity listed in the table (except Erosion Control for Disturbed Slopes, which requires one BMP per season).

If applicable, use **Table 7** to describe why BMPs not selected in Table 6 are either infeasible or are only partially feasible. Justifications must be provided for all construction activity types for which NO BMPs were selected. If requested by County staff, also justify why specific individual BMPs were not selected.

## **10. Attachment 2: DMA Exhibits and Construction Plans**

Exhibits and construction plan sets incorporating all applicable site features, activities, and BMPs identified in **Tables 1, 2, and 6** must be submitted as **Attachment 2 (DMA Exhibits and Construction Plan Sheets)**. See the Attachment 2 cover sheet for additional instructions.

## **11. Attachment 13: Green Streets PDP Exempt Form**

Refer to BMPDM Section 1.4.3. Complete the project description and performance standard calculations found in Appendix K.2.1 of the BMP Design Manual. Include supporting DMA Exhibits in Attachment 2 delineating new impervious areas, existing/replaced impervious areas, and removed impervious areas as needed to support the green street PDP exempt area performance calculations. Include Green Street BMPs in Installation Verification and Maintenance Agreement in **Attachment 10** and **Attachment 11**.

## PDP SWQMP Submittal Checklist

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

|                                                                                                                    |        |
|--------------------------------------------------------------------------------------------------------------------|--------|
| <input checked="" type="checkbox"/> Table 1: Baseline BMPs for Existing and Proposed Site Features .....           | Page 2 |
| <input checked="" type="checkbox"/> Table 2: Baseline BMPs for Pollutant-generating Sources .....                  | Page 3 |
| <input checked="" type="checkbox"/> Table 3: Explanations and Justifications for Table 1 and 2 Baseline BMPs ..... | Page 4 |
| <input checked="" type="checkbox"/> Table 4: DMA Structural Compliance Strategies and Documentation .....          | Page 5 |
| <input checked="" type="checkbox"/> Table 5: Critical Coarse Sediment Yield Area (CCSYA) Requirements .....        | Page 6 |
| <input checked="" type="checkbox"/> Table 6: Minimum Construction Stormwater BMPs .....                            | Page 7 |
| <input checked="" type="checkbox"/> Table 7: Explanations and Justifications for Construction Phase BMPs .....     | Page 8 |

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

- ☒ Attachment 1: Storm Water Intake Form
- ☒ Attachment 2: DMA Exhibits and Construction Plan Sheets
- ☐ Attachment 3: Reserved for Future Use
- ☐ Attachment 4: Previous SWQMP Submittals
- ☒ Attachment 5: Existing Site and Drainage Description
- ☐ Attachment 6: Documentation of DMAs without Structural BMPs
- ☒ Attachment 7: Documentation of DMAs with Structural Pollutant Control BMPs
- ☒ Attachment 8: Documentation of DMAs with Structural Hydromodification Management BMPs
- ☒ Attachment 9: Management of Critical Coarse Sediment Yield Areas
- ☒ Attachment 10: BMP Installation Verification Form
- ☒ Attachment 11: BMP Maintenance Agreements and Plans
- ☐ Attachment 12: Documentation of Alternative Compliance Projects (ACPs)
- ☐ Attachment 13: Green Streets PDP Exempt Form

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

<sup>1</sup> All SWQMP Attachments are available at [www.sandiego.gov/stormwater](http://www.sandiego.gov/stormwater) under the Development Resources tab, Submittal Templates.

**Table 1 – Baseline BMPs for Existing and Proposed Site Features**

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

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

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

**Table 2 – Baseline BMPs for Pollutant-generating Sources**

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

**A. Management of Stormwater Discharges**

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

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

Select one option for each feature below:

|                                                                 |                                           |                                                                                                                    |
|-----------------------------------------------------------------|-------------------------------------------|--------------------------------------------------------------------------------------------------------------------|
| • <b>Storm drain inlets and catch basins ...</b>                | <input type="checkbox"/> are not proposed | <input checked="" type="checkbox"/> will be labeled with stenciling or signage to discourage dumping <b>(SC-F)</b> |
| • <b>Educational BMP Signage ...</b>                            | <input type="checkbox"/> are not proposed | <input checked="" type="checkbox"/> will be labeled with educational signage for BMP <b>(SC-G)</b>                 |
| • <b>Interior work surfaces, floor drains, &amp; sumps ...</b>  | <input type="checkbox"/> are not proposed | <input checked="" type="checkbox"/> will not discharge directly or indirectly to the MS4 or receiving waters       |
| • <b>Drain lines (e.g., air conditioning, boiler, etc.) ...</b> | <input type="checkbox"/> are not proposed | <input checked="" type="checkbox"/> will not discharge directly or indirectly to the MS4 or receiving waters       |
| • <b>Fire sprinkler test water ...</b>                          | <input type="checkbox"/> are not proposed | <input checked="" type="checkbox"/> will not discharge directly or indirectly to the MS4 or receiving waters       |

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

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

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

<sup>3</sup> Separate wastewater agency approvals may be required.

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

<sup>5</sup> Describe other proposed options for managing stormwater discharges in Table 3.

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

| <input type="checkbox"/> <b>Check here if no explanations or justifications for Table 1 or 2 BMPs are required.</b>                                                                                                                                                                                                                                                                                                              |                                                  |                                                                                                           |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|-----------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>• <b>Required Justifications:</b> Provide explanations of BMP inapplicability and/or infeasibility as indicated per Tables 1 and 2.</li> <li>• <b>If Requested:</b> Justify why specific BMPs will not be implemented or will only be partially implemented.</li> <li>• <b>Additional Explanation:</b> Describe any proposed features and/or BMPs not listed in Tables 1 or 2.</li> </ul> |                                                  |                                                                                                           |
| BMP-Feature Combination                                                                                                                                                                                                                                                                                                                                                                                                          |                                                  | Explanation                                                                                               |
| Feature                                                                                                                                                                                                                                                                                                                                                                                                                          | Natural areas, soils, & vegetation (incl. trees) | No existing trees will be conserved on site in the proposed improvements area due to grading requirements |
| BMP                                                                                                                                                                                                                                                                                                                                                                                                                              | Conserve natural features (SD-G)                 |                                                                                                           |
| Feature                                                                                                                                                                                                                                                                                                                                                                                                                          | BMPs for Roof Top Areas                          | Project is in Subdivision and Preliminary Stage                                                           |
| BMP                                                                                                                                                                                                                                                                                                                                                                                                                              | Direct runoff to pervious areas                  |                                                                                                           |
| Feature                                                                                                                                                                                                                                                                                                                                                                                                                          | BMPs for Landscape Areas                         | Project is in Subdivision and Preliminary Stage                                                           |
| BMP                                                                                                                                                                                                                                                                                                                                                                                                                              | Sustainable Landscaping                          |                                                                                                           |
| Feature                                                                                                                                                                                                                                                                                                                                                                                                                          | Feature                                          | Explanation                                                                                               |
| BMP                                                                                                                                                                                                                                                                                                                                                                                                                              | BMP                                              |                                                                                                           |
| Feature                                                                                                                                                                                                                                                                                                                                                                                                                          | Feature                                          | Explanation                                                                                               |
| BMP                                                                                                                                                                                                                                                                                                                                                                                                                              | BMP                                              |                                                                                                           |
| Feature                                                                                                                                                                                                                                                                                                                                                                                                                          | Feature                                          | Explanation                                                                                               |
| BMP                                                                                                                                                                                                                                                                                                                                                                                                                              | BMP                                              |                                                                                                           |
| Feature                                                                                                                                                                                                                                                                                                                                                                                                                          | Feature                                          | Explanation                                                                                               |
| BMP                                                                                                                                                                                                                                                                                                                                                                                                                              | BMP                                              |                                                                                                           |

**Table 4: DMA Structural Compliance Strategies and Documentation**

| Part A – Selection and Application Structural Performance Standards                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                            |                                                                                                                                                   |                                                |  |  |  |  |  |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|--|--|--|--|--|
| <b>1. Selection of Standards</b> (see BMPDM Sections 1.4.3, and 6.1)                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                            |                                                                                                                                                   |                                                |  |  |  |  |  |
| <input checked="" type="checkbox"/> a. Pollutant control + hydromodification                                                                                                                                                                                                                                                                                                                                                                                               | <input type="checkbox"/> b. Pollutant control only (project is exempt from hydromodification requirements) | <input type="checkbox"/> c. Green Streets PDP Exemption - pollutant control only (applicable portions exempt from hydromodification requirements) |                                                |  |  |  |  |  |
| <b>2. Application of Structural Performance Standards</b> (select one; see BMPDM Section 1.7)                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                            |                                                                                                                                                   |                                                |  |  |  |  |  |
| <input checked="" type="checkbox"/> <b>New Development Projects:</b> Standards apply to <u>all impervious surfaces</u> .                                                                                                                                                                                                                                                                                                                                                   |                                                                                                            |                                                                                                                                                   |                                                |  |  |  |  |  |
| <input type="checkbox"/> <b>Redevelopment Projects:</b> Complete the calculations below. Select <u>the</u> applicable scenario based on the results.                                                                                                                                                                                                                                                                                                                       |                                                                                                            |                                                                                                                                                   |                                                |  |  |  |  |  |
| <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr style="background-color: #d3d3d3;"> <th style="padding: 5px;">a. Existing impervious area (ft<sup>2</sup>)</th> <th style="padding: 5px;">b. Impervious area created / replaced (ft<sup>2</sup>)</th> <th style="padding: 5px;">c. % Impervious created / replaced [(b/a)*100]</th> </tr> </thead> <tbody> <tr> <td style="height: 20px;"></td> <td></td> <td></td> </tr> </tbody> </table> | a. Existing impervious area (ft <sup>2</sup> )                                                             | b. Impervious area created / replaced (ft <sup>2</sup> )                                                                                          | c. % Impervious created / replaced [(b/a)*100] |  |  |  |  |  |
| a. Existing impervious area (ft <sup>2</sup> )                                                                                                                                                                                                                                                                                                                                                                                                                             | b. Impervious area created / replaced (ft <sup>2</sup> )                                                   | c. % Impervious created / replaced [(b/a)*100]                                                                                                    |                                                |  |  |  |  |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                            |                                                                                                                                                   |                                                |  |  |  |  |  |
| <input type="checkbox"/> <i>Scenario 1: c is 50% or more:</i> Performance standards apply to all impervious surfaces (a + b).                                                                                                                                                                                                                                                                                                                                              |                                                                                                            |                                                                                                                                                   |                                                |  |  |  |  |  |
| <input type="checkbox"/> <i>Scenario 2: c is less than 50%:</i> Performance standards apply only to created or replaced impervious surfaces (b only).                                                                                                                                                                                                                                                                                                                      |                                                                                                            |                                                                                                                                                   |                                                |  |  |  |  |  |

## Part B – Compliance Strategies and Required Attachments

|                                                                         |                                                                |                                                                                  |                                 |                                                                          |                                                                               |  |  |  |
|-------------------------------------------------------------------------|----------------------------------------------------------------|----------------------------------------------------------------------------------|---------------------------------|--------------------------------------------------------------------------|-------------------------------------------------------------------------------|--|--|--|
| 1. Complete and submit each of the applicable attachments on the right. | Att. 1                                                         | Att. 2                                                                           | Att. 3                          | Att. 4                                                                   | Att. 5                                                                        |  |  |  |
|                                                                         | Storm Water Intake Form<br><input checked="" type="checkbox"/> | DMA Exhibits and Construction Plan Sheets<br><input checked="" type="checkbox"/> | N/A<br><input type="checkbox"/> | Previous SWQMP Submittals (see inside cover)<br><input type="checkbox"/> | Existing Site and Drainage Description<br><input checked="" type="checkbox"/> |  |  |  |

|                                                                                                                                                                |                                                                     |                                           |                                     |                                      |                                     |                                     |                                 |                               |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------|-------------------------------------------|-------------------------------------|--------------------------------------|-------------------------------------|-------------------------------------|---------------------------------|-------------------------------|
| 2. Indicate each compliance strategy below that will be used for one or more DMAs on the site.                                                                 | Att. 6                                                              | Att. 7                                    | Att. 8                              | Att. 9                               | Att. 10                             | Att. 11                             | Att. 12                         | Att. 13                       |
|                                                                                                                                                                | DMAs without Structural BMPs                                        | DMAs w/ Structural Pollutant Control BMPs | DMAs w/ Structural Hydromod. BMPs   | Critical Coarse Sediment Yield Areas | BMP Installation Verification Form  | Maintenance Agreements/ Plans       | Alternative Compliance Projects | Green Streets PDP Exempt Form |
|                                                                                                                                                                | <input type="checkbox"/> Self-mitigating DMAs (BMPDM Section 5.2.1) | <input type="checkbox"/>                  |                                     | <input type="checkbox"/>             |                                     |                                     |                                 |                               |
|                                                                                                                                                                | <input type="checkbox"/> De Minimis DMAs (BMPDM Section 5.2.2)      | <input type="checkbox"/>                  |                                     | <input type="checkbox"/>             |                                     |                                     |                                 |                               |
|                                                                                                                                                                | <input type="checkbox"/> Self-retaining DMAs (BMPDM Section 5.2.3)  | <input type="checkbox"/>                  |                                     | <input type="checkbox"/>             | <input type="checkbox"/>            |                                     |                                 |                               |
| <b>Structural BMPs (select all that apply)</b>                                                                                                                 |                                                                     |                                           |                                     |                                      |                                     |                                     |                                 |                               |
| <input checked="" type="checkbox"/> Pollutant Control BMPs (BMPDM Section 5.3, 5.4, App K)                                                                     |                                                                     | <input checked="" type="checkbox"/>       |                                     | <input checked="" type="checkbox"/>  | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |                                 | <input type="checkbox"/>      |
| <input checked="" type="checkbox"/> Hydromodification Control BMPs (BMPDM Chapter 6)                                                                           |                                                                     |                                           | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/>  | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |                                 |                               |
| <input type="checkbox"/> Alternative Compliance Project (BMPDM Section 1.8)                                                                                    |                                                                     |                                           |                                     | <input type="checkbox"/>             | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>        |                               |
| <input checked="" type="checkbox"/> Please check this box after you complete this list. Corresponding attachments will be automatically selected on the right. |                                                                     |                                           |                                     |                                      |                                     |                                     |                                 |                               |

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



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

|                                                                                                                                                                                                                                                                                                                                                            |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"><li>○ Identify one applicable compliance pathway for the PDP below.</li><li>○ Document your selection in <b>Attachment 9</b>.</li></ul>                                                                                                                                                                                  |
| <b>A. Hydromodification Management Exemption (BMPDM Sections 1.6 and 6.1)</b>                                                                                                                                                                                                                                                                              |
| <input type="checkbox"/> <b>PDP is Exempt from Hydromodification Management Requirements</b><br>Select if hydromodification management exemption was selected in Table 4 Part A.1.                                                                                                                                                                         |
| <b>B. Watershed Management Area (WMAA) Mapping (BMPDM Appendix H.1.1.2)</b>                                                                                                                                                                                                                                                                                |
| <input checked="" type="checkbox"/> <b>WMAA mapping demonstrates the following:</b> <ul style="list-style-type: none"><li>a. &lt;5% of potential onsite CCYSAs will be impacted (built on or obstructed)</li><li>b. All potential upstream offsite CCYSAs will be bypassed</li></ul>                                                                       |
| <b>C. Resource Protection Ordinance (RPO) Methods (BMPDM Appendix H.1.1.1)</b>                                                                                                                                                                                                                                                                             |
| <input type="checkbox"/> <b>RPO Scenario 1: PDP is subject to and in compliance with RPO requirements</b> <ul style="list-style-type: none"><li>a. Project requires one or more discretionary permits (RPO applicability is confirmed during discretionary review)</li><li>b. Onsite AND upstream offsite CCSYAs will be avoided and/or bypassed</li></ul> |
| <input type="checkbox"/> <b>RPO Scenario 2: PDP is entirely exempt/not subject to RPO requirements<sup>6</sup></b> <ul style="list-style-type: none"><li>a. Project does not require discretionary permits</li><li>b. Project will bypass all upstream offsite CCSYAs (no requirements for onsite CCSYAs)</li></ul>                                        |
| <b>D. No Net Impact Analysis (BMPDM Appendix H.4)</b>                                                                                                                                                                                                                                                                                                      |
| <input type="checkbox"/> <b>Project demonstrates no net impact to receiving waters</b>                                                                                                                                                                                                                                                                     |

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

**Table 6 –Minimum Construction Stormwater BMPs**

| Minimum Required BMPs by Activity Type                                                                                                       |                  | References            |                        |
|----------------------------------------------------------------------------------------------------------------------------------------------|------------------|-----------------------|------------------------|
| Select all applicable activities and at least one BMP for each.                                                                              |                  | Caltrans <sup>7</sup> | County of San Diego    |
| <input checked="" type="checkbox"/> <b>Erosion Control for Disturbed Slopes</b> (choose at least 1 per season)                               |                  |                       |                        |
| <input checked="" type="checkbox"/> Vegetation Stabilization Planting <sup>8</sup> (Summer)                                                  | SS-2, SS-4       |                       |                        |
| <input type="checkbox"/> Hydraulic Stabilization Hydroseeding (Summer)                                                                       | SS-4             |                       |                        |
| <input checked="" type="checkbox"/> Bonded Fiber Matrix or Stabilized Fiber Matrix <sup>9</sup> (Winter)                                     | SS-3             |                       |                        |
| <input type="checkbox"/> Physical Stabilization Erosion Control Blanket (Winter)                                                             | SS-7             |                       |                        |
| <input checked="" type="checkbox"/> <b>Erosion control for disturbed flat areas (slope &lt; 5%)</b>                                          |                  |                       |                        |
| <input type="checkbox"/> County Standard Lot Perimeter Protection Detail                                                                     | SC-2             |                       | PDS 659 <sup>10</sup>  |
| <input checked="" type="checkbox"/> Use of Item A erosion control measures on flat areas                                                     | SS-3, SS-4, SS-7 |                       |                        |
| <input type="checkbox"/> County Standard Desilting Basin (must treat all site runoff)                                                        | SC-2             |                       | PDS 660 <sup>11</sup>  |
| <input type="checkbox"/> Mulch, straw, wood chips, soil application                                                                          | SS-6, SS-8       |                       |                        |
| <input checked="" type="checkbox"/> <b>Energy dissipation (required to control velocity for concentrated runoff or dewatering discharge)</b> |                  |                       |                        |
| <input checked="" type="checkbox"/> Energy Dissipater Outlet Protection                                                                      | SS-10            |                       | RSD D-40 <sup>12</sup> |
| <input checked="" type="checkbox"/> <b>Sediment control for all disturbed areas</b>                                                          |                  |                       |                        |
| <input checked="" type="checkbox"/> Silt Fence                                                                                               | SC-1             |                       |                        |
| <input checked="" type="checkbox"/> Fiber Rolls (Straw Wattles)                                                                              | SC-5             |                       |                        |
| <input checked="" type="checkbox"/> Gravel & Sand Bags                                                                                       | SC-6, SC-8       |                       |                        |
| <input type="checkbox"/> Dewatering Filtration                                                                                               | NS-2             |                       |                        |
| <input checked="" type="checkbox"/> Storm Drain Inlet Protection                                                                             | SC-10            |                       |                        |
| <input type="checkbox"/> Engineered Desilting Basin (sized for 10-year flow)                                                                 | SC-2             |                       |                        |
| <input checked="" type="checkbox"/> <b>Preventing offsite tracking of sediment</b>                                                           |                  |                       |                        |
| <input checked="" type="checkbox"/> Stabilized Construction Entrance                                                                         | TC-1             |                       |                        |
| <input type="checkbox"/> Construction Road Stabilization                                                                                     | TC-2             |                       |                        |
| <input type="checkbox"/> Entrance/Exit Tire Wash                                                                                             | TC-3             |                       |                        |
| <input type="checkbox"/> Entrance/Exit Inspection & Cleaning Facility                                                                        | TC-1             |                       |                        |
| <input checked="" type="checkbox"/> Street Sweeping and Vacuuming                                                                            | SC-7             |                       |                        |
| <input checked="" type="checkbox"/> <b>Materials Management</b>                                                                              |                  |                       |                        |
| <input checked="" type="checkbox"/> Material Delivery & Storage                                                                              | WM-1             |                       |                        |
| <input checked="" type="checkbox"/> Spill Prevention and Control                                                                             | WM-4             |                       |                        |
| <input checked="" type="checkbox"/> <b>Waste Management</b> <sup>13</sup>                                                                    |                  |                       |                        |
| <input checked="" type="checkbox"/> Waste Management Concrete Waste Management                                                               | WM-8             |                       |                        |
| <input checked="" type="checkbox"/> Solid Waste Management                                                                                   | WM-5             |                       |                        |
| <input checked="" type="checkbox"/> Sanitary Waste Management                                                                                | WM-9             |                       |                        |
| <input checked="" type="checkbox"/> Hazardous Waste Management                                                                               | WM-6             |                       |                        |

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

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

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

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

<sup>10</sup> County PDS 659. Standard Lot Perimeter Protection Design System (Bldg. Division)

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

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

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

**Table 7 – Explanations and Justifications for Construction Phase BMPs**

| <input checked="" type="checkbox"/> <b>Check here if no explanations or justifications for Table 6 BMPs are required.</b>                                                                                                                                                                                                                                                                                                            |               |             |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|-------------|
| <b>Justifications for Table 6 Temporary Construction Phase BMPs</b> <ul style="list-style-type: none"> <li>• <b>Required Justifications:</b> Justify all construction activity types for which NO BMPs were selected.</li> <li>• <b>If Requested:</b> Justify why specific individual BMPs were not selected.</li> <li>• <b>Additional Explanation:</b> Describe any proposed features and/or BMPs not listed in Table 6.</li> </ul> |               |             |
| Activity Type / BMP                                                                                                                                                                                                                                                                                                                                                                                                                  |               | Explanation |
| Activity Type                                                                                                                                                                                                                                                                                                                                                                                                                        | Activity Type | Explanation |
| BMP                                                                                                                                                                                                                                                                                                                                                                                                                                  | BMP           |             |
| Activity Type                                                                                                                                                                                                                                                                                                                                                                                                                        | Activity Type | Explanation |
| BMP                                                                                                                                                                                                                                                                                                                                                                                                                                  | BMP           |             |
| Activity Type                                                                                                                                                                                                                                                                                                                                                                                                                        | Activity Type | Explanation |
| BMP                                                                                                                                                                                                                                                                                                                                                                                                                                  | BMP           |             |
| Activity Type                                                                                                                                                                                                                                                                                                                                                                                                                        | Activity Type | Explanation |
| BMP                                                                                                                                                                                                                                                                                                                                                                                                                                  | BMP           |             |
| Activity Type                                                                                                                                                                                                                                                                                                                                                                                                                        | Activity Type | Explanation |
| BMP                                                                                                                                                                                                                                                                                                                                                                                                                                  | BMP           |             |
| Activity Type                                                                                                                                                                                                                                                                                                                                                                                                                        | Activity Type | Explanation |
| BMP                                                                                                                                                                                                                                                                                                                                                                                                                                  | BMP           |             |
| Activity Type                                                                                                                                                                                                                                                                                                                                                                                                                        | Activity Type | Explanation |
| BMP                                                                                                                                                                                                                                                                                                                                                                                                                                  | BMP           |             |



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

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

| Part 1. Project Information       |                     |  |
|-----------------------------------|---------------------|--|
| Project Name:                     | Montiel Road        |  |
| Record ID (Permit) No(s):         | PDS2022-TM-5648     |  |
| Assessor's Parcel No(s):          | 228-171-16          |  |
| Street Address (or Intersection): | 1434 Montiel Rd     |  |
| City, State, Zip:                 | Escondido, CA 92026 |  |

| Part 2. Applicant / Project Proponent Information |                                   |  |
|---------------------------------------------------|-----------------------------------|--|
| Name:                                             | Daniel Camargo                    |  |
| Company:                                          | NOAA Group                        |  |
| Street Address:                                   | 3990 Old Town Avenue, Suite C-107 |  |
| City, State, Zip:                                 | San Diego, CA 92110               |  |
| Phone Number                                      | (415) 419-4944                    |  |
| Email:                                            | dcamargo@noaainc.com              |  |

| Part 3. Required Information for All Development Projects |                                                                                                                                                                                    |                                                                        |                                                              |
|-----------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|--------------------------------------------------------------|
| <b>(A)</b>                                                | <b>1. Existing<br/>(pre-development)<br/>impervious surfaces (ft<sup>2</sup>)</b>                                                                                                  | <b>2. Created or replaced<br/>impervious surfaces (ft<sup>2</sup>)</b> | <b>3. Total disturbed area<br/>(acres or ft<sup>2</sup>)</b> |
|                                                           | 2275                                                                                                                                                                               | 43890                                                                  | 84180                                                        |
| <b>(B)</b>                                                | <input checked="" type="checkbox"/> Check here and provide a WDID# if this project is subject to the California Construction General Permit (Order No. 2009-0009-DWQ) <sup>1</sup> |                                                                        | <b>WDID # (if issued)</b>                                    |
|                                                           |                                                                                                                                                                                    |                                                                        |                                                              |

| For County Use Only                     | Reviewed By:                       | Review Date:                                            |
|-----------------------------------------|------------------------------------|---------------------------------------------------------|
| <input type="checkbox"/> Standard SWQMP | <input type="checkbox"/> PDP SWQMP | <input type="checkbox"/> Green Streets PDP Exempt SWQMP |

<sup>1</sup> Available at: [https://www.waterboards.ca.gov/water\\_issues/programs/stormwater/construction.html](https://www.waterboards.ca.gov/water_issues/programs/stormwater/construction.html)

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

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

☒ **Priority Development Project (PDP)****→ PDP SWQMP Form/ PDP SWQMP Amendment required with scope change**

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

Refer to Section 1.4 of the [County BMP Design Manual](#) for additional guidance.☐ **Green Streets PDP Exemption<sup>2</sup>****→ Green Streets PDP Exempt SWQMP Form**Select this option only if the entire project qualifies for Green Streets PDP Exemption. Refer to Section 1.4.3 of the [County BMP Design Manual](#) for additional guidance.**Part 5. Applicant Signature***I have reviewed the information in this form, and it is true and correct to the best of my knowledge.*

Applicant / Project Proponent Signature:



Date: 03/11/2026

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

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



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

## 2.0 General Requirements

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

| Sub-attachments                                                                | Requirement               |
|--------------------------------------------------------------------------------|---------------------------|
| <input checked="" type="checkbox"/> 2.1: DMA Exhibits                          | All PDPs                  |
| <input checked="" type="checkbox"/> 2.2: Individual Structural BMP DMA Mapbook | PDPs with structural BMPs |
| <input checked="" type="checkbox"/> 2.3: Construction Plan Sets                | All projects              |

## 2.1 DMA Exhibits

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- DMA Exhibits must show all DMAs on the project site. Exhibits must include all applicable features identified in applicable SWQMP attachments.
- Exhibits may be prepared individually for the BMPs associated with each applicable SWQMP Attachment (6, 7, 8, 9, and/or 13) or combined into one or more consolidated exhibits. Hatching or other variations in symbology shall be used to differentiate different surface types when an exhibit is demonstrating compliance with two or more performance standards, for example, PDP and green street performance standards.
- Use this checklist to ensure required information is included on each exhibit (copy as needed).

|                                                                                                    |                                                                                                                                                                                                                                                                                       |
|----------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DMA Exhibit ID #:</b>                                                                           | <b>1-4</b>                                                                                                                                                                                                                                                                            |
| <b>A. Features required for all exhibits</b>                                                       |                                                                                                                                                                                                                                                                                       |
| <b>1. Existing Site Features</b>                                                                   |                                                                                                                                                                                                                                                                                       |
| <input type="checkbox"/> Underlying hydrologic soil group (A, B, C, D)                             | <input checked="" type="checkbox"/> Topography and impervious areas                                                                                                                                                                                                                   |
| <input type="checkbox"/> Approximate depth to groundwater                                          | <input checked="" type="checkbox"/> Existing drainage network, directions, and offsite connections                                                                                                                                                                                    |
| <input type="checkbox"/> Natural hydrologic features                                               |                                                                                                                                                                                                                                                                                       |
| <b>2. Drainage Management Area (DMA) Information</b>                                               |                                                                                                                                                                                                                                                                                       |
| <input checked="" type="checkbox"/> Proposed drainage network, directions, and offsite connections | <input checked="" type="checkbox"/> DMA boundaries, ID numbers, areas, and type (structural BMP, Green Street BMP, de minimis, etc.)                                                                                                                                                  |
| <b>3. Proposed Site Changes, Features, and BMPs</b>                                                |                                                                                                                                                                                                                                                                                       |
| <input checked="" type="checkbox"/> Proposed demolition and grading                                | <input type="checkbox"/> Construction BMPs <sup>2</sup>                                                                                                                                                                                                                               |
| <input type="checkbox"/> Group 1, 2, and 3 Features <sup>1</sup>                                   | <input checked="" type="checkbox"/> Baseline source control BMPs                                                                                                                                                                                                                      |
| <input type="checkbox"/> Group 4 Features                                                          | <input type="checkbox"/> Baseline site design BMPs                                                                                                                                                                                                                                    |
|                                                                                                    | <input type="checkbox"/> Green street PDP exempt areas – new impervious areas, existing/replaced impervious areas, and removed impervious areas                                                                                                                                       |
| <b>B. Proposed Features and BMPs Specific to Individual SWQMP Attachments<sup>3</sup></b>          |                                                                                                                                                                                                                                                                                       |
| <input type="checkbox"/> Attachment 6                                                              | <input type="checkbox"/> SSD-BMP impervious dispersion areas<br><input type="checkbox"/> SSD-BMP tree wells                                                                                                                                                                           |
| <input checked="" type="checkbox"/> Attachment 7                                                   | <input checked="" type="checkbox"/> Structural pollutant control BMPs                                                                                                                                                                                                                 |
| <input checked="" type="checkbox"/> Attachment 8                                                   | <input checked="" type="checkbox"/> Structural hydromodification management BMPs<br><input checked="" type="checkbox"/> Point(s) of Compliance (POC) for hydromodification management<br><input checked="" type="checkbox"/> Proposed drainage boundary and drainage area to each POC |
| <input checked="" type="checkbox"/> Attachment 9                                                   | <input checked="" type="checkbox"/> Onsite CCSYAs <input type="checkbox"/> Bypass of onsite CCSYAs<br><input type="checkbox"/> Bypass of upstream offsite CCSYAs                                                                                                                      |
| <input checked="" type="checkbox"/> Attachment 13                                                  | <input checked="" type="checkbox"/> Green Street pollutant control BMPs                                                                                                                                                                                                               |

<sup>1</sup> Group 1-4 features and baseline BMPs from PDP SWQMP Tables 2 and 3.

<sup>2</sup> Minimum Construction Stormwater BMPs from PDP SWQMP Table 7.

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



## 2.2 Individual Structural BMP DMA Mapbook

---

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

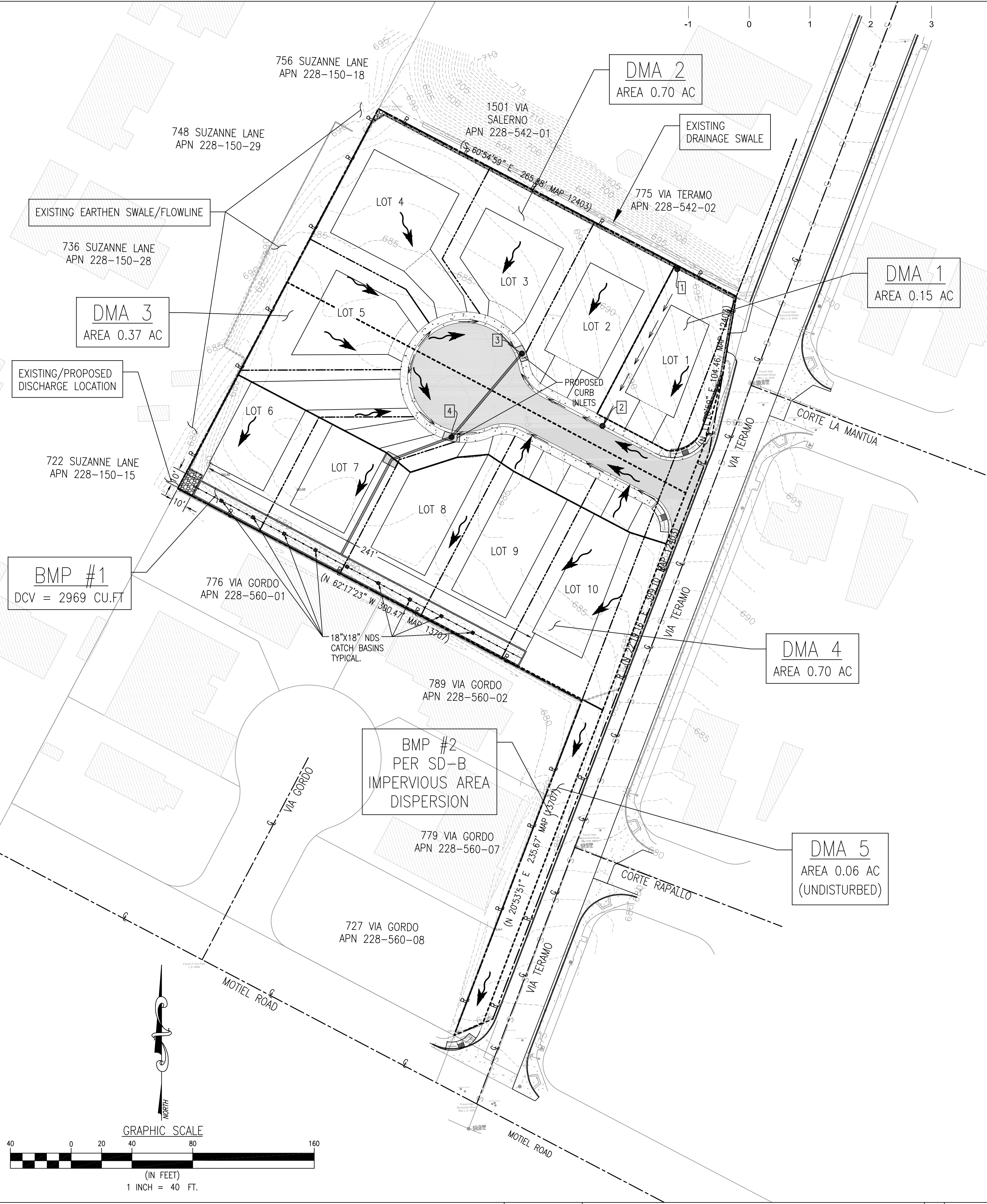
|                                     |                                          |
|-------------------------------------|------------------------------------------|
| <input type="checkbox"/>            | <u>All Mapbooks are attached</u>         |
| <input checked="" type="checkbox"/> | <u>All Mapbooks are in Attachment 11</u> |

## 2.3 Construction Plan Sets

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

| Plan Type                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Preliminary Grading Plan |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| <b>Required Information<sup>4</sup></b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                          |
| <ul style="list-style-type: none"><li><input checked="" type="checkbox"/> Structural BMP(s) and Significant Site Design BMPs (if applicable) with ID numbers.</li><li><input checked="" type="checkbox"/> The grading and drainage design shown on the plans must be consistent with the delineation of DMAs shown on the DMA exhibit.</li><li><input checked="" type="checkbox"/> Details and specifications for construction of Structural BMP(s) and Significant Site Design BMPs (if applicable).</li><li><input checked="" type="checkbox"/> Signage indicating the location and boundary of structural BMP(s) as required by County staff.</li><li><input type="checkbox"/> How to access the structural BMP(s) to inspect and perform maintenance.</li><li><input checked="" type="checkbox"/> Features that are provided to facilitate inspection (e.g., observation ports, cleanouts, silt posts, or other features that allow the inspector to view necessary components of the structural BMP and compare to maintenance thresholds).</li><li><input type="checkbox"/> Maintenance thresholds specific to the structural BMP(s), with a location-specific frame of reference (e.g., level of accumulated materials that triggers removal of the materials, to be identified based on viewing marks on silt posts or measured with a survey rod with respect to a fixed benchmark within the BMP).</li><li><input type="checkbox"/> Recommended equipment to perform maintenance.</li><li><input type="checkbox"/> When applicable, necessary special training or certification requirements for inspection and maintenance personnel such as confined space entry or hazardous waste management.</li><li><input type="checkbox"/> Include landscaping plan sheets (if available) showing vegetation requirements for vegetated structural BMP(s).</li><li><input checked="" type="checkbox"/> All BMPs must be fully dimensioned on the plans.</li><li><input type="checkbox"/> When proprietary BMPs are used, site-specific cross-section with outflow, inflow, and manufacturer model number must be provided. Photocopies of general brochures are not acceptable.</li><li><input type="checkbox"/> Include all source control and site design measures described in the SWQMP.</li><li><input type="checkbox"/> Include all construction BMPs described in the SWQMP.</li></ul> |                          |

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



FOR REDUCED PLANS  
ORIGINAL SCALE IS IN INCHES

REGISTERED PROFESSIONAL ENGINEER  
JAY RAYNO P. BETTADAPRA  
NO. C46505  
EXP. 6/30/2027  
CIVIL  
STATE OF CALIFORNIA

PLANS

DESIGNED

CHECKED

BY

JCW

DB

DATE

----

----

04/16/2026  
DATE

LEGEND

→

FLOW LINE

→

DIRECTION OF FLOW

□

CATCH BASIN

---

DMA BOUNDARY

---

EXISTING WALL

---

PROPOSED WALL

PATTERN LEGEND

---

PLANTER BOX

BMP-1 ORIFICE DETAIL  
NOT TO SCALE

TYPICAL BMP SECTION  
NOT TO SCALE

BMP-1 BIOFILTRATION OUTLET  
STRUCTURE DETAIL  
NOT TO SCALE

| DMA # | AREA NAME | TOTAL LOT AREA | TOTAL IMPERVIOUS AREA (SF) | TOTAL IMPERVIOUS AREA (AC) | TOTAL PERVIOUS AREA (SF) | TOTAL PERVIOUS AREA (AC) | %IMPERVIOUS |
|-------|-----------|----------------|----------------------------|----------------------------|--------------------------|--------------------------|-------------|
| 1     | LOT 1     | 6519           | 2506                       | 0.0580                     | 4013                     | 0.0920                   | 38          |
| 2     | LOT 2     | 6565           | 3020                       | 0.0690                     | 3545                     | 0.0810                   | 46          |
| 2     | LOT 3     | 6502           | 3048                       | 0.0700                     | 3454                     | 0.0790                   | 47          |
| 2     | LOT 4     | 8914           | 4685                       | 0.1080                     | 4229                     | 0.0970                   | 53          |
| 2 & 3 | LOT 5     | 6636           | 2904                       | 0.0670                     | 3732                     | 0.0860                   | 44          |
| 3 & 4 | LOT 6     | 7764           | 3974                       | 0.0910                     | 3790                     | 0.0870                   | 51          |
| 3 & 4 | LOT 7     | 6359           | 2994                       | 0.0690                     | 3365                     | 0.0770                   | 47          |
| 3 & 4 | LOT 8     | 6727           | 3170                       | 0.0730                     | 3557                     | 0.0820                   | 47          |
| 3 & 4 | LOT 9     | 8036           | 3937                       | 0.0900                     | 4099                     | 0.0940                   | 49          |
| 3 & 4 | LOT 10    | 8243           | 3295                       | 0.0760                     | 4948                     | 0.1140                   | 40          |

\*STREET AREAS ARE BEING ADDED INTO WORKSHEETS

DMA'S SUMMARY  
NOT TO SCALE

NOTES:

1. SITES SOIL TYPE: HYDROLOGIC SOIL TYPE B

2. INFILTRATION RATE : 1.5 IN/HR

3. GROUNDWATER ENCOUNTERET AT A DEPTH OF 22.5 FT BELOW GROUND

PREPARED BY:

ABI

ENGINEERING

CONSULTANTS, INC.

1701 EAST EDINGER AVENUE, SUITE A9  
SANTA ANA, CALIFORNIA 92705  
TEL: (888) 220-5596 FAX: (714) 866-4171

| REVISIONS | BY | APPROVED | DATE |
|-----------|----|----------|------|
|           |    |          |      |
|           |    |          |      |
|           |    |          |      |
|           |    |          |      |

COORDINATE INDEX

XXXX N, XXXX E

CONST. COMPL.

FIELD REVISIONS

1434 MONTIEL ROAD  
ESCONDIDO CALIFORNIA  
DRAINAGE REPORT EXHIBITS  
DMA EXHIBIT

SCALE: HOR. AS SHOWN VERT. AS SHOWN

W.A. 1234567 R.S.

SHEET 1 OF 1 SHEETS

C:\Users\Jogadish\ABI\ABI - Projects\2022\22056 Montiel Road Escondido Parcel Subdivision NOAA\SWQMP\2026-04-16\Attachments\CAD\DMA EXHIBITS\DMA EXHIBITS.dwg Thursday, Apr. 16 2026 5:57pm Jogadish



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

## 5.0 General Requirements

---

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

☒ **Yes**

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

Title: CEQA Drainage Study Report for 1434 Montiel Road

Prepared By: ABI Engineering Consultants, Inc

Date: March 10, 2026

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

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





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

### 5.1 Description of Existing Site Condition

Provide the requested information below for the project site in its existing condition.

#### a. Current Site Status

Select all that apply to any portion of the site.

- ☐ Existing development
- ☐ Previously graded but not built out
- ☐ Agricultural or other non-impervious use
- ☒ Vacant, undeveloped/natural
- ☐ Demolition completed without new construction

#### b. Existing Land Cover

Provide the area (in acres or square feet) within all applicable categories of land cover below. The total area should equal that of the entire project site.

|                                                                  | Area (acres or ft <sup>2</sup> )          |
|------------------------------------------------------------------|-------------------------------------------|
| <input checked="" type="checkbox"/> Vegetative Cover             | 1.98 acres                                |
| <input checked="" type="checkbox"/> Non-Vegetated Pervious Areas | 0.05 acres                                |
| <input type="checkbox"/> Impervious Areas                        | <a href="#">Click here to enter text.</a> |

#### c. Underlying Soil

Select all soil groups that are present on the site.

| NRCS Hydrologic Soil Group(s) |                                     |                          |                          |
|-------------------------------|-------------------------------------|--------------------------|--------------------------|
| Type A                        | Type B                              | Type C                   | Type D                   |
| <input type="checkbox"/>      | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |



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

## 5.2 Description of Existing Site Drainage

Describe how storm water runoff is conveyed from the site. At a minimum, address the following:

- Is the existing drainage conveyance ☒ **natural** or ☐ **urban**?
- Is runoff from offsite conveyed through the site? ☐ **Yes** ☒ **No**  
If **yes**, quantify all offsite drainage areas, design flows, and locations where offsite flows enter the project site, and summarize how such flows are conveyed through the site.
- Describe the existing project site drainage conveyance network (including any existing storm drains, concrete channels, swales, detention facilities, storm water treatment facilities, natural or constructed channels).
- Identify all discharge locations from the existing project site along with a summary of conveyance system size and capacity for each of the discharge locations. Summarize the pre-project drainage areas and design flows to each of the existing runoff discharge locations.
- Provide additional information as necessary or requested to describe the site drainage.

*Description (add pages as necessary to provide all requested information).*

The 1.98-acre project site is vacant and consists of native vegetation, including trees and shrubs. The site topography is characterized by a consistent 22-foot elevation relief, sloping from a high point of EL. 698 at the northeast corner to a low point of EL. 676 at the southwest corner. All stormwater generated within the property boundaries flows from the northeast toward the southwest, following this natural grade.

A concrete drainage ditch exists to the northeast of the property outside the boundary of this property. The drainage ditch conveys off-site runoff westward. The existing grades or an earthen swale located outside the western property boundary on the adjacent lots, directs offsite surface water runoff toward the regional low point at the southwest corner of the property area.

The small sliver of the parcel located at the southeast corner drains from north to south toward Montiel Road. This runoff is collected and directed south into the existing County-maintained storm drain system. These flows eventually discharge into Escondido Creek and terminate at the San Elijo Lagoon. The existing drainage patterns have been mapped to ensure the design maintains the historic natural flow of the site and protects adjacent properties and downstream systems.



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

### 5.3 Description of Proposed Site Development

Provide a general description of the proposed site development, including at a minimum the information requested below. Add pages as necessary.

*a. Project description/ Proposed land use and/or activities (project location, development type, size, numbers of units, etc.)*

The project is a new residential subdivision on 1.98-acre parcel located west of Via Teramo, approximately 250 feet north of Montiel Road in the County of San Diego. The project proposes subdivide the vacant parcel into ten (10) residential lots ranging in size from 6,360 to 8,899 square feet. Improvements include residential pads, Lot A (Private Road), internal private driveways, utility installation, structural stormwater BMPs and public frontage work. Lot B (the Via Teramo frontage strip) will remain undisturbed. Additionally, the existing swale or flowline outside the western property boundary and the drainage ditch outside the northern boundary will be preserved and remain undisturbed. Total area of disturbance is approximately 1.92 acres.

Proposed drainage patterns follow the existing site topography, conveying on-site runoff from the northeast toward the southwest. Runoff from the residential pads, Lot A (Private Road), and other impervious surfaces are collected via drainage swales and a private storm drain system. These flows are directed toward biofiltration planter box (BMP #1) located at the southwestern low point of the site. BMP #1 has been sized for a Design Capture Volume to provide both water quality treatment and hydromodification management. In the event of a peak storm overflow, runoff is piped to the existing drainage low point at the southwest corner of the property. This design ensures that post-development peak flow rates do not exceed pre-development levels.

*b. List/describe proposed impervious features of the project (e.g., buildings, roadways, parking lots, courtyards, athletic courts, other impervious features).*

Residential buildings, internal private driveways, private street and public frontage work

*c. List/describe proposed pervious features of the project (e.g., landscape areas):*  
Vegetated slopes, flat pervious areas and BMP

*d. Does the project include grading and changes to site topography?* ☒ **Yes** ☐ **No**  
*If yes, describe below.*



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

The proposed project involves grading operations to prepare the site for residential development. To accommodate the new homes, fill material will be imported to create level, stable building pads across the property. This earthwork also establishes the necessary elevations and alignments for a new private cul-de-sac, complete with standard frontage improvements including sidewalks, curbs, and gutters. By modifying the existing surface contours, the site topography is appropriately adapted for the planned residential use and safe vehicular access.

In addition to preparing the building pads, the site's topography is specifically contoured to safely manage stormwater runoff in strict compliance with County standards. Surface flows are directed away from the residential structures using graded swales and valley gutters, which route the water into a dedicated biofiltration planter box for required water quality treatment and flow mitigation. The final grading design maintains historical drainage patterns by ensuring all site runoff continues to flow toward the property's pre-existing natural low point.





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

#### 5.4 Description of Proposed Site Drainage

**A. Changes to Site Drainage --** Does the project include changes to site drainage (e.g., installation of new storm water conveyance systems)? ☒ **Yes** ☐ **No**

If **yes**:

- Describe (1) the proposed project site drainage conveyance network (including storm drains, concrete channels, swales, detention facilities, storm water treatment facilities, natural or constructed channels), and (2) the method for conveying offsite flows through or around the proposed project site.
- Identify all discharge locations from the proposed project site along with a summary of the conveyance system size and capacity for each of the discharge locations.
- Provide a summary of pre- and post-project drainage areas and design flows to each of the runoff discharge locations.

*Description (add pages as necessary to provide all requested information).*

The project includes controlled modifications to the internal site drainage conveyance system to accommodate the residential subdivision. The existing natural overland sheet flow will be replaced by a standard engineered stormwater conveyance network. This system utilizes typical residential surface improvements, including valley gutters and swales, to capture and route surface runoff away from the proposed building pads and street improvements. All onsite runoff from the project's drainage management area is directed into a proposed permanent structural biofiltration planter box for required water quality treatment and hydromodification flow control.

Despite these internal routing modifications, the project maintains the historical drainage pattern by utilizing a single, pre-existing discharge location. Mitigated flows from the biofiltration basin will discharge at the established natural low point at the southwest corner of the property. The treated water exits the site via a proposed storm drain outlet pipe equipped with a riprap energy dissipator, which reduces flow velocities and prevents downstream erosion.



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

## 6.0 General Requirements

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

| DMA Compliance Option                                                                                                                                                                                                 | Required Sub-attachments or Printouts                                                                                                                                                                                                                             | BMPDM Design Resources                                                                                                                                                                                |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <input type="checkbox"/> Self-mitigating                                                                                                                                                                              | <ul style="list-style-type: none"><li>Sub-attachment 6.1</li></ul>                                                                                                                                                                                                | <ul style="list-style-type: none"><li>BMPDM Section 5.2.1</li></ul>                                                                                                                                   |
| <input type="checkbox"/> De minimis                                                                                                                                                                                   | <ul style="list-style-type: none"><li>Sub-attachment 6.2</li></ul>                                                                                                                                                                                                | <ul style="list-style-type: none"><li>BMPDM Section 5.2.2</li></ul>                                                                                                                                   |
| <input checked="" type="checkbox"/> Self-retaining <sup>1</sup><br><br><b><u>SSD-BMP Type(s)</u></b><br><br><input checked="" type="checkbox"/> Impervious Area Dispersion<br><br><input type="checkbox"/> Tree Wells | <ul style="list-style-type: none"><li>Sub-attachment 6.3</li><li>DCV calculations from SSD-BMP tool</li><li>Dispersion Areas calculations from SSD-BMP tool</li><li>DCV calculations from SSD-BMP tool</li><li>Tree Well calculations from SSD-BMP tool</li></ul> | <ul style="list-style-type: none"><li>BMPDM Section 5.2.3 (all options)</li><li>Fact Sheet SD-B (Appendix E.8)</li><li>Appendix I</li><li>Fact Sheet SD-A (Appendix E.7)</li><li>Appendix I</li></ul> |

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

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

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

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

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

| DMA # | a. DMA Area (ft <sup>2</sup> ) | Incidental Impervious Area |                | Permit # and Sheet # |
|-------|--------------------------------|----------------------------|----------------|----------------------|
|       |                                | b. Size(ft <sup>2</sup> )  | c. % (b/a*100) |                      |
|       |                                |                            |                |                      |
|       |                                |                            |                |                      |
|       |                                |                            |                |                      |
|       |                                |                            |                |                      |
|       |                                |                            |                |                      |
|       |                                |                            |                |                      |
|       |                                |                            |                |                      |
|       |                                |                            |                |                      |
|       |                                |                            |                |                      |

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

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

### Natural and Landscaped Areas

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

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

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

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

### Incidental Impervious Areas (if applicable; see above)

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

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

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

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

---

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

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

| <i><b>DMA #</b></i> | <i><b>DMA Area<br/>(ft<sup>2</sup>)</b></i> | <i><b>Permit # and Sheet #</b></i> |
|---------------------|---------------------------------------------|------------------------------------|
|                     |                                             |                                    |
|                     |                                             |                                    |
|                     |                                             |                                    |
|                     |                                             |                                    |
|                     |                                             |                                    |
|                     |                                             |                                    |
|                     |                                             |                                    |
|                     |                                             |                                    |
|                     |                                             |                                    |
|                     |                                             |                                    |

- “DMA #”, “DMA Area”, and “Permit # and Sheet #” are required.
- Check the boxes below to confirm that each required condition is satisfied for ALL de minimis DMAs on the site.
  - ☐ Each DMA listed is less than 250 square feet and not adjacent or hydraulically connected to each other.
  - ☐ Each DMA listed fully satisfies all design requirements and restrictions described in BMPDM Section 5.2.2 De Minimis DMAs.

### 6.3 Self-retaining DMAs using Significant Site Design BMPs

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

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

| DMA # | DMA Area (ft <sup>2</sup> ) | BMP Type (choose one per DMA)       |                          | Permit # and Sheet #                |
|-------|-----------------------------|-------------------------------------|--------------------------|-------------------------------------|
|       |                             | Dispersion Area (Att. 6.3.1)        | Tree Wells (Att. 6.3.2)  |                                     |
| 2     | 7,165                       | <input checked="" type="checkbox"/> | <input type="checkbox"/> | PDS2022-TM-5648 (See attachment 13) |
|       |                             | <input type="checkbox"/>            | <input type="checkbox"/> |                                     |
|       |                             | <input type="checkbox"/>            | <input type="checkbox"/> |                                     |
|       |                             | <input type="checkbox"/>            | <input type="checkbox"/> |                                     |
|       |                             | <input type="checkbox"/>            | <input type="checkbox"/> |                                     |
|       |                             | <input type="checkbox"/>            | <input type="checkbox"/> |                                     |
|       |                             | <input type="checkbox"/>            | <input type="checkbox"/> |                                     |
|       |                             | <input type="checkbox"/>            | <input type="checkbox"/> |                                     |
|       |                             | <input type="checkbox"/>            | <input type="checkbox"/> |                                     |
|       |                             | <input type="checkbox"/>            | <input type="checkbox"/> |                                     |
|       |                             | <input type="checkbox"/>            | <input type="checkbox"/> |                                     |
|       |                             | <input type="checkbox"/>            | <input type="checkbox"/> |                                     |
|       |                             | <input type="checkbox"/>            | <input type="checkbox"/> |                                     |
|       |                             | <input type="checkbox"/>            | <input type="checkbox"/> |                                     |
|       |                             | <input type="checkbox"/>            | <input type="checkbox"/> |                                     |
|       |                             | <input type="checkbox"/>            | <input type="checkbox"/> |                                     |

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

### 6.3.1 Self-retaining DMAs with Impervious Dispersion Areas

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

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

## **Summary Sheet for Self-retaining DMAs with Impervious Area Dispersion**

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Attach Printouts from SSD-BMP tool below

- DCV calculations from SSD-BMP tool
- Dispersion Areas calculations from SSD-BMP tool

See attachment 13

### 6.3.2 Self-retaining DMAs with Tree Wells

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

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

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

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



## **Summary Sheet for Self-retaining DMAs with Tree Wells**

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Attach Printouts from SSD-BMP tool below

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



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

## 7.0 General Requirements

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

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

## 7.1 Engineer of Work Certification for Structural BMPs

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**Project Name** Montiel Road  
**Permit Application Number** PDS2022-TM-5648

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### CERTIFICATION

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

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

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

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

Daya Bettadapura

Print Name

ABI Engineering Consultants, Inc.

Company

03/11/2026

Date

Engineer's Seal:



## 7.2 Structural BMP Strategy

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

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

The overall structural BMP for the Montiel Road residential subdivision is to manage all onsite runoff through a single, comprehensive treatment facility. The developed project area has been delineated as a single Drainage Management Area (DMA). Runoff from proposed impervious surfaces is conveyed via engineered surface improvements (valley gutters and swales) to the property's natural low point at the southwest corner of the site.

In accordance with Section 5.1 of the BMP Design Manual, the project evaluated the structural BMP selection. While the underlying native soils possess adequate infiltration rates, full retention and unlined infiltration were determined to be physically infeasible due to the required setbacks and the high risk of lateral seepage negatively impacting adjacent property foundations. Consequently, the project implements a Lined Biofiltration facility (a concrete-sided and concrete-bottomed planter box) as the designated structural BMP.

Pollutant control and hydromodification flow control are fully integrated into this single structural BMP. For pollutant control, the Lined Biofiltration Planter Box is sized to capture and filter the requisite water quality design volume. Stormwater percolates through an engineered soil media layer to effectively remove target pollutants before reaching the impermeable concrete bottom and underdrain system.

Simultaneously, the facility provides hydromodification management by actively detaining larger storm volumes and restricting the outlet flow rate. By routing the site's runoff through this integrated planter box, the unmitigated 100-year peak flow of 5.69 cfs is successfully reduced to a controlled post-project release of 2.45 cfs. The treated and mitigated water is then safely discharged offsite via a proposed storm drain outfall equipped with a riprap energy dissipator. This integrated strategy satisfies all County pollutant and flow-control requirements while protecting downstream properties from erosion and preserving the historical drainage pattern.

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

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

| BMP ID # | DMA # | DMA Area (ft <sup>2</sup> ) | Structural BMP Type      |                          |                          |                                     |                          |                                           |                          |   | Permit # and Sheet # |
|----------|-------|-----------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|-------------------------------------------|--------------------------|---|----------------------|
|          |       |                             | Harvest and Use          | Infiltration             | Unlined Biofiltration    | Lined Biofiltration                 | Flow-thru treatment      | Hydromodification Management <sup>1</sup> | Other                    |   |                      |
| 1        | 1     |                             | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/>       | <input type="checkbox"/> | 2 |                      |
| 1        | 2     |                             | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/>       | <input type="checkbox"/> | 2 |                      |
| 1        | 3     |                             | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/>       | <input type="checkbox"/> | 2 |                      |
| 1        | 4     |                             | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/>       | <input type="checkbox"/> | 2 |                      |
|          |       |                             | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/>                  | <input type="checkbox"/> |   |                      |
|          |       |                             | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/>                  | <input type="checkbox"/> |   |                      |
|          |       |                             | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/>                  | <input type="checkbox"/> |   |                      |
|          |       |                             | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/>                  | <input type="checkbox"/> |   |                      |
|          |       |                             | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/>                  | <input type="checkbox"/> |   |                      |
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|          |       |                             | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/>                  | <input type="checkbox"/> |   |                      |
|          |       |                             | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/>                  | <input type="checkbox"/> |   |                      |
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|          |       |                             | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/>                  | <input type="checkbox"/> |   |                      |
|          |       |                             | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/>                  | <input type="checkbox"/> |   |                      |
|          |       |                             | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/>                  | <input type="checkbox"/> |   |                      |
|          |       |                             | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/>                  | <input type="checkbox"/> |   |                      |
|          |       |                             | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/>                  | <input type="checkbox"/> |   |                      |
|          |       |                             | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/>                  | <input type="checkbox"/> |   |                      |
|          |       |                             | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/>                  | <input type="checkbox"/> |   |                      |
|          |       |                             | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/>                  | <input type="checkbox"/> |   |                      |
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|          |       |                             | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/>                  | <input type="checkbox"/> |   |                      |
|          |       |                             | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/>                  | <input type="checkbox"/> |   |                      |
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|          |       |                             | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/>                  | <input type="checkbox"/> |   |                      |
|          |       |                             | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/>                  | <input type="checkbox"/> |   |                      |
|          |       |                             | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/>                  | <input type="checkbox"/> |   |                      |
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|          |       |                             | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/>                  | <input type="checkbox"/> |   |                      |
|          |       |                             | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/>                  | <input type="checkbox"/> |   |                      |
|          |       |                             | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/>                  | <input type="checkbox"/> |   |                      |
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|          |       |                             | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/>                  | <input type="checkbox"/> |   |                      |
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|          |       |                             | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/>                  | <input type="checkbox"/> |   |                      |
|          |       |                             | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/>                  | <input type="checkbox"/> |   |                      |
|          |       |                             | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/>                  | <input type="checkbox"/> |   |                      |
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|          |       |                             | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/>                  | <input type="checkbox"/> |   |                      |
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|          |       |                             | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/>                  | <input type="checkbox"/> |   |                      |
|          |       |                             | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/>                  | <input type="checkbox"/> |   |                      |
|          |       |                             | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/>                  | <input type="checkbox"/> |   |                      |
|          |       |                             | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/>                  | <input type="checkbox"/> |   |                      |
|          |       |                             | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/>                  | <input type="checkbox"/> |   |                      |
|          |       |                             | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/>                  | <input type="checkbox"/> |   |                      |
|          |       |                             | <input type="checkbox"/> | <input type="checkbox"/> |                          |                                     |                          |                                           |                          |   |                      |

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

|                                                                                                                                                                                                                        |                                                                                       |                                                                                                                                                                                                                                                                                                                                                                              |                                 |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|
| <b>Structural BMP ID #</b> 1                                                                                                                                                                                           |                                                                                       | <b>Permit # and Sheet #</b> 2                                                                                                                                                                                                                                                                                                                                                |                                 |
| <b>BMP Type</b>                                                                                                                                                                                                        |                                                                                       |                                                                                                                                                                                                                                                                                                                                                                              |                                 |
| <b>Infiltration</b><br><input type="checkbox"/> Infiltration basin (INF-1)<br><input checked="" type="checkbox"/> Bioretention (INF-2)<br><input type="checkbox"/> Permeable pavement (INF-3)                          |                                                                                       | <b>Harvest and Use</b><br><input type="checkbox"/> Cistern (HU-1)<br><b>Flow-thru Treatment</b> (describe below)<br><input type="checkbox"/> With prior lawful approval to meet earlier PDP requirements<br><input type="checkbox"/> Pre-treatment/forebay for an onsite retention or biofiltration BMP <sup>2</sup><br><input type="checkbox"/> With alternative compliance |                                 |
| <b>Unlined Biofiltration</b><br><input type="checkbox"/> Biofiltration with partial retention (PR-1)                                                                                                                   |                                                                                       | <b>Hydromodification Management</b> <sup>3</sup><br><input checked="" type="checkbox"/> Detention pond or vault<br><input type="checkbox"/> <b>Other</b> (describe below)                                                                                                                                                                                                    |                                 |
| <b>Lined Biofiltration</b><br><input checked="" type="checkbox"/> Biofiltration (BF-1)<br><input type="checkbox"/> Nutrient Sensitive Media Design (BF-2)<br><input type="checkbox"/> Proprietary Biofiltration (BF-3) |                                                                                       |                                                                                                                                                                                                                                                                                                                                                                              |                                 |
| <b>BMP Purpose</b>                                                                                                                                                                                                     |                                                                                       |                                                                                                                                                                                                                                                                                                                                                                              |                                 |
| <input type="checkbox"/> Pollutant control only<br><input type="checkbox"/> Hydromodification control only<br><input checked="" type="checkbox"/> Combined pollutant control and hydromodification                     |                                                                                       | <input type="checkbox"/> Pre-treatment/forebay for another BMP<br><input type="checkbox"/> Green Street BMP<br><input type="checkbox"/> Other (describe below)                                                                                                                                                                                                               |                                 |
| <b>BMP Verification</b> (See BMPDM Section 8.3)                                                                                                                                                                        |                                                                                       |                                                                                                                                                                                                                                                                                                                                                                              |                                 |
| Provide name and contact information for the party responsible to sign BMP verification forms                                                                                                                          |                                                                                       | Daya Bettadapura<br><a href="mailto:dayab@abieng.net">dayab@abieng.net</a><br>(888) 220-5596                                                                                                                                                                                                                                                                                 |                                 |
| <b>BMP Ownership and Maintenance</b> (See BMPDM Section 7.3 and Attachment 11)                                                                                                                                         |                                                                                       |                                                                                                                                                                                                                                                                                                                                                                              |                                 |
| BMP Maintenance Category                                                                                                                                                                                               | Cat. 1                                                                                | Cat. 2                                                                                                                                                                                                                                                                                                                                                                       | Cat. 3                          |
|                                                                                                                                                                                                                        | <input type="checkbox"/>                                                              | <input checked="" type="checkbox"/>                                                                                                                                                                                                                                                                                                                                          | <input type="checkbox"/>        |
| Final owner of BMP                                                                                                                                                                                                     | <input checked="" type="checkbox"/> HOA<br><input type="checkbox"/> Other (describe): | <input type="checkbox"/> Property Owner                                                                                                                                                                                                                                                                                                                                      | <input type="checkbox"/> County |
| Maintenance of BMP into perpetuity                                                                                                                                                                                     | <input checked="" type="checkbox"/> HOA<br><input type="checkbox"/> Other (describe): | <input type="checkbox"/> Property Owner                                                                                                                                                                                                                                                                                                                                      | <input type="checkbox"/> County |
| <b>Discussion</b> (As needed; Continue on subsequent pages as necessary)                                                                                                                                               |                                                                                       |                                                                                                                                                                                                                                                                                                                                                                              |                                 |

Copy and Paste table here for additional BMPs

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

<sup>3</sup> Hydromodification Management BMPs must be accompanied by BMPs that provide pollutant control.

## 7.4 Storm Water Pollutant Control Worksheet Calculations

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

| Worksheet                                                                                    | Requirement   |
|----------------------------------------------------------------------------------------------|---------------|
| <input checked="" type="checkbox"/> Worksheet B.1 Calculation of Design Capture Volume (DCV) | Required      |
| <input checked="" type="checkbox"/> Worksheet B.2 Retention Requirements                     | Required      |
| <input checked="" type="checkbox"/> Worksheet B.3 BMP Performance                            | Required      |
| <input type="checkbox"/> Worksheet B.4 Major Maintenance Intervals for Reduced-sized BMPs    | If applicable |
| <input type="checkbox"/> Other worksheets                                                    | As required   |

## County of San Diego Automated Stormwater Pollutant Control Worksheets (Version 2.0)

### **WELCOME:**

Welcome to the County of San Diego Automated Stormwater Pollutant Control Worksheets. These worksheets may be used to demonstrate compliance with stormwater pollutant control standards set forth in the 2013 MS4 Permit for Priority Development Projects and Green Street Projects.

### **INSTRUCTIONS:**

**General:** To use this workbook, navigate to each of the worksheet tabs below and populate all yellow cells with project specific information. Yellow cells require user input, white cells are locked for editing and are automatically calculated, blue cells are also locked for editing and are automatically populated based on results from previous worksheet tabs, grey cells are items that do not require user input because of previous user inputs, orange cells represent warnings where supplemental information and/or revisions may be required for compliance. The worksheets are formatted to accommodate calculations for up to 10 drainage areas and associated BMPs. Each drainage area and BMP is represented as a discrete column with corresponding user inputs and calculations appearing in the rows below. Please note that projects with more than 10 drainage areas may need to use more than one workbook to accommodate the entire project.

**Step 1. DCV:** Provide the required inputs to determine the design capture volume for each PDP drainage area. The calculations in this worksheet determine the initial design capture volume and also apply any applicable reductions associated with site design techniques including dispersion to pervious surfaces, incorporation of tree wells, and incorporation of rain barrels.

**Step 2. Retention Requirements:** Provide required inputs to determine the minimum retention requirements for each drainage area.

**Step 3. BMP Performance:** Provide required inputs to determine the portion of the pollutant control performance standards that are satisfied by the proposed BMPs.

**Reduced Size BMP Maintenance (optional):** If BMPs with a footprint of less than 3% of the effective impervious tributary are proposed, provide required inputs to determine the anticipated frequency for major BMP maintenance activities.

### **DISCLAIMER:**

The County of San Diego has developed this tool in an effort to streamline traditionally complex efforts associated with planning, design, submittal, and review of PDPs that are subject to stormwater pollutant control requirements set forth in the 2013 MS4 Permit. While the calculations performed herein are deemed to be in compliance with Permit requirements, applicants may elect to provide their own calculations. Use of this tool is optional and the County will not be held liable for any errors or other negative impacts associated with its use. In the event that the County performs updates to these worksheets, applicants that have not established reliance on previous versions of the worksheet via discretionary approval may be required to utilize the latest version of the worksheets. A summary of version releases is included below.

### **QUESTIONS:**

-Questions relating to specific projects, submittal requirements, approval process, and/or policy-related issues should be directed your PDS Land Development Project Manager (link below).

[PDS Land Development Project Manager](#)

-General questions/comments on this worksheet may be directed to Charles Mohrlock in the County of San Diego Watershed Protection Program (link below).

[charles.mohrlock@sdcounty.ca.gov](mailto:charles.mohrlock@sdcounty.ca.gov)



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

| Category                                                               | #                        | Description                                                                       | <i>i</i> | <i>ii</i> | <i>iii</i> | <i>iv</i> | <i>v</i> | <i>vi</i> | <i>vii</i> | <i>viii</i> | <i>ix</i> | <i>x</i> | Units      |
|------------------------------------------------------------------------|--------------------------|-----------------------------------------------------------------------------------|----------|-----------|------------|-----------|----------|-----------|------------|-------------|-----------|----------|------------|
| Standard<br>Drainage Basin<br>Inputs                                   | 1                        | Drainage Basin ID or Name                                                         | 1        |           |            |           |          |           |            |             |           |          | unitless   |
|                                                                        | 2                        | 85th Percentile 24-hr Storm Depth                                                 | 0.81     |           |            |           |          |           |            |             |           |          | inches     |
|                                                                        | 3                        | Impervious Surfaces <u>Not Directed to Dispersion Area</u> (C=0.90)               | 43,890   |           |            |           |          |           |            |             |           |          | sq-ft      |
|                                                                        | 4                        | Semi-Pervious Surfaces <u>Not Serving as Dispersion Area</u> (C=0.30)             |          |           |            |           |          |           |            |             |           |          | sq-ft      |
|                                                                        | 5                        | Engineered Pervious Surfaces <u>Not Serving as Dispersion Area</u> (C=0.10)       | 40,290   |           |            |           |          |           |            |             |           |          | sq-ft      |
|                                                                        | 6                        | Natural Type A Soil <u>Not Serving as Dispersion Area</u> (C=0.10)                |          |           |            |           |          |           |            |             |           |          | sq-ft      |
|                                                                        | 7                        | Natural Type B Soil <u>Not Serving as Dispersion Area</u> (C=0.14)                |          |           |            |           |          |           |            |             |           |          | sq-ft      |
|                                                                        | 8                        | Natural Type C Soil <u>Not Serving as Dispersion Area</u> (C=0.23)                |          |           |            |           |          |           |            |             |           |          | sq-ft      |
|                                                                        | 9                        | Natural Type D Soil <u>Not Serving as Dispersion Area</u> (C=0.30)                |          |           |            |           |          |           |            |             |           |          | sq-ft      |
| Dispersion<br>Area, Tree Well<br>& Rain Barrel<br>Inputs<br>(Optional) | 10                       | Does Tributary Incorporate Dispersion, Tree Wells, and/or Rain Barrels?           | No       | No        | No         | No        | No       | No        | No         | No          | No        | No       | yes/no     |
|                                                                        | 11                       | Impervious Surfaces <b>Directed to Dispersion Area</b> per SD-B (Ci=0.90)         |          |           |            |           |          |           |            |             |           |          | sq-ft      |
|                                                                        | 12                       | Semi-Pervious Surfaces <b>Serving as Dispersion Area</b> per SD-B (Ci=0.30)       |          |           |            |           |          |           |            |             |           |          | sq-ft      |
|                                                                        | 13                       | Engineered Pervious Surfaces <b>Serving as Dispersion Area</b> per SD-B (Ci=0.10) |          |           |            |           |          |           |            |             |           |          | sq-ft      |
|                                                                        | 14                       | Natural Type A Soil <b>Serving as Dispersion Area</b> per SD-B (Ci=0.10)          |          |           |            |           |          |           |            |             |           |          | sq-ft      |
|                                                                        | 15                       | Natural Type B Soil <b>Serving as Dispersion Area</b> per SD-B (Ci=0.14)          |          |           |            |           |          |           |            |             |           |          | sq-ft      |
|                                                                        | 16                       | Natural Type C Soil <b>Serving as Dispersion Area</b> per SD-B (Ci=0.23)          |          |           |            |           |          |           |            |             |           |          | sq-ft      |
|                                                                        | 17                       | Natural Type D Soil <b>Serving as Dispersion Area</b> per SD-B (Ci=0.30)          |          |           |            |           |          |           |            |             |           |          | sq-ft      |
|                                                                        | 18                       | Number of Tree Wells Proposed per SD-A                                            |          |           |            |           |          |           |            |             |           |          | #          |
|                                                                        | 19                       | Average Mature Tree Canopy Diameter                                               |          |           |            |           |          |           |            |             |           |          | ft         |
|                                                                        | 20                       | Number of Rain Barrels Proposed per SD-E                                          |          |           |            |           |          |           |            |             |           |          | #          |
| 21                                                                     | Average Rain Barrel Size |                                                                                   |          |           |            |           |          |           |            |             |           | gal      |            |
| Initial Runoff<br>Factor<br>Calculation                                | 22                       | Total Tributary Area                                                              | 84,180   | 0         | 0          | 0         | 0        | 0         | 0          | 0           | 0         | 0        | sq-ft      |
|                                                                        | 23                       | Initial Runoff Factor for Standard Drainage Areas                                 | 0.52     | 0.00      | 0.00       | 0.00      | 0.00     | 0.00      | 0.00       | 0.00        | 0.00      | 0.00     | unitless   |
|                                                                        | 24                       | Initial Runoff Factor for Dispersed & Dispersion Areas                            | 0.00     | 0.00      | 0.00       | 0.00      | 0.00     | 0.00      | 0.00       | 0.00        | 0.00      | 0.00     | unitless   |
|                                                                        | 25                       | Initial Weighted Runoff Factor                                                    | 0.52     | 0.00      | 0.00       | 0.00      | 0.00     | 0.00      | 0.00       | 0.00        | 0.00      | 0.00     | unitless   |
|                                                                        | 26                       | Initial Design Capture Volume                                                     | 2,955    | 0         | 0          | 0         | 0        | 0         | 0          | 0           | 0         | 0        | cubic-feet |
| Dispersion<br>Area<br>Adjustments                                      | 27                       | Total Impervious Area Dispersed to Pervious Surface                               | 0        | 0         | 0          | 0         | 0        | 0         | 0          | 0           | 0         | 0        | sq-ft      |
|                                                                        | 28                       | Total Pervious Dispersion Area                                                    | 0        | 0         | 0          | 0         | 0        | 0         | 0          | 0           | 0         | 0        | sq-ft      |
|                                                                        | 29                       | Ratio of Dispersed Impervious Area to Pervious Dispersion Area                    | n/a      | n/a       | n/a        | n/a       | n/a      | n/a       | n/a        | n/a         | n/a       | n/a      | ratio      |
|                                                                        | 30                       | Adjustment Factor for Dispersed & Dispersion Areas                                | 1.00     | 1.00      | 1.00       | 1.00      | 1.00     | 1.00      | 1.00       | 1.00        | 1.00      | 1.00     | ratio      |
|                                                                        | 31                       | Runoff Factor After Dispersion Techniques                                         | 0.52     | n/a       | n/a        | n/a       | n/a      | n/a       | n/a        | n/a         | n/a       | n/a      | unitless   |
|                                                                        | 32                       | Design Capture Volume After Dispersion Techniques                                 | 2,955    | 0         | 0          | 0         | 0        | 0         | 0          | 0           | 0         | 0        | cubic-feet |
| Tree & Barrel<br>Adjustments                                           | 33                       | Total Tree Well Volume Reduction                                                  | 0        | 0         | 0          | 0         | 0        | 0         | 0          | 0           | 0         | 0        | cubic-feet |
|                                                                        | 34                       | Total Rain Barrel Volume Reduction                                                | 0        | 0         | 0          | 0         | 0        | 0         | 0          | 0           | 0         | 0        | cubic-feet |
| Results                                                                | 35                       | Final Adjusted Runoff Factor                                                      | 0.52     | 0.00      | 0.00       | 0.00      | 0.00     | 0.00      | 0.00       | 0.00        | 0.00      | 0.00     | unitless   |
|                                                                        | 36                       | Final Effective Tributary Area                                                    | 43,774   | 0         | 0          | 0         | 0        | 0         | 0          | 0           | 0         | 0        | sq-ft      |
|                                                                        | 37                       | Initial Design Capture Volume Retained by Site Design Elements                    | 0        | 0         | 0          | 0         | 0        | 0         | 0          | 0           | 0         | 0        | cubic-feet |
|                                                                        | 38                       | Final Design Capture Volume Tributary to BMP                                      | 2,955    | 0         | 0          | 0         | 0        | 0         | 0          | 0           | 0         | 0        | cubic-feet |
| No Warning Messages                                                    |                          |                                                                                   |          |           |            |           |          |           |            |             |           |          |            |

[illegible]

|                     |
|---------------------|
| No Warning Messages |
|---------------------|

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

| Category                   | #  | Description                                                             | <i>i</i>   | <i>ii</i> | <i>iii</i> | <i>iv</i> | <i>v</i> | <i>vi</i> | <i>vii</i> | <i>viii</i> | <i>ix</i> | <i>x</i> | Units      |
|----------------------------|----|-------------------------------------------------------------------------|------------|-----------|------------|-----------|----------|-----------|------------|-------------|-----------|----------|------------|
| BMP Inputs                 | 1  | Drainage Basin ID or Name                                               | 1          | -         | -          | -         | -        | -         | -          | -           | -         | -        | sq-ft      |
|                            | 2  | Design Infiltration Rate Recommended                                    | 0.000      | -         | -          | -         | -        | -         | -          | -           | -         | -        | in/hr      |
|                            | 3  | Design Capture Volume Tributary to BMP                                  | 2,955      | -         | -          | -         | -        | -         | -          | -           | -         | -        | cubic-feet |
|                            | 4  | Is BMP Vegetated or Unvegetated?                                        | Vegetated  |           |            |           |          |           |            |             |           |          | unitless   |
|                            | 5  | Is BMP Impermeably Lined or Unlined?                                    | Lined      |           |            |           |          |           |            |             |           |          | unitless   |
|                            | 6  | Does BMP Have an Underdrain?                                            | Underdrain |           |            |           |          |           |            |             |           |          | unitless   |
|                            | 7  | Does BMP Utilize Standard or Specialized Media?                         | Standard   |           |            |           |          |           |            |             |           |          | unitless   |
|                            | 8  | Provided Surface Area                                                   | 2,408      |           |            |           |          |           |            |             |           |          | sq-ft      |
|                            | 9  | Provided Surface Ponding Depth                                          | 12         |           |            |           |          |           |            |             |           |          | inches     |
|                            | 10 | Provided Soil Media Thickness                                           | 24         |           |            |           |          |           |            |             |           |          | inches     |
|                            | 11 | Provided Gravel Thickness (Total Thickness)                             | 30         |           |            |           |          |           |            |             |           |          | inches     |
|                            | 12 | Underdrain Offset                                                       | 3          |           |            |           |          |           |            |             |           |          | inches     |
|                            | 13 | Diameter of Underdrain or Hydromod Orifice (Select Smallest)            | 0.89       |           |            |           |          |           |            |             |           |          | inches     |
|                            | 14 | Specialized Soil Media Filtration Rate                                  |            |           |            |           |          |           |            |             |           |          | in/hr      |
|                            | 15 | Specialized Soil Media Pore Space for Retention                         |            |           |            |           |          |           |            |             |           |          | unitless   |
|                            | 16 | Specialized Soil Media Pore Space for Biofiltration                     |            |           |            |           |          |           |            |             |           |          | unitless   |
|                            | 17 | Specialized Gravel Media Pore Space                                     |            |           |            |           |          |           |            |             |           |          | unitless   |
| Retention Calculations     | 18 | Volume Infiltrated Over 6 Hour Storm                                    | 0          | 0         | 0          | 0         | 0        | 0         | 0          | 0           | 0         | 0        | cubic-feet |
|                            | 19 | Ponding Pore Space Available for Retention                              | 0.00       | 1.00      | 1.00       | 1.00      | 1.00     | 1.00      | 1.00       | 1.00        | 1.00      | 1.00     | unitless   |
|                            | 20 | Soil Media Pore Space Available for Retention                           | 0.05       | 0.05      | 0.05       | 0.05      | 0.05     | 0.05      | 0.05       | 0.05        | 0.05      | 0.05     | unitless   |
|                            | 21 | Gravel Pore Space Available for Retention (Above Underdrain)            | 0.00       | 0.40      | 0.40       | 0.40      | 0.40     | 0.40      | 0.40       | 0.40        | 0.40      | 0.40     | unitless   |
|                            | 22 | Gravel Pore Space Available for Retention (Below Underdrain)            | 0.40       | 0.40      | 0.40       | 0.40      | 0.40     | 0.40      | 0.40       | 0.40        | 0.40      | 0.40     | unitless   |
|                            | 23 | Effective Retention Depth                                               | 2.40       | 0.00      | 0.00       | 0.00      | 0.00     | 0.00      | 0.00       | 0.00        | 0.00      | 0.00     | inches     |
|                            | 24 | Fraction of DCV Retained (Independent of Drawdown Time)                 | 0.16       | 0.00      | 0.00       | 0.00      | 0.00     | 0.00      | 0.00       | 0.00        | 0.00      | 0.00     | ratio      |
|                            | 25 | Calculated Retention Storage Drawdown Time                              | 120        | 0         | 0          | 0         | 0        | 0         | 0          | 0           | 0         | 0        | hours      |
|                            | 26 | Efficacy of Retention Processes                                         | 0.18       | 0.00      | 0.00       | 0.00      | 0.00     | 0.00      | 0.00       | 0.00        | 0.00      | 0.00     | ratio      |
|                            | 27 | Volume Retained by BMP (Considering Drawdown Time)                      | 535        | 0         | 0          | 0         | 0        | 0         | 0          | 0           | 0         | 0        | cubic-feet |
|                            | 28 | Design Capture Volume Remaining for Biofiltration                       | 2,420      | 0         | 0          | 0         | 0        | 0         | 0          | 0           | 0         | 0        | cubic-feet |
| Biofiltration Calculations | 29 | Max Hydromod Flow Rate through Underdrain                               | 0.0475     | 0.0000    | 0.0000     | 0.0000    | 0.0000   | 0.0000    | 0.0000     | 0.0000      | 0.0000    | 0.0000   | cfs        |
|                            | 30 | Max Soil Filtration Rate Allowed by Underdrain Orifice                  | 0.85       | 0.00      | 0.00       | 0.00      | 0.00     | 0.00      | 0.00       | 0.00        | 0.00      | 0.00     | in/hr      |
|                            | 31 | Soil Media Filtration Rate per Specifications                           | 5.00       | 5.00      | 5.00       | 5.00      | 5.00     | 5.00      | 5.00       | 5.00        | 5.00      | 5.00     | in/hr      |
|                            | 32 | Soil Media Filtration Rate to be used for Sizing                        | 0.85       | 0.00      | 0.00       | 0.00      | 0.00     | 0.00      | 0.00       | 0.00        | 0.00      | 0.00     | in/hr      |
|                            | 33 | Depth Biofiltered Over 6 Hour Storm                                     | 5.11       | 0.00      | 0.00       | 0.00      | 0.00     | 0.00      | 0.00       | 0.00        | 0.00      | 0.00     | inches     |
|                            | 34 | Ponding Pore Space Available for Biofiltration                          | 1.00       | 0.00      | 0.00       | 0.00      | 0.00     | 0.00      | 0.00       | 0.00        | 0.00      | 0.00     | unitless   |
|                            | 35 | Soil Media Pore Space Available for Biofiltration                       | 0.20       | 0.20      | 0.20       | 0.20      | 0.20     | 0.20      | 0.20       | 0.20        | 0.20      | 0.20     | unitless   |
|                            | 36 | Gravel Pore Space Available for Biofiltration (Above Underdrain)        | 0.40       | 0.40      | 0.40       | 0.40      | 0.40     | 0.40      | 0.40       | 0.40        | 0.40      | 0.40     | unitless   |
|                            | 37 | Effective Depth of Biofiltration Storage                                | 27.60      | 0.00      | 0.00       | 0.00      | 0.00     | 0.00      | 0.00       | 0.00        | 0.00      | 0.00     | inches     |
|                            | 38 | Drawdown Time for Surface Ponding                                       | 14         | 0         | 0          | 0         | 0        | 0         | 0          | 0           | 0         | 0        | hours      |
|                            | 39 | Drawdown Time for Effective Biofiltration Depth                         | 32         | 0         | 0          | 0         | 0        | 0         | 0          | 0           | 0         | 0        | hours      |
|                            | 40 | Total Depth Biofiltered                                                 | 32.71      | 0.00      | 0.00       | 0.00      | 0.00     | 0.00      | 0.00       | 0.00        | 0.00      | 0.00     | inches     |
|                            | 41 | Option 1 - Biofilter 1.50 DCV: Target Volume                            | 3,630      | 0         | 0          | 0         | 0        | 0         | 0          | 0           | 0         | 0        | cubic-feet |
|                            | 42 | Option 1 - Provided Biofiltration Volume                                | 3,630      | 0         | 0          | 0         | 0        | 0         | 0          | 0           | 0         | 0        | cubic-feet |
|                            | 43 | Option 2 - Store 0.75 DCV: Target Volume                                | 1,815      | 0         | 0          | 0         | 0        | 0         | 0          | 0           | 0         | 0        | cubic-feet |
|                            | 44 | Option 2 - Provided Storage Volume                                      | 1,815      | 0         | 0          | 0         | 0        | 0         | 0          | 0           | 0         | 0        | cubic-feet |
|                            | 45 | Portion of Biofiltration Performance Standard Satisfied                 | 1.00       | 0.00      | 0.00       | 0.00      | 0.00     | 0.00      | 0.00       | 0.00        | 0.00      | 0.00     | ratio      |
| Result                     | 46 | Do Site Design Elements and BMPs Satisfy Annual Retention Requirements? | Yes        | -         | -          | -         | -        | -         | -          | -           | -         | -        | yes/no     |
|                            | 47 | Overall Portion of Performance Standard Satisfied (BMP Efficacy Factor) | 1.00       | 0.00      | 0.00       | 0.00      | 0.00     | 0.00      | 0.00       | 0.00        | 0.00      | 0.00     | ratio      |
|                            | 48 | Deficit of Effectively Treated Stormwater                               | 0          | n/a       | n/a        | n/a       | n/a      | n/a       | n/a        | n/a         | n/a       | n/a      | cubic-feet |

### No Warning Messages

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

| Category                      | #  | Description                                                | <i>i</i> | <i>ii</i> | <i>iii</i> | <i>iv</i> | <i>v</i> | <i>vi</i> | <i>vii</i> | <i>viii</i> | <i>ix</i> | <i>x</i> | Units      |
|-------------------------------|----|------------------------------------------------------------|----------|-----------|------------|-----------|----------|-----------|------------|-------------|-----------|----------|------------|
| Drainage Basin Info           | 1  | Drainage Basin ID or Name                                  | -        | -         | -          | -         | -        | -         | -          | -           | -         | -        | unitless   |
|                               | 2  | Final Effective Tributary Area                             | -        | -         | -          | -         | -        | -         | -          | -           | -         | -        | sq-ft      |
|                               | 3  | Provided BMP Surface Area                                  | -        | -         | -          | -         | -        | -         | -          | -           | -         | -        | sq-ft      |
| Biofiltration Clogging Inputs | 4  | Average Annual Precipitation                               |          |           |            |           |          |           |            |             |           |          | inches     |
|                               | 5  | Load to Clog (default =2.0)                                |          |           |            |           |          |           |            |             |           |          | lb/sq-ft   |
|                               | 6  | TSS Pretreatment Efficacy                                  |          |           |            |           |          |           |            |             |           |          | yes/no     |
|                               | 7  | Percentage "Commercial"                                    |          |           |            |           |          |           |            |             |           |          | percentage |
|                               | 8  | Percentage "Education"                                     |          |           |            |           |          |           |            |             |           |          | percentage |
|                               | 9  | Percentage "Industrial"                                    |          |           |            |           |          |           |            |             |           |          | percentage |
|                               | 10 | Percentage "Low Traffic Areas"                             |          |           |            |           |          |           |            |             |           |          | percentage |
|                               | 11 | Percentage "Multi-Family Residential"                      |          |           |            |           |          |           |            |             |           |          | percentage |
|                               | 12 | Percentage "Roof Areas"                                    |          |           |            |           |          |           |            |             |           |          | percentage |
|                               | 13 | Percentage "Single Family Residential"                     |          |           |            |           |          |           |            |             |           |          | percentage |
|                               | 14 | Percentage "Transportation"                                |          |           |            |           |          |           |            |             |           |          | percentage |
|                               | 15 | Percentage "Vacant/Open Space"                             |          |           |            |           |          |           |            |             |           |          | percentage |
|                               | 16 | Percentage "Steep Hillslopes"                              |          |           |            |           |          |           |            |             |           |          | percentage |
| Result                        | 17 | Total Percentage of Above Land Uses                        | 0%       | 0%        | 0%         | 0%        | 0%       | 0%        | 0%         | 0%          | 0%        | 0%       | percentage |
|                               | 18 | Average TSS Concentration for Tributary After Pretreatment | 0        | 0         | 0          | 0         | 0        | 0         | 0          | 0           | 0         | 0        | mg/L       |
|                               | 19 | Average Annual Runoff Volume                               | 0        | 0         | 0          | 0         | 0        | 0         | 0          | 0           | 0         | 0        | cubic-feet |
|                               | 20 | Average Annual TSS Load                                    | 0        | 0         | 0          | 0         | 0        | 0         | 0          | 0           | 0         | 0        | lb/yr      |
|                               | 21 | Available Sediment Storage within BMP                      | 0        | 0         | 0          | 0         | 0        | 0         | 0          | 0           | 0         | 0        | lb         |
|                               | 22 | Anticipated Major Maintenance Frequency                    | -        | -         | -          | -         | -        | -         | -          | -           | -         | -        | years      |
| No Warning Messages           |    |                                                            |          |           |            |           |          |           |            |             |           |          |            |

## 7.5 Identification and Narrative of Receiving Water and Pollutants of Concern

- Complete this sub-attachment *only if flow-thru treatment BMPs are implemented onsite* in lieu of retention or biofiltration BMPs. Unless excepted because of a Prior Lawful Approval<sup>4</sup>, PDPs must also participate in an alternative compliance program<sup>5</sup>.

### A. General Description

Describe flow path of storm water from the project site discharge location(s), through urban storm conveyance systems as applicable, to receiving creeks, rivers, and lagoons as applicable, and ultimate discharge to the Pacific Ocean (or bay, lagoon, lake or reservoir, as applicable).

### B. Water Body Impairments and Priorities

List any 303(d) impaired water bodies<sup>6</sup> within the path of storm water from the project site to the Pacific Ocean (or bay, lagoon, lake or reservoir, as applicable), identify the pollutant(s)/stressor(s) causing impairment, and identify any TMDLs and/or Highest Priority Pollutants from the WQIP for the impaired water bodies:

| 303(d) Impaired Water Body | Pollutant(s)/Stressor(s) | TMDLs / WQIP               |
|----------------------------|--------------------------|----------------------------|
|                            |                          | Highest Priority Pollutant |
|                            |                          |                            |
|                            |                          |                            |
|                            |                          |                            |

### C. Identification of Project Site Pollutants

Identify pollutants expected from the project site based on all proposed use(s) of the site (see BMP Design Manual Appendix J.5)

| Pollutant                   | Not Applicable to the Project Site | Anticipated from the Project Site | Also a Receiving Water Pollutant of Concern |
|-----------------------------|------------------------------------|-----------------------------------|---------------------------------------------|
| Sediment                    | <input type="checkbox"/>           | <input type="checkbox"/>          | <input type="checkbox"/>                    |
| Nutrients                   | <input type="checkbox"/>           | <input type="checkbox"/>          | <input type="checkbox"/>                    |
| Heavy Metals                | <input type="checkbox"/>           | <input type="checkbox"/>          | <input type="checkbox"/>                    |
| Organic Compounds           | <input type="checkbox"/>           | <input type="checkbox"/>          | <input type="checkbox"/>                    |
| Trash & Debris              | <input type="checkbox"/>           | <input type="checkbox"/>          | <input type="checkbox"/>                    |
| Oxygen Demanding Substances | <input type="checkbox"/>           | <input type="checkbox"/>          | <input type="checkbox"/>                    |
| Oil & Grease                | <input type="checkbox"/>           | <input type="checkbox"/>          | <input type="checkbox"/>                    |
| Bacteria & Viruses          | <input type="checkbox"/>           | <input type="checkbox"/>          | <input type="checkbox"/>                    |
| Pesticides                  | <input type="checkbox"/>           | <input type="checkbox"/>          | <input type="checkbox"/>                    |

<sup>4</sup> See BMPDM Appendix L: Prior Lawful Approval Requirements and Guidance.

<sup>5</sup> See SWQMP Attachment 12 (Alternative Compliance Projects) and BMPDM Appendix J (Offsite Alternative Compliance Requirements and Guidance).

<sup>6</sup> The current list of Section 303(d) impaired water bodies can be found at:

[https://www.waterboards.ca.gov/water\\_issues/programs/tmdl/integrated2014\\_2016.shtml](https://www.waterboards.ca.gov/water_issues/programs/tmdl/integrated2014_2016.shtml)



## 8.0 General Requirements

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

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

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

## 8.1 Flow Control Facility Design

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



## **Purpose**

This project falls under the Priority Development Project (PDP) category and is required to manage hydromodification impacts due to the development. A hydromodification management plan is required for all PDPs to demonstrate that the project is designed to manage increases in runoff discharge rates and durations in the proposed condition. Increased flow rates and durations are likely to cause increased erosion of channel beds and banks, sediment pollutant generation, or other impacts to beneficial uses and stream habitat due to increased erosive force. The results of a hydromodification management analysis must comply with the following design criteria:

- Post-development flow rates and durations must not exceed pre-development flow rates and durations by more than 10 percent for flow rates ranging from 10 percent of the 2-year runoff event (0.1Q2) to the 10-year runoff event (Q10).
- Each PDP must avoid critical sediment yield areas identified by the optional WMAA, or implement measures that allow critical coarse sediment to be discharged to receiving waters, such that there is no net impact to the receiving water.

## **Hydromodification Analysis**

The hydromodification analysis is prepared utilizing continuous simulation of long-term rainfall records. San Diego Hydrology Model (SDHM) Version 3.1 developed by Clear Creek Solutions Inc., is used for this purpose. The following site-specific information is required to perform the simulation:

- Rainfall basin information for the project site. This information is included in the program.
- Hydraulic soil group at the project site: Hydrologic Soil Group B.
- Pre-development and post-project slope categories: Flat (0% - 5%).
- Drainage area tributary to BMP: 1.92 acres.
- Fraction of Q2 to Q10 for HMP control: 0.1Q2 to Q10.

## **Rainfall Station**

This site is located closest to the Escondido rainfall station. Therefore, continuous simulation is performed by utilizing the long-term rainfall records for this station.

## **Predevelopment Condition Scenario**

The site area tributary to the Point of Compliance (POC 1) was delineated according to site-specific topographic information. The drainage area in the predevelopment condition is 1.92 acres and is modeled as Natural Vegetation (NatVeg) on flat slopes. The underlying soil is comprised of hydrologic soil type B. POC 1 is located at the downstream end where runoff will be concentrated prior to discharging offsite.



### **Developed Condition (Mitigated) Scenario**

In the proposed condition, the drainage management area tributary to POC 1 remains 1.92 acres. Runoff from the impervious and pervious areas of the proposed development is directed to a structural BMP. This BMP is designed to control both pollutant and hydromodification impacts due to the development. Because the site conditions require a lined system, the runoff is routed to a Lined Biofiltration Planter Box (No Infiltration) equipped with an impermeable liner and an underdrain system.

#### **BMP #1:**

**Lined Biofiltration Planter Box** The runoff from the 1.92-acre DMA is directed to the Lined Biofiltration Planter Box for pollutant as well as hydromodification control. The facility is sized to provide continuous flow control by temporarily storing runoff within the surface ponding area, engineered soil, and gravel layers. A specialized underdrain orifice restricts the outflow to safely mimic pre-development flow durations as modeled in SDHM 3.1.

### **Conclusion**

A comparison of the pre-development and mitigated flow duration curves was conducted for 100 flow levels between the lower (0.1Q2) and the upper (Q10) flow thresholds. This study has demonstrated that the proposed HMP BMP provided for the site is adequate to meet the current HMP criteria. The comparison of these flows shows compliance with the hydromodification criteria as all results passed. See the attached results obtained from SDHM 3.1 and exhibits for further details.

**SDHM 3.1**

**PROJECT REPORT**

## *General Model Information*

Project Name: 25-062rev3  
Site Name: Montiel  
Site Address: 1434 Montiel Road  
City: Escondido  
Report Date: 4/8/2026  
Gage: ESCONDID  
Data Start: 10/01/1964  
Data End: 09/30/2004  
Timestep: Hourly  
Precip Scale: 1.000  
Version Date: 2021/06/28

## *POC Thresholds*

---

|                               |                          |
|-------------------------------|--------------------------|
| Low Flow Threshold for POC1:  | 10 Percent of the 2 Year |
| High Flow Threshold for POC1: | 10 Year                  |

---

## *Landuse Basin Data*

### *Predeveloped Land Use*

#### Basin 1

Bypass: No

GroundWater: No

Pervious Land Use      acre  
  B,NatVeg,Flat      1.94

Pervious Total      1.94

Impervious Land Use      acre

Impervious Total      0

Basin Total      1.94

Element Flows To:  
Surface      Interflow      Groundwater

## Mitigated Land Use

### Basin 1

Bypass: No

GroundWater: No

Pervious Land Use      acre  
B,NatVeg,Flat      0.94

Pervious Total      0.94

Impervious Land Use      acre  
IMPERVIOUS-FLAT      1

Impervious Total      1

Basin Total      1.94

Element Flows To:  
Surface      Interflow      Groundwater  
Surface Biofilter 1      Surface Biofilter 1

## *Routing Elements*

### *Predeveloped Routing*

## Mitigated Routing

### Biofilter 1

Bottom Length: 235.00 ft.  
 Bottom Width: 10.00 ft.  
 Material thickness of first layer: 0.25  
 Material type for first layer: Mulch  
 Material thickness of second layer: 1.5  
 Material type for second layer: ESM  
 Material thickness of third layer: 1.5  
 Material type for third layer: GRAVEL  
 Underdrain used  
 Underdrain Diameter (feet): 0.67  
 Orifice Diameter (in.): 0.89  
 Offset (in.): 3  
 Flow Through Underdrain (ac-ft.): 37.126  
 Total Outflow (ac-ft.): 40.2  
 Percent Through Underdrain: 92.35  
 Discharge Structure  
 Riser Height: 5.25 ft.  
 Riser Diameter: 12 in.  
 Orifice 1 Diameter: 0.1 in. Elevation: 0.75 ft.  
 Element Flows To:  
 Outlet 1                      Outlet 2

Biofilter Hydraulic Table

| Stage(feet) | Area(ac.) | Volume(ac-ft.) | Discharge(cfs) | Infilt(cfs) |
|-------------|-----------|----------------|----------------|-------------|
| 677.00      | 0.0539    | 0.0000         | 0.0000         | 0.0000      |
| 677.10      | 0.0539    | 0.0017         | 0.0000         | 0.0000      |
| 677.21      | 0.0539    | 0.0034         | 0.0000         | 0.0000      |
| 677.31      | 0.0539    | 0.0051         | 0.0000         | 0.0000      |
| 677.42      | 0.0539    | 0.0068         | 0.0000         | 0.0000      |
| 677.52      | 0.0539    | 0.0084         | 0.0000         | 0.0000      |
| 677.63      | 0.0539    | 0.0101         | 0.0000         | 0.0000      |
| 677.73      | 0.0539    | 0.0118         | 0.0000         | 0.0000      |
| 677.84      | 0.0539    | 0.0135         | 0.0000         | 0.0000      |
| 677.94      | 0.0539    | 0.0152         | 0.0000         | 0.0000      |
| 678.04      | 0.0539    | 0.0169         | 0.0000         | 0.0000      |
| 678.15      | 0.0539    | 0.0186         | 0.0000         | 0.0000      |
| 678.25      | 0.0539    | 0.0203         | 0.0017         | 0.0000      |
| 678.36      | 0.0539    | 0.0220         | 0.0025         | 0.0000      |
| 678.46      | 0.0539    | 0.0237         | 0.0043         | 0.0000      |
| 678.57      | 0.0539    | 0.0253         | 0.0051         | 0.0000      |
| 678.67      | 0.0539    | 0.0270         | 0.0065         | 0.0000      |
| 678.77      | 0.0539    | 0.0294         | 0.0071         | 0.0000      |
| 678.88      | 0.0539    | 0.0317         | 0.0082         | 0.0000      |
| 678.98      | 0.0539    | 0.0340         | 0.0087         | 0.0000      |
| 679.09      | 0.0539    | 0.0364         | 0.0091         | 0.0000      |
| 679.19      | 0.0539    | 0.0387         | 0.0093         | 0.0000      |
| 679.30      | 0.0539    | 0.0411         | 0.0101         | 0.0000      |
| 679.40      | 0.0539    | 0.0434         | 0.0116         | 0.0000      |
| 679.51      | 0.0539    | 0.0457         | 0.0132         | 0.0000      |
| 679.61      | 0.0539    | 0.0481         | 0.0148         | 0.0000      |
| 679.71      | 0.0539    | 0.0504         | 0.0163         | 0.0000      |
| 679.82      | 0.0539    | 0.0527         | 0.0177         | 0.0000      |

|        |        |        |        |        |
|--------|--------|--------|--------|--------|
| 679.92 | 0.0539 | 0.0551 | 0.0190 | 0.0000 |
| 680.03 | 0.0539 | 0.0574 | 0.0202 | 0.0000 |
| 680.13 | 0.0539 | 0.0598 | 0.0214 | 0.0000 |
| 680.24 | 0.0539 | 0.0621 | 0.0226 | 0.0000 |
| 680.25 | 0.0539 | 0.0624 | 0.0372 | 0.0000 |

Biofilter Hydraulic Table

| Stage(feet) | Area(ac.) | Volume(ac-ft.) | Discharge(cfs) | To Amended(cfs) | Infilt(cfs) |
|-------------|-----------|----------------|----------------|-----------------|-------------|
| 3.2500      | 0.0539    | 0.0624         | 0.0000         | 0.2720          | 0.0000      |
| 3.3544      | 0.0539    | 0.0680         | 0.0000         | 0.2720          | 0.0000      |
| 3.4588      | 0.0539    | 0.0737         | 0.0000         | 0.3552          | 0.0000      |
| 3.5632      | 0.0539    | 0.0793         | 0.0000         | 0.3741          | 0.0000      |
| 3.6676      | 0.0539    | 0.0849         | 0.0000         | 0.3930          | 0.0000      |
| 3.7720      | 0.0539    | 0.0906         | 0.0000         | 0.4120          | 0.0000      |
| 3.8764      | 0.0539    | 0.0962         | 0.0000         | 0.4309          | 0.0000      |
| 3.9808      | 0.0539    | 0.1018         | 0.0000         | 0.4498          | 0.0000      |
| 4.0852      | 0.0539    | 0.1075         | 0.0001         | 0.4688          | 0.0000      |
| 4.1896      | 0.0539    | 0.1131         | 0.0001         | 0.4877          | 0.0000      |
| 4.2940      | 0.0539    | 0.1187         | 0.0001         | 0.5066          | 0.0000      |
| 4.3984      | 0.0539    | 0.1244         | 0.0002         | 0.5256          | 0.0000      |
| 4.5027      | 0.0539    | 0.1300         | 0.0002         | 0.5445          | 0.0000      |
| 4.6071      | 0.0539    | 0.1356         | 0.0002         | 0.5634          | 0.0000      |
| 4.7115      | 0.0539    | 0.1412         | 0.0002         | 0.5823          | 0.0000      |
| 4.8159      | 0.0539    | 0.1469         | 0.0002         | 0.6013          | 0.0000      |
| 4.9203      | 0.0539    | 0.1525         | 0.0003         | 0.6202          | 0.0000      |
| 5.0247      | 0.0539    | 0.1581         | 0.0003         | 0.6391          | 0.0000      |
| 5.1291      | 0.0539    | 0.1638         | 0.0003         | 0.6581          | 0.0000      |
| 5.2335      | 0.0539    | 0.1694         | 0.0003         | 0.6770          | 0.0000      |
| 5.3379      | 0.0539    | 0.1750         | 0.0003         | 0.6959          | 0.0000      |
| 5.4423      | 0.0539    | 0.1807         | 0.0003         | 0.7148          | 0.0000      |
| 5.5467      | 0.0539    | 0.1863         | 0.0003         | 0.7338          | 0.0000      |
| 5.6511      | 0.0539    | 0.1919         | 0.0003         | 0.7527          | 0.0000      |
| 5.7555      | 0.0539    | 0.1976         | 0.0004         | 0.7716          | 0.0000      |
| 5.8599      | 0.0539    | 0.2032         | 0.0004         | 0.7906          | 0.0000      |
| 5.9643      | 0.0539    | 0.2088         | 0.0004         | 0.8095          | 0.0000      |
| 6.0687      | 0.0539    | 0.2145         | 0.0004         | 0.8284          | 0.0000      |
| 6.1731      | 0.0539    | 0.2201         | 0.0004         | 0.8474          | 0.0000      |
| 6.2775      | 0.0539    | 0.2257         | 0.0004         | 0.8663          | 0.0000      |
| 6.3819      | 0.0539    | 0.2314         | 0.0004         | 0.8852          | 0.0000      |
| 6.4863      | 0.0539    | 0.2370         | 0.0004         | 0.9041          | 0.0000      |
| 6.5907      | 0.0539    | 0.2426         | 0.0004         | 0.9231          | 0.0000      |
| 6.6951      | 0.0539    | 0.2483         | 0.0004         | 0.9420          | 0.0000      |
| 6.7995      | 0.0539    | 0.2539         | 0.0005         | 0.9609          | 0.0000      |
| 6.9038      | 0.0539    | 0.2595         | 0.0005         | 0.9799          | 0.0000      |
| 7.0082      | 0.0539    | 0.2652         | 0.0005         | 0.9988          | 0.0000      |
| 7.1126      | 0.0539    | 0.2708         | 0.0005         | 1.0177          | 0.0000      |
| 7.2170      | 0.0539    | 0.2764         | 0.0005         | 1.0367          | 0.0000      |
| 7.3214      | 0.0539    | 0.2820         | 0.0005         | 1.0556          | 0.0000      |
| 7.4258      | 0.0539    | 0.2877         | 0.0005         | 1.0745          | 0.0000      |
| 7.5302      | 0.0539    | 0.2933         | 0.0005         | 1.0934          | 0.0000      |
| 7.6346      | 0.0539    | 0.2989         | 0.0005         | 1.1124          | 0.0000      |
| 7.7390      | 0.0539    | 0.3046         | 0.0005         | 1.1313          | 0.0000      |
| 7.8434      | 0.0539    | 0.3102         | 0.0005         | 1.1502          | 0.0000      |
| 7.9478      | 0.0539    | 0.3158         | 0.0005         | 1.1692          | 0.0000      |
| 8.0522      | 0.0539    | 0.3215         | 0.0005         | 1.1881          | 0.0000      |
| 8.1566      | 0.0539    | 0.3271         | 0.0006         | 1.2070          | 0.0000      |
| 8.2610      | 0.0539    | 0.3327         | 0.0006         | 1.2260          | 0.0000      |
| 8.3654      | 0.0539    | 0.3384         | 0.0006         | 1.2449          | 0.0000      |



|        |        |        |        |        |        |
|--------|--------|--------|--------|--------|--------|
| 8.4698 | 0.0539 | 0.3440 | 0.0006 | 1.2638 | 0.0000 |
| 8.5742 | 0.0539 | 0.3496 | 0.2143 | 1.2827 | 0.0000 |
| 8.6786 | 0.0539 | 0.3553 | 0.7761 | 1.3017 | 0.0000 |
| 8.7830 | 0.0539 | 0.3609 | 1.4142 | 1.3206 | 0.0000 |
| 8.8874 | 0.0539 | 0.3665 | 1.9161 | 1.3395 | 0.0000 |
| 8.9918 | 0.0539 | 0.3722 | 2.1884 | 1.3585 | 0.0000 |
| 9.0962 | 0.0539 | 0.3778 | 2.4325 | 1.3774 | 0.0000 |
| 9.2005 | 0.0539 | 0.3834 | 2.6368 | 1.3963 | 0.0000 |
| 9.3049 | 0.0539 | 0.3891 | 2.8264 | 1.4152 | 0.0000 |
| 9.4093 | 0.0539 | 0.3947 | 3.0041 | 1.4342 | 0.0000 |
| 9.5000 | 0.0539 | 0.3996 | 3.1718 | 1.4506 | 0.0000 |

## Surface Biofilter 1

Element Flows To:

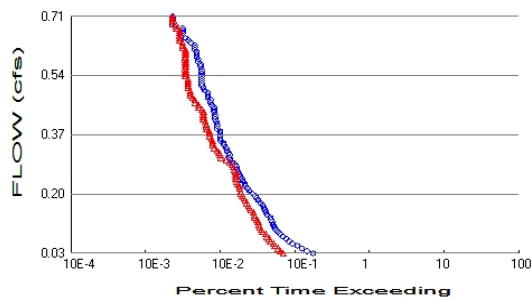
Outlet 1

Outlet 2

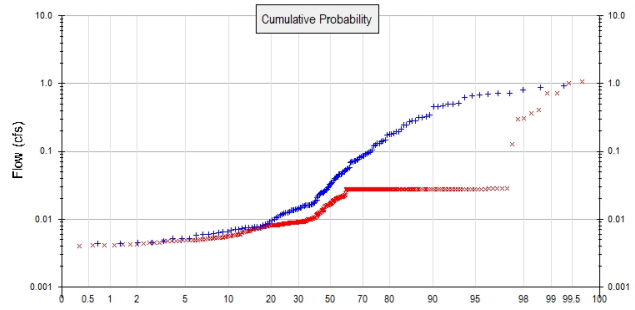
Biofilter 1

# Analysis Results

## POC 1



+ Predeveloped    x Mitigated



### Predeveloped Landuse Totals for POC #1

Total Pervious Area: 1.94  
Total Impervious Area: 0

### Mitigated Landuse Totals for POC #1

Total Pervious Area: 0.94  
Total Impervious Area: 1

Flow Frequency Method: Cunnane

### Flow Frequency Return Periods for Predeveloped. POC #1

| Return Period | Flow(cfs) |
|---------------|-----------|
| 2 year        | 0.282255  |
| 5 year        | 0.652671  |
| 10 year       | 0.714616  |
| 25 year       | 0.895149  |

### Flow Frequency Return Periods for Mitigated. POC #1

| Return Period | Flow(cfs) |
|---------------|-----------|
| 2 year        | 0.027781  |
| 5 year        | 0.257666  |
| 10 year       | 0.678885  |
| 25 year       | 1.015043  |

## Duration Flows

The Facility PASSED

| Flow(cfs) | Predev | Mit | Percentage | Pass/Fail |
|-----------|--------|-----|------------|-----------|
| 0.0282    | 613    | 246 | 40         | Pass      |
| 0.0352    | 507    | 224 | 44         | Pass      |
| 0.0421    | 437    | 208 | 47         | Pass      |
| 0.0490    | 380    | 190 | 50         | Pass      |
| 0.0560    | 323    | 182 | 56         | Pass      |
| 0.0629    | 291    | 165 | 56         | Pass      |
| 0.0698    | 269    | 159 | 59         | Pass      |
| 0.0768    | 242    | 149 | 61         | Pass      |
| 0.0837    | 224    | 143 | 63         | Pass      |
| 0.0906    | 210    | 129 | 61         | Pass      |
| 0.0976    | 193    | 125 | 64         | Pass      |
| 0.1045    | 189    | 119 | 62         | Pass      |
| 0.1114    | 180    | 115 | 63         | Pass      |
| 0.1184    | 173    | 113 | 65         | Pass      |
| 0.1253    | 169    | 110 | 65         | Pass      |
| 0.1322    | 165    | 102 | 61         | Pass      |
| 0.1392    | 150    | 100 | 66         | Pass      |
| 0.1461    | 144    | 98  | 68         | Pass      |
| 0.1530    | 139    | 90  | 64         | Pass      |
| 0.1600    | 135    | 87  | 64         | Pass      |
| 0.1669    | 131    | 84  | 64         | Pass      |
| 0.1738    | 122    | 80  | 65         | Pass      |
| 0.1808    | 114    | 76  | 66         | Pass      |
| 0.1877    | 108    | 73  | 67         | Pass      |
| 0.1946    | 105    | 70  | 66         | Pass      |
| 0.2016    | 94     | 67  | 71         | Pass      |
| 0.2085    | 88     | 66  | 75         | Pass      |
| 0.2154    | 82     | 64  | 78         | Pass      |
| 0.2224    | 76     | 64  | 84         | Pass      |
| 0.2293    | 75     | 61  | 81         | Pass      |
| 0.2362    | 72     | 58  | 80         | Pass      |
| 0.2432    | 69     | 57  | 82         | Pass      |
| 0.2501    | 65     | 57  | 87         | Pass      |
| 0.2570    | 63     | 57  | 90         | Pass      |
| 0.2640    | 61     | 57  | 93         | Pass      |
| 0.2709    | 59     | 55  | 93         | Pass      |
| 0.2778    | 58     | 53  | 91         | Pass      |
| 0.2848    | 56     | 51  | 91         | Pass      |
| 0.2917    | 51     | 47  | 92         | Pass      |
| 0.2986    | 48     | 42  | 87         | Pass      |
| 0.3056    | 47     | 36  | 76         | Pass      |
| 0.3125    | 47     | 35  | 74         | Pass      |
| 0.3194    | 45     | 34  | 75         | Pass      |
| 0.3264    | 43     | 32  | 74         | Pass      |
| 0.3333    | 42     | 29  | 69         | Pass      |
| 0.3402    | 40     | 28  | 70         | Pass      |
| 0.3472    | 39     | 28  | 71         | Pass      |
| 0.3541    | 36     | 28  | 77         | Pass      |
| 0.3610    | 35     | 27  | 77         | Pass      |
| 0.3680    | 35     | 25  | 71         | Pass      |
| 0.3749    | 35     | 25  | 71         | Pass      |
| 0.3818    | 35     | 25  | 71         | Pass      |
| 0.3888    | 32     | 23  | 71         | Pass      |

|        |    |    |     |      |
|--------|----|----|-----|------|
| 0.3957 | 32 | 23 | 71  | Pass |
| 0.4026 | 32 | 23 | 71  | Pass |
| 0.4096 | 31 | 22 | 70  | Pass |
| 0.4165 | 30 | 21 | 70  | Pass |
| 0.4234 | 30 | 21 | 70  | Pass |
| 0.4304 | 30 | 21 | 70  | Pass |
| 0.4373 | 29 | 21 | 72  | Pass |
| 0.4442 | 29 | 20 | 68  | Pass |
| 0.4512 | 29 | 18 | 62  | Pass |
| 0.4581 | 27 | 18 | 66  | Pass |
| 0.4650 | 26 | 16 | 61  | Pass |
| 0.4720 | 26 | 16 | 61  | Pass |
| 0.4789 | 24 | 15 | 62  | Pass |
| 0.4858 | 24 | 14 | 58  | Pass |
| 0.4928 | 24 | 14 | 58  | Pass |
| 0.4997 | 22 | 14 | 63  | Pass |
| 0.5066 | 21 | 13 | 61  | Pass |
| 0.5136 | 20 | 13 | 65  | Pass |
| 0.5205 | 20 | 13 | 65  | Pass |
| 0.5274 | 20 | 13 | 65  | Pass |
| 0.5344 | 20 | 13 | 65  | Pass |
| 0.5413 | 20 | 12 | 60  | Pass |
| 0.5482 | 20 | 12 | 60  | Pass |
| 0.5552 | 20 | 12 | 60  | Pass |
| 0.5621 | 20 | 12 | 60  | Pass |
| 0.5690 | 19 | 12 | 63  | Pass |
| 0.5760 | 19 | 12 | 63  | Pass |
| 0.5829 | 18 | 12 | 66  | Pass |
| 0.5898 | 18 | 12 | 66  | Pass |
| 0.5968 | 17 | 12 | 70  | Pass |
| 0.6037 | 17 | 12 | 70  | Pass |
| 0.6106 | 17 | 12 | 70  | Pass |
| 0.6176 | 16 | 12 | 75  | Pass |
| 0.6245 | 16 | 11 | 68  | Pass |
| 0.6314 | 16 | 11 | 68  | Pass |
| 0.6384 | 14 | 11 | 78  | Pass |
| 0.6453 | 13 | 10 | 76  | Pass |
| 0.6522 | 12 | 10 | 83  | Pass |
| 0.6592 | 11 | 10 | 90  | Pass |
| 0.6661 | 11 | 10 | 90  | Pass |
| 0.6730 | 11 | 10 | 90  | Pass |
| 0.6799 | 11 | 9  | 81  | Pass |
| 0.6869 | 9  | 9  | 100 | Pass |
| 0.6938 | 8  | 8  | 100 | Pass |
| 0.7007 | 8  | 8  | 100 | Pass |
| 0.7077 | 8  | 8  | 100 | Pass |
| 0.7146 | 8  | 8  | 100 | Pass |

## Water Quality

### Drawdown Time Results

Pond: Surface Biofilter 1

| <b>Days</b> | <b>Stage(feet)</b> | <b>Percent of Total Run Time</b> |
|-------------|--------------------|----------------------------------|
| 1           | N/A                | N/A                              |
| 2           | N/A                | N/A                              |
| 3           | N/A                | N/A                              |
| 4           | N/A                | N/A                              |
| 5           | N/A                | N/A                              |

Maximum Stage: 5.500 Drawdown Time: Less than 1 day

## *Model Default Modifications*

Total of 0 changes have been made.

### *PERLND Changes*

No PERLND changes have been made.

### *IMPLND Changes*

No IMPLND changes have been made.

# Appendix

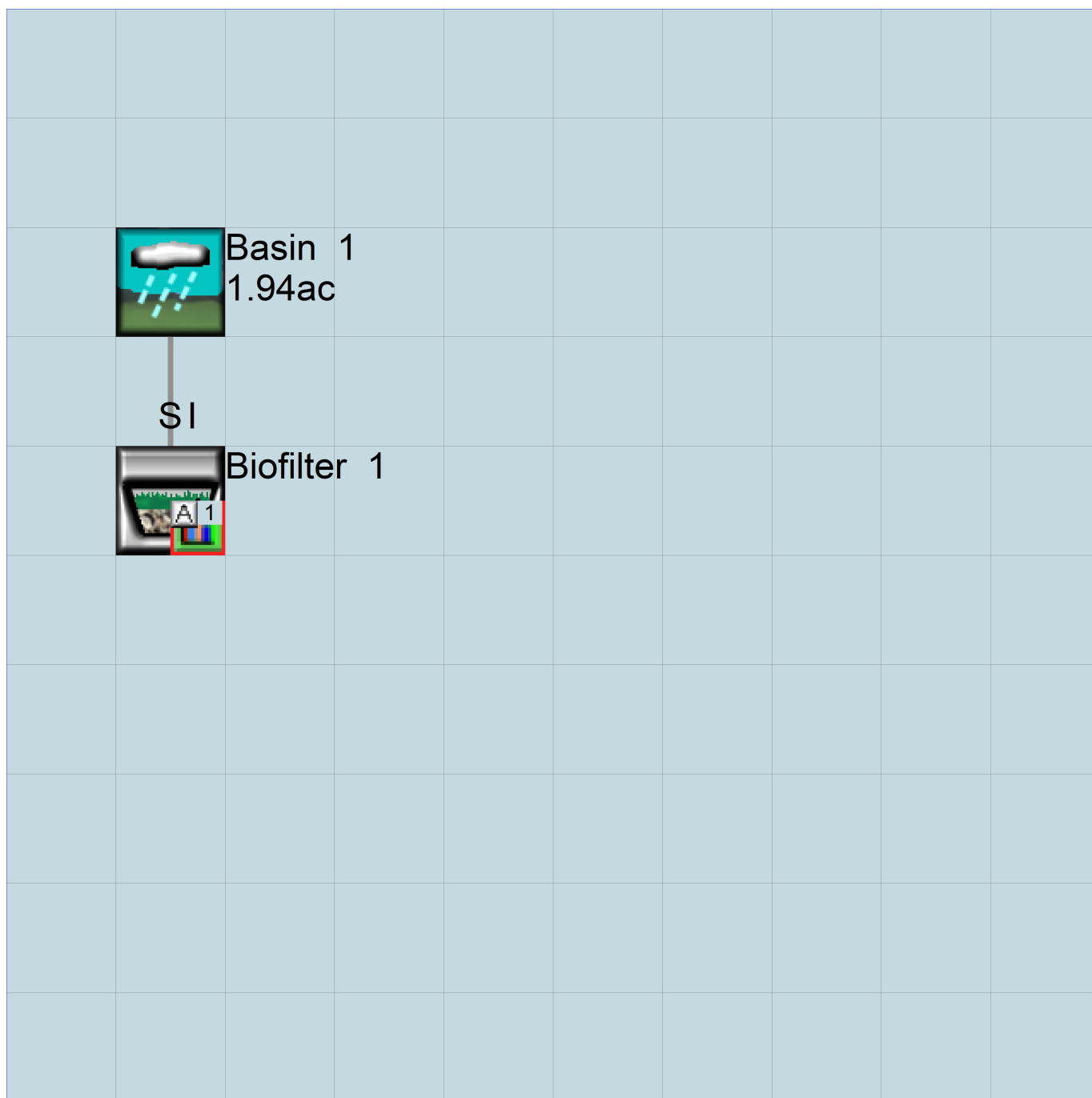
## Predeveloped Schematic



Basin 1  
1.94ac



## Mitigated Schematic





## Mitigated UCI File

RUN

GLOBAL

```
WWM4 model simulation
START      1964 10 01      END      2004 09 30
RUN INTERP OUTPUT LEVEL    3      0
RESUME     0 RUN      1
UNIT SYSTEM      1
END GLOBAL
```

FILES

```
<File> <Un#> <-----File Name----->***
<-ID->                                     ***
WDM      26      25-062rev3.wdm
MESSU    25      Mit25-062rev3.MES
          27      Mit25-062rev3.L61
          28      Mit25-062rev3.L62
          30      POC25-062rev31.dat
```

END FILES

OPN SEQUENCE

```
INGRP      INDELT 00:60
  PERLND      10
  IMPLND       1
  GENER       2
  RCHRES       1
  RCHRES       2
  COPY        1
  COPY      501
  DISPLY       1
```

END INGRP

END OPN SEQUENCE

DISPLY

DISPLY-INF01

```
# - #<-----Title----->***TRAN PIVL DIG1 FIL1 PYR DIG2 FIL2 YRND
1      Surface Biofilter 1      MAX      1      2      30      9
```

END DISPLY-INF01

END DISPLY

COPY

TIMESERIES

```
# - # NPT NMN ***
1      1      1
501    1      1
```

END TIMESERIES

END COPY

GENER

OPCODE

```
#      # OPCD ***
2      24
```

END OPCODE

PARM

```
#      #      K ***
2      0.
```

END PARM

END GENER

PERLND

GEN-INFO

```
<PLS ><-----Name----->NBLKS      Unit-systems      Printer ***
# - #      User      t-series      Engl Metr ***
          in      out
10      B,NatVeg,Flat      1      1      1      1      27      0
```

END GEN-INFO

\*\*\* Section PWATER\*\*\*

ACTIVITY

```
<PLS > ***** Active Sections *****
# - # ATMP SNOW PWAT SED PST PWG PQAL MSTL PEST NITR PHOS TRAC ***
10      0      0      1      0      0      0      0      0      0      0      0      0
```

END ACTIVITY

```

PRINT-INFO
<PLS > ***** Print-flags ***** PIVL  PYR
# - # ATMP SNOW PWAT SED PST PWG PQAL MSTL PEST NITR PHOS TRAC *****
10      0      0      4      0      0      0      0      0      0      0      0      0      1      9
END PRINT-INFO

PWAT-PARM1
<PLS > PWATER variable monthly parameter value flags ***
# - # CSNO RTOP UZFG VCS VUZ VNN VIFW VIRC VLE INFC HWT ***
10      0      1      1      1      0      0      0      0      1      1      0
END PWAT-PARM1

PWAT-PARM2
<PLS > PWATER input info: Part 2 ***
# - # ***FOREST LZSN INFILT LSUR SLSUR KVARY AGWRC
10      0      4      0.07      100      0.05      2.5      0.915
END PWAT-PARM2

PWAT-PARM3
<PLS > PWATER input info: Part 3 ***
# - # ***PETMAX PETMIN INFEXP INFILD DEEPFR BASETP AGWETP
10      0      0      2      2      0      0.05      0.05
END PWAT-PARM3

PWAT-PARM4
<PLS > PWATER input info: Part 4 ***
# - # CEPSC UZSN NSUR INTFW IRC LZETP ***
10      0      0.6      0.04      1      0.3      0
END PWAT-PARM4

MON-LZETPARM
<PLS > PWATER input info: Part 3 ***
# - # JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC ***
10      0.4      0.4      0.4      0.4      0.6      0.6      0.6      0.6      0.6      0.4      0.4      0.4
END MON-LZETPARM

MON-INTERCEP
<PLS > PWATER input info: Part 3 ***
# - # JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC ***
10      0.1      0.1      0.1      0.1      0.06      0.06      0.06      0.06      0.06      0.1      0.1      0.1
END MON-INTERCEP

PWAT-STATE1
<PLS > *** Initial conditions at start of simulation
ran from 1990 to end of 1992 (pat 1-11-95) RUN 21 ***
# - # *** CEPS SURS UZS IFWS LZS AGWS GWVS
10      0      0      0.01      0      0.4      0.01      0
END PWAT-STATE1

END PERLND

IMPLND
GEN-INFO
<PLS ><-----Name-----> Unit-systems Printer ***
# - # User t-series Engl Metr ***
in out
1 IMPERVIOUS-FLAT 1 1 1 27 0
END GEN-INFO
*** Section IWATER***

ACTIVITY
<PLS > ***** Active Sections *****
# - # ATMP SNOW IWAT SLD IWG IQAL ***
1      0      0      1      0      0      0
END ACTIVITY

PRINT-INFO
<ILS > ***** Print-flags ***** PIVL  PYR
# - # ATMP SNOW IWAT SLD IWG IQAL *****
1      0      0      4      0      0      0      1      9
END PRINT-INFO

```

```

IWAT-PARM1
<PLS > IWATER variable monthly parameter value flags ***
# - # CSNO RTOP VRS VNN RTLI ***
1 0 0 0 0 1
END IWAT-PARM1

IWAT-PARM2
<PLS > IWATER input info: Part 2 ***
# - # *** LSUR SLSUR NSUR RETSC
1 100 0.05 0.011 0.1
END IWAT-PARM2

IWAT-PARM3
<PLS > IWATER input info: Part 3 ***
# - # *** PETMAX PETMIN
1 0 0
END IWAT-PARM3

IWAT-STATE1
<PLS > *** Initial conditions at start of simulation
# - # *** RETS SURS
1 0 0
END IWAT-STATE1

END IMPLND

SCHEMATIC
<-Source-> <--Area--> <-Target-> MBLK ***
<Name> # <-factor-> <Name> # Tbl# ***
Basin 1***
PERLND 10 0.94 RCHRES 1 2
PERLND 10 0.94 RCHRES 1 3
IMPLND 1 1 RCHRES 1 5

*****Routing*****
PERLND 10 0.94 COPY 1 12
IMPLND 1 1 COPY 1 15
PERLND 10 0.94 COPY 1 13
RCHRES 1 1 RCHRES 2 8
RCHRES 2 1 COPY 501 16
RCHRES 1 1 COPY 501 17
END SCHEMATIC

NETWORK
<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Target vols> <-Grp> <-Member-> ***
<Name> # <Name> # #<-factor->strg <Name> # # <Name> # # ***
COPY 501 OUTPUT MEAN 1 1 12.1 DISPLY 1 INPUT TIMSER 1
GENER 2 OUTPUT TIMSER .0002778 RCHRES 1 EXTNL OUTDGT 1

<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Target vols> <-Grp> <-Member-> ***
<Name> # <Name> # #<-factor->strg <Name> # # <Name> # # ***
END NETWORK

RCHRES
GEN-INFO
RCHRES Name Nexits Unit Systems Printer ***
# - #<-----><----> User T-series Engl Metr LKFG ***
1 Surface Biofilte-004 2 1 1 1 28 0 1 ***
2 Biofilter 1 1 1 1 28 0 1 ***
END GEN-INFO
*** Section RCHRES***

ACTIVITY
<PLS > ***** Active Sections *****
# - # HYFG ADFG CNFG HTFG SDFG GQFG OXFG NUFG PKFG PHFG ***
1 1 0 0 0 0 0 0 0 0 0
2 1 0 0 0 0 0 0 0 0 0

```

```

END ACTIVITY

PRINT-INFO
<PLS > ***** Print-flags ***** PIVL  PYR
# - # HYDR ADCA CONS HEAT SED GQL OXRX NUTR PLNK PHCB PIVL  PYR  *****
1      4      0      0      0      0      0      0      0      0      0      1      9
2      4      0      0      0      0      0      0      0      0      0      1      9
END PRINT-INFO

HYDR-PARM1
RCHRES  Flags for each HYDR Section
# - # VC A1 A2 A3 ODFVFG for each possible exit *** ODGTFG for each possible exit *** FUNCT for each possible exit ***
      * * * * *
1      0  1  0  0      4  5  0  0  0      0  1  0  0  0      2  1  2  2  2
2      0  1  0  0      4  0  0  0  0      0  0  0  0  0      2  2  2  2  2
END HYDR-PARM1

HYDR-PARM2
# - # FTABNO      LEN      DELTH      STCOR      KS      DB50      ***
<-----><-----><-----><-----><-----><-----><----->
1      1      0.01      0.0      677.0      0.0      0.0
2      2      0.04      0.0      677.0      0.0      0.0
END HYDR-PARM2

HYDR-INIT
RCHRES  Initial conditions for each HYDR section
# - # *** VOL      Initial value of COLIND      Initial value of OUTDGT
      *** ac-ft      for each possible exit      for each possible exit
<-----><----->      <-----><-----><-----><-----> *** <-----><-----><-----><-----><----->
1      0      4.0  5.0  0.0  0.0  0.0      0.0  0.0  0.0  0.0  0.0
2      0      4.0  0.0  0.0  0.0  0.0      0.0  0.0  0.0  0.0  0.0
END HYDR-INIT
END RCHRES

SPEC-ACTIONS
*** User-Defined Variable Quantity Lines
***      addr
***      <----->
*** kwd  varnam optyp  opn  vari  s1 s2 s3 tp multiply  lc ls ac as agfn ***
<****> <-----> <-----> <-> <-----><-----><-----><-----><-----> <-><-> <-><-> ***
UVQUAN vol2  RCHRES  2 VOL      4
UVQUAN v2m2  GLOBAL  WORKSP  1      3
UVQUAN vpo2  GLOBAL  WORKSP  2      3
UVQUAN v2d2  GENER  2 K      1      3
*** User-Defined Target Variable Names
***      addr or      addr or
***      <----->      <----->
*** kwd  varnam ct  vari  s1 s2 s3 frac oper      vari  s1 s2 s3 frac oper
<****> <-----><-----> <-----><-----><-----> <-----> <-----> <-----><-----><-----> <-----> <----->
UVNAME v2m2  1 WORKSP  1      1.0 QUAN
UVNAME vpo2  1 WORKSP  2      1.0 QUAN
UVNAME v2d2  1 K      1      1.0 QUAN
*** opt foplop dcdts  yr mo dy hr mn d t  vnam  s1 s2 s3 ac quantity  tc  ts rp
<****><-----><-----><-----><-----> <-> <-> <-> <-><-> <-----><-----><-----><-----> <-> <-><->
GENER  2      v2m2      = 2852.19
*** Compute remaining available pore space
GENER  2      vpo2      = v2m2
GENER  2      vpo2      -= vol2
*** Check to see if VPORA goes negative; if so set VPORA = 0.0
IF (vpo2 < 0.0) THEN
GENER  2      vpo2      = 0.0
END IF
*** Infiltration volume
GENER  2      v2d2      = vpo2
END SPEC-ACTIONS
FTABLES
FTABLE  2
33      4
Depth      Area      Volume      Outflow1 Velocity      Travel Time***
(ft)      (acres)      (acre-ft)      (cfs)      (ft/sec)      (Minutes)***

```

|          |          |          |          |
|----------|----------|----------|----------|
| 0.000000 | 0.053949 | 0.000000 | 0.000000 |
| 0.104396 | 0.053949 | 0.001690 | 0.000000 |
| 0.208791 | 0.053949 | 0.003379 | 0.000000 |
| 0.313187 | 0.053949 | 0.005069 | 0.000000 |
| 0.417582 | 0.053949 | 0.006758 | 0.000000 |
| 0.521978 | 0.053949 | 0.008448 | 0.000000 |
| 0.626374 | 0.053949 | 0.010138 | 0.000000 |
| 0.730769 | 0.053949 | 0.011827 | 0.000000 |
| 0.835165 | 0.053949 | 0.013517 | 0.000000 |
| 0.939560 | 0.053949 | 0.015206 | 0.000000 |
| 1.043956 | 0.053949 | 0.016896 | 0.000000 |
| 1.148352 | 0.053949 | 0.018586 | 0.000000 |
| 1.252747 | 0.053949 | 0.020275 | 0.001695 |
| 1.357143 | 0.053949 | 0.021965 | 0.002543 |
| 1.461538 | 0.053949 | 0.023654 | 0.004271 |
| 1.565934 | 0.053949 | 0.025344 | 0.005135 |
| 1.670330 | 0.053949 | 0.027034 | 0.006454 |
| 1.774725 | 0.053949 | 0.029371 | 0.007114 |
| 1.879121 | 0.053949 | 0.031708 | 0.008163 |
| 1.983516 | 0.053949 | 0.034045 | 0.008687 |
| 2.087912 | 0.053949 | 0.036383 | 0.009086 |
| 2.192308 | 0.053949 | 0.038720 | 0.009286 |
| 2.296703 | 0.053949 | 0.041057 | 0.010138 |
| 2.401099 | 0.053949 | 0.043395 | 0.011579 |
| 2.505495 | 0.053949 | 0.045732 | 0.013175 |
| 2.609890 | 0.053949 | 0.048069 | 0.014756 |
| 2.714286 | 0.053949 | 0.050406 | 0.016260 |
| 2.818681 | 0.053949 | 0.052744 | 0.017672 |
| 2.923077 | 0.053949 | 0.055081 | 0.018997 |
| 3.027473 | 0.053949 | 0.057418 | 0.020244 |
| 3.131868 | 0.053949 | 0.059755 | 0.021424 |
| 3.236264 | 0.053949 | 0.062093 | 0.022561 |
| 3.250000 | 0.053949 | 0.065477 | 0.037231 |

END FTABLE 2

FTABLE 1

| 61       | 5        |           |          |          |          |                |  |
|----------|----------|-----------|----------|----------|----------|----------------|--|
| Depth    | Area     | Volume    | Outflow1 | Outflow2 | Velocity | Travel Time*** |  |
| (ft)     | (acres)  | (acre-ft) | (cfs)    | (cfs)    | (ft/sec) | (Minutes)***   |  |
| 0.000000 | 0.053949 | 0.000000  | 0.000000 | 0.000000 |          |                |  |
| 0.104396 | 0.053949 | 0.005632  | 0.000000 | 0.271991 |          |                |  |
| 0.208791 | 0.053949 | 0.011264  | 0.000000 | 0.355182 |          |                |  |
| 0.313187 | 0.053949 | 0.016896  | 0.000000 | 0.374112 |          |                |  |
| 0.417582 | 0.053949 | 0.022528  | 0.000000 | 0.393042 |          |                |  |
| 0.521978 | 0.053949 | 0.028160  | 0.000000 | 0.411972 |          |                |  |
| 0.626374 | 0.053949 | 0.033792  | 0.000000 | 0.430901 |          |                |  |
| 0.730769 | 0.053949 | 0.039424  | 0.000000 | 0.449831 |          |                |  |
| 0.835165 | 0.053949 | 0.045056  | 0.000079 | 0.468761 |          |                |  |
| 0.939560 | 0.053949 | 0.050688  | 0.000118 | 0.487691 |          |                |  |
| 1.043956 | 0.053949 | 0.056320  | 0.000147 | 0.506621 |          |                |  |
| 1.148352 | 0.053949 | 0.061952  | 0.000171 | 0.525550 |          |                |  |
| 1.252747 | 0.053949 | 0.067584  | 0.000192 | 0.544480 |          |                |  |
| 1.357143 | 0.053949 | 0.073216  | 0.000211 | 0.563410 |          |                |  |
| 1.461538 | 0.053949 | 0.078848  | 0.000229 | 0.582340 |          |                |  |
| 1.565934 | 0.053949 | 0.084480  | 0.000245 | 0.601269 |          |                |  |
| 1.670330 | 0.053949 | 0.090112  | 0.000260 | 0.620199 |          |                |  |
| 1.774725 | 0.053949 | 0.095744  | 0.000275 | 0.639129 |          |                |  |
| 1.879121 | 0.053949 | 0.101376  | 0.000288 | 0.658059 |          |                |  |
| 1.983516 | 0.053949 | 0.107008  | 0.000301 | 0.676988 |          |                |  |
| 2.087912 | 0.053949 | 0.112640  | 0.000314 | 0.695918 |          |                |  |
| 2.192308 | 0.053949 | 0.118272  | 0.000326 | 0.714848 |          |                |  |
| 2.296703 | 0.053949 | 0.123904  | 0.000337 | 0.733778 |          |                |  |
| 2.401099 | 0.053949 | 0.129536  | 0.000349 | 0.752708 |          |                |  |
| 2.505495 | 0.053949 | 0.135168  | 0.000360 | 0.771637 |          |                |  |
| 2.609890 | 0.053949 | 0.140800  | 0.000370 | 0.790567 |          |                |  |
| 2.714286 | 0.053949 | 0.146432  | 0.000380 | 0.809497 |          |                |  |
| 2.818681 | 0.053949 | 0.152064  | 0.000390 | 0.828427 |          |                |  |
| 2.923077 | 0.053949 | 0.157696  | 0.000400 | 0.847356 |          |                |  |
| 3.027473 | 0.053949 | 0.163328  | 0.000410 | 0.866286 |          |                |  |
| 3.131868 | 0.053949 | 0.168960  | 0.000419 | 0.885216 |          |                |  |
| 3.236264 | 0.053949 | 0.174592  | 0.000428 | 0.904146 |          |                |  |

|          |          |          |          |          |
|----------|----------|----------|----------|----------|
| 3.340659 | 0.053949 | 0.180224 | 0.000437 | 0.923076 |
| 3.445055 | 0.053949 | 0.185856 | 0.000445 | 0.942005 |
| 3.549451 | 0.053949 | 0.191488 | 0.000454 | 0.960935 |
| 3.653846 | 0.053949 | 0.197120 | 0.000462 | 0.979865 |
| 3.758242 | 0.053949 | 0.202752 | 0.000471 | 0.998795 |
| 3.862637 | 0.053949 | 0.208384 | 0.000479 | 1.017724 |
| 3.967033 | 0.053949 | 0.214016 | 0.000487 | 1.036654 |
| 4.071429 | 0.053949 | 0.219648 | 0.000495 | 1.055584 |
| 4.175824 | 0.053949 | 0.225280 | 0.000502 | 1.074514 |
| 4.280220 | 0.053949 | 0.230912 | 0.000510 | 1.093444 |
| 4.384615 | 0.053949 | 0.236544 | 0.000517 | 1.112373 |
| 4.489011 | 0.053949 | 0.242176 | 0.000525 | 1.131303 |
| 4.593407 | 0.053949 | 0.247808 | 0.000532 | 1.150233 |
| 4.697802 | 0.053949 | 0.253440 | 0.000539 | 1.169163 |
| 4.802198 | 0.053949 | 0.259072 | 0.000546 | 1.188092 |
| 4.906593 | 0.053949 | 0.264704 | 0.000553 | 1.207022 |
| 5.010989 | 0.053949 | 0.270336 | 0.000560 | 1.225952 |
| 5.115385 | 0.053949 | 0.275968 | 0.000567 | 1.244882 |
| 5.219780 | 0.053949 | 0.281600 | 0.000574 | 1.263811 |
| 5.324176 | 0.053949 | 0.287232 | 0.214325 | 1.282741 |
| 5.428571 | 0.053949 | 0.292864 | 0.776139 | 1.301671 |
| 5.532967 | 0.053949 | 0.298496 | 1.414214 | 1.320601 |
| 5.637363 | 0.053949 | 0.304128 | 1.916131 | 1.339531 |
| 5.741758 | 0.053949 | 0.309760 | 2.188445 | 1.358460 |
| 5.846154 | 0.053949 | 0.315392 | 2.432473 | 1.377390 |
| 5.950549 | 0.053949 | 0.321024 | 2.636822 | 1.396320 |
| 6.054945 | 0.053949 | 0.326656 | 2.826433 | 1.415250 |
| 6.159341 | 0.053949 | 0.332288 | 3.004098 | 1.434179 |
| 6.250000 | 0.053949 | 0.337179 | 3.171826 | 1.450618 |

END FTABLE 1  
END FTABLES

#### EXT SOURCES

| <-Volume-> | <Member> | SsysSgap<--Mult--> | Tran | <-Target           | vols>  | <-Grp> | <-Member-> | ***   |        |
|------------|----------|--------------------|------|--------------------|--------|--------|------------|-------|--------|
| <Name>     | #        | <Name>             | #    | tem strg<-factor-> | strg   | <Name> | #          | #     |        |
| WDM        | 2        | PREC               | ENGL | 1                  | PERLND | 1      | 999        | EXTNL | PREC   |
| WDM        | 2        | PREC               | ENGL | 1                  | IMPLND | 1      | 999        | EXTNL | PREC   |
| WDM        | 1        | EVAP               | ENGL | 1                  | PERLND | 1      | 999        | EXTNL | PETINP |
| WDM        | 1        | EVAP               | ENGL | 1                  | IMPLND | 1      | 999        | EXTNL | PETINP |
| WDM        | 2        | PREC               | ENGL | 1                  | RCHRES | 1      |            | EXTNL | PREC   |
| WDM        | 1        | EVAP               | ENGL | 0.5                | RCHRES | 1      |            | EXTNL | POTEV  |
| WDM        | 1        | EVAP               | ENGL | 0.7                | RCHRES | 2      |            | EXTNL | POTEV  |

END EXT SOURCES

#### EXT TARGETS

| <-Volume-> | <-Grp> | <-Member-> | <--Mult--> | Tran        | <-Volume-> | <Member> | Tsys | Tgap   | Amd  | ***  |
|------------|--------|------------|------------|-------------|------------|----------|------|--------|------|------|
| <Name>     | #      | <Name>     | #          | #<-factor-> | strg       | <Name>   | #    | <Name> | tem  | strg |
| RCHRES     | 2      | HYDR       | RO         | 1           | 1          | WDM      | 1000 | FLOW   | ENGL | REPL |
| RCHRES     | 2      | HYDR       | STAGE      | 1           | 1          | WDM      | 1001 | STAG   | ENGL | REPL |
| RCHRES     | 1      | HYDR       | STAGE      | 1           | 1          | WDM      | 1002 | STAG   | ENGL | REPL |
| RCHRES     | 1      | HYDR       | 0          | 1           | 1          | WDM      | 1003 | FLOW   | ENGL | REPL |
| COPY       | 1      | OUTPUT     | MEAN       | 1           | 1          | WDM      | 701  | FLOW   | ENGL | REPL |
| COPY       | 501    | OUTPUT     | MEAN       | 1           | 1          | WDM      | 801  | FLOW   | ENGL | REPL |

END EXT TARGETS

#### MASS-LINK

| <Volume>      | <-Grp> | <-Member-> | <--Mult--> | <Target>   | <-Grp> | <-Member-> | ***  |
|---------------|--------|------------|------------|------------|--------|------------|------|
| <Name>        | #      | <Name>     | #          | <-factor-> | <Name> | #          | #    |
| MASS-LINK     | 2      |            |            |            |        |            |      |
| PERLND        | PWATER | SURO       |            | 0.083333   | RCHRES | INFLOW     | IVOL |
| END MASS-LINK | 2      |            |            |            |        |            |      |
| MASS-LINK     | 3      |            |            |            |        |            |      |
| PERLND        | PWATER | IFW0       |            | 0.083333   | RCHRES | INFLOW     | IVOL |
| END MASS-LINK | 3      |            |            |            |        |            |      |
| MASS-LINK     | 5      |            |            |            |        |            |      |
| IMPLND        | IWATER | SURO       |            | 0.083333   | RCHRES | INFLOW     | IVOL |
| END MASS-LINK | 5      |            |            |            |        |            |      |



|               |        |      |   |          |        |             |
|---------------|--------|------|---|----------|--------|-------------|
| MASS-LINK     | 8      |      |   |          |        |             |
| RCHRES        | OFLOW  | OVOL | 2 |          | RCHRES | INFLOW IVOL |
| END MASS-LINK | 8      |      |   |          |        |             |
| MASS-LINK     | 12     |      |   |          |        |             |
| PERLND        | PWATER | SURO |   | 0.083333 | COPY   | INPUT MEAN  |
| END MASS-LINK | 12     |      |   |          |        |             |
| MASS-LINK     | 13     |      |   |          |        |             |
| PERLND        | PWATER | IFW0 |   | 0.083333 | COPY   | INPUT MEAN  |
| END MASS-LINK | 13     |      |   |          |        |             |
| MASS-LINK     | 15     |      |   |          |        |             |
| IMPLND        | IWATER | SURO |   | 0.083333 | COPY   | INPUT MEAN  |
| END MASS-LINK | 15     |      |   |          |        |             |
| MASS-LINK     | 16     |      |   |          |        |             |
| RCHRES        | ROFLOW |      |   |          | COPY   | INPUT MEAN  |
| END MASS-LINK | 16     |      |   |          |        |             |
| MASS-LINK     | 17     |      |   |          |        |             |
| RCHRES        | OFLOW  | OVOL | 1 |          | COPY   | INPUT MEAN  |
| END MASS-LINK | 17     |      |   |          |        |             |
| END MASS-LINK |        |      |   |          |        |             |
| END RUN       |        |      |   |          |        |             |

## *Predeveloped HSPF Message File*



## *Disclaimer*

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## 8.2 Hydromodification Management Points of Compliance

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

| POC name or # | Channel name or #                      | POC Description                                                                                                              |
|---------------|----------------------------------------|------------------------------------------------------------------------------------------------------------------------------|
| 1             | Existing Unnamed Flow/Swale or Channel | Discharge from the proposed storm drain outfall and riprap energy dissipator located at the southwest corner of the property |
|               |                                        |                                                                                                                              |
|               |                                        |                                                                                                                              |
|               |                                        |                                                                                                                              |

### **8.3 Geomorphic Assessment of Receiving Water Channels**

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Insert Geomorphic Assessment behind this cover page or submit as a separate stand-alone document labeled Sub-attachment 8.3.

Not Applicable

#### **8.4 Vector Control Plan**

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Insert Vector Control Plan behind this cover page or submit as a separate stand-alone document labeled Sub-attachment 8.4.

**Not Applicable**



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

**9.0 General Requirements**

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

| <b>Sub-attachments</b>                                                                                        | <b>BMPDM Design Resources</b> |
|---------------------------------------------------------------------------------------------------------------|-------------------------------|
| <input type="checkbox"/> <b>9.1: Documentation of Hydromodification Management Exemption<sup>1</sup></b>      | Section 1.6                   |
| <input checked="" type="checkbox"/> <b>9.2: Watershed Management Area Analysis (WMAA) Mapping<sup>1</sup></b> | Appendix H.1.1.2              |
| <input type="checkbox"/> <b>9.3: Resource Protection Ordinance (RPO) Methods</b>                              | Appendix H.1.1.1              |
| <input type="checkbox"/> <b>9.4: No Net Impact Analysis</b>                                                   | Appendix H.4                  |

<sup>1</sup> The San Diego County Regional comprehensive WMAA mapping data can be found on the Project Clean Water website here: [http://www.projectcleanwater.org/download/wmaa\\_attc\\_data/](http://www.projectcleanwater.org/download/wmaa_attc_data/)



- If the PDP is exempt from hydromodification management requirements (see Table 4 Part A.1 of the PDP SWQMP), use this Sub-attachment to document the exemption.
- Select the type of exemption below that applies and provide an explanation of the selection, including maps or other applicable documentation. Additional documentation may be requested by County staff.

<sup>2</sup> This option must include an analysis of the project using the methodology presented in Attachment E of the Regional Watershed Management Area Analysis.

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

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

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

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

See Mapping Results Attached

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

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

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

Based on a review of the approved County of San Diego Watershed Management Area Analysis (WMAA) mapping, the 1.92-acre project site located at 1434 Montiel Road consists of flat terrain and does not contain any mapped Critical Coarse Sediment Yield Areas (CCSYAs) within the project footprint.

Furthermore, the WMAA mapping confirms there are no upstream offsite CCSYAs that drain onto or are tributary to the property. Because no onsite or upstream offsite CCSYAs exist, there is no critical coarse sediment to bypass. The project inherently avoids impacts to critical coarse sediment yield areas, fully satisfying the CCSYA compliance requirements via the WMAA Mapping pathway (BMPDM Appendix H.1.1.2)



1434 Montiel Rd, Escondido, CA 92026

1434 Montiel Rd, Escondido, CA 92026

1434 Montiel Rd

0  
06073C  
06073C  
06073C  
1434 Montiel Rd  
Creek  
Creek  
Feature 1  
Lake  
San  
San  
San Luis Rey River  
Yes



Google Earth

300 ft





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

- Either of two Resource Protection Ordinance (RPO) methods may also be used to demonstrate compliance with CCSYA requirements. Select either option and document the selection below:

☐ **RPO Scenario 1: PDP is subject to and in compliance with RPO requirements<sup>5</sup>**

- **Select** if the project requires one or more discretionary permits;
- **Demonstrate** that onsite AND upstream offsite CCSYAs will be avoided and/or bypassed.

☐ **RPO Scenario 2: PDP is entirely exempt/not subject to RPO requirements<sup>6</sup>**

- **Select** if the project does not require discretionary permits;
- **Demonstrate** that all upstream offsite CCSYAs will be bypassed<sup>7</sup>.

**A. Mapping Results** -- At a minimum, show as applicable: (1) the project footprint, (2) areas of proposed development, (3) locations of onsite and upstream offsite CCSYAs, and (4) bypass of all identified CCSYAs.

<sup>5</sup> RPO applicability is normally confirmed during discretionary review. Check with your project manager if you're not sure of your status.

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

<sup>7</sup> This scenario does not impose requirements for onsite CCSYAs.

**B. Explanation** -- Provide documentation as needed to demonstrate that (1) onsite CCSYAs are avoided and bypassed [if applicable], and (2) upstream offsite CCYSAs are effectively bypassed. Add pages as necessary.

#### 9.4 No Net Impact Analysis (BMPDM Appendix H.4)

- When impacts to CCSYAs cannot be avoided or effectively bypassed, applicants must demonstrate that their project generates no net impact to the receiving water per the performance metrics identified in BMPDM Appendix H.4.
- Use the space below to document that the PDP will generate no net impact to any receiving water.

**No Net Impact Analysis** (add or attach pages as necessary)



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## **ATTACHMENT #10 - SUBMITTAL CHECKLIST**

The BMP Installation Verification Package for Priority Development Projects (PDPs) shall include each of the following items as separate PDF files, when applicable to the project. Review of submittal package shall commence once all materials are received digitally with the most current forms and plans. Incomplete submittals shall NOT be reviewed.

### **ATTACHMENT #10 – BMP Installation Verification for PDPs**

- Signed and Certified by Preparer / Engineer of Work (EOW)
- Must include all relevant project permit numbers (grading / building / improvement)
- Projects with structural BMPs must be certified by a registered engineer

### **SWQMP (Stormwater Quality Management Plan)**

- Stamped & County-Approved SWQMP w/ Attachments – most current version
- If as-built BMPs differ from the SWQMP, a revision or addendum may be required

### **CONSTRUCTION PLANS**

- County Stamped Plan Set (Grading Plan / Building Plan / Improvement Plan / etc.)
- Plan sheets submitted must include:
  - Cover Sheet(s) with BMP Table & Stamps
  - Plan Detail, Cross-Section, and Location of all BMPs

### **MAINTENANCE AGREEMENT**

- Submit draft for review prior to recordation, unless previously required by County staff
- Agreement type will be determined by Category assigned in SWQMP
  - CAT 1: Maintenance Notification Agreement (MNA)
  - CAT 2: Storm Water Facilities Maintenance Agreement (SWMA)
  - CAT 4: Encroachment Maintenance & Removal Agreement (EMRA)
- Include all project-specific exhibits referenced in Agreement
- Provide details for all BMP components (spreader trenches, forebays, SSDs & SDs)

### **PHOTO DOCUMENTATION \*\*\* Mid-construction photos REQUIRED \*\*\***

- Provide separate PDFs for each BMP (max 6 photos/page) or clearly label within PDF
- Each photo must be titled with Date, Description & BMP Identifier
- Photos must document all BMP components and specific measurements
- Refer to [BMP IV: Photo Guidance](#) for required photos and examples

### **FORM: MID-CONSTRUCTION INSPECTIONS \*\*\* Inspection Form for EOW to Complete \*\*\***

- Link: [BMP IV: Mid-Construction Inspections Form](#)

### **LANDSCAPE MATERIALS (for Vegetated BMPs)**

- Final Landscape Plan, if available
- Proof of Irrigation & Soil Moisture Probes
  - For projects with 500 sf or more landscaping per Sec. 86.709 of Landscaping Ordinance
- Verification of Plant / Tree Species – Refer to [F3 Plant List Table \(BMP Design Manual\)](#)

### **SUPPORTING DOCUMENTATION (as applicable)**

- Activation Report for Proprietary Systems (i.e. Modular Wetlands)
- Receipts / Delivery Tickets from Vendors (plants / soil / rock / irrigation)

➡ **Email Submittal Package to:** [PDP.PackageReview@sdcounty.ca.gov](mailto:PDP.PackageReview@sdcounty.ca.gov)





## ***SUBMITTAL CHECKLIST (cont.)***

### **Photo Documentation\*** (general list for most common BMPs)

1. Finished BMP from multiple angles (showing surrounding areas and grade)
2. Excavation Depths
3. Forebay / Pretreatment Areas
4. Maintenance Elements (cleanouts, inspection ports, access path & manholes)
5. Planted Vegetation (70% coverage) / Mulch / Proof of Irrigation / Soil Moisture Probes
6. Layers for Vegetation (drainage, insulation, support)
7. Liners / Filter Fabrics / Waterproof Membranes
8. Above Ground Storage Components (pump, tank, diverters, discharge area, accessories)
9. Nameplate for Proprietary System
10. Site Design (SD) BMPs (e.g. permeable pavement, water barrels, etc.)

### **Tape Measurement Photos – ensure measurements are visible in photos for dimensioned elements:**

11. Different Layers (soil amendments, media, filter course, aggregate storage)
12. Ponding Depth
13. Outflow & Conveyance (overflow structure, riser pipe, outlet, underdrain, bypass, orifice)
14. Inlets / Curb cuts / Spillways
15. Energy Dissipators (riprap, inflow distributors, check dams, outfalls)
16. Subsurface Layers for Permeable Pavement (surface bedding, storage, filter course, liner)

### **\* PHOTO NOTES → IMPORTANT:**

1. Entire list may not be applicable to specific BMP(s) installed
2. Additional documentation may be necessary, depending on specific BMP installed
3. Refer to ***BMP IV Photo Guidance*** for required photo matrix and examples

### **PDF File Names**

Use the following file names for the relevant PDFs in submittal. PERMIT# will be grading or building permit #.

| Document Name                                     | File Name Convention                                          |
|---------------------------------------------------|---------------------------------------------------------------|
| <b>ATTACH #10 – BMP Installation Verification</b> | PERMIT#_BMP IV                                                |
| <b>STORMWATER QUALITY MANAGEMENT PLAN</b>         | PERMIT#_SWQMP                                                 |
| <b>BMP CONSTRUCTION PLANS</b>                     | PERMIT#_PLANS                                                 |
| <b>MAINTENANCE AGREEMENT</b>                      | PERMIT#_MNA_draft<br>PERMIT#_SWMA_DOC#<br>PERMIT#_EMRA_emra#  |
| <b>PHOTO DOCUMENTATION</b>                        | PERMIT#_PHOTOS_BMP ID                                         |
| <b>LANDSCAPE PLAN</b>                             | PERMIT#_LP_LP PLAN#                                           |
| <b>SUPPORTING DOCUMENTATION</b>                   | PERMIT#_ActivationReport<br>PERMIT#_Receipts<br>PERMIT#_other |

### **Helpful References:**

Forms: [https://www.sandiegocounty.gov/content/sdc/dpw/watersheds/DevelopmentandConstruction/Acceptance\\_Forms.html](https://www.sandiegocounty.gov/content/sdc/dpw/watersheds/DevelopmentandConstruction/Acceptance_Forms.html)  
Development Resources: <https://www.sandiegocounty.gov/content/sdc/dpw/watersheds/DevelopmentandConstruction/>



County of San Diego  
Stormwater Quality Management Plan (SWQMP)  
**Attachment 10: BMP Installation Verification for PDPs**

This form must be accepted by the County prior to the release of construction permits or granting of occupancy for applicable portions of a Priority Development Project (PDP). Its purpose is to provide documentation of the final installation of permanent Best Management Practices (BMPs) used to satisfy the Structural Performance Standards for the development project.

## PART 1: PROJECT INFORMATION

| A. Project Summary Information                                                          |                                                                                                                                                                                                                                                                                 |
|-----------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Project Name:</b> Montiel Road                                                       | <b>APN(s):</b> 228-171-16                                                                                                                                                                                                                                                       |
| <b>Record ID(s)</b> - grading/improvement/building permit number(s):<br>PDS2022-TM-5648 | <b>Project Watershed</b> (Hydrologic Unit, Area, & Subarea Name w/ ID):<br>Watershed Management Area (WMA): Carlsbad Watershed; Hydrologic Unit (HU): Carlsbad (HU 904.00); Hydrologic Area (HA): Escondido Creek (HA 904.60); Hydrologic Subarea (HSA): Escondido (HSA 904.62) |
| <b>Project Address:</b> 1434 Montiel Rd, Escondido, CA 92026                            |                                                                                                                                                                                                                                                                                 |
| B. Owner Information                                                                    |                                                                                                                                                                                                                                                                                 |
| <b>Owner Name:</b> Shub Estates LLC                                                     | <b>Email:</b> Shubhestatesllc@yahoo.com                                                                                                                                                                                                                                         |
| <b>Address:</b> 10225 Barnes Canyon Road, San Diego, CA                                 | <b>Phone #:</b> (732) 552-7712                                                                                                                                                                                                                                                  |

## PART 2: PREPARER'S CERTIFICATION

By signing, I certify I have inspected the BMP(s) listed in Part 4 of this Attachment and confirm all elements have been constructed in accordance with the approved plans (permit plans & SWQMP) AND all applicable regulations (County Ordinance, BMP Design Manual, and NPDES MS4 Permit). I understand the County reserves the right to inspect the listed BMPs to verify compliance with the approved plans and regulations. If it is determined the BMPs were not constructed to plan or code, corrective actions shall be necessary before permits can be closed.

| Preparer's Information                                                             | [SEAL]                                                                                |
|------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| <b>Preparer's Name:</b> Daya Bettadapura                                           |  |
| <b>Email:</b> Dayab@abieng.net                                                     |                                                                                       |
| <b>Phone #:</b> (888) 220-5596                                                     |                                                                                       |
| <b>Preparer's Signature:</b>                                                       |                                                                                       |
| <b>Date:</b> 03/11/2026                                                            |                                                                                       |
| <b>Note: Structural BMPs must be certified by a licensed professional engineer</b> |                                                                                       |

## PART 3: COUNTY ACCEPTANCE

| COUNTY – OFFICIAL USE ONLY                                                                                                 |                                                            |
|----------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------|
| <b>County Inspector Approval:</b> BMPs listed in Part 4 have been inspected by the County.                                 |                                                            |
| <b>Inspector Name:</b>                                                                                                     | <b>Dept-Div:</b> DPW-PDCI PDS-Bldg DGS DPR<br>(circle one) |
| <b>Inspector Signature:</b>                                                                                                | <b>Date:</b>                                               |
| <b>DPW Watershed Protection Program (WPP) Acceptance:</b> BMPs listed in Part 4 are hereby accepted into County inventory. |                                                            |
| <b>Date Received:</b>                                                                                                      | <b>WPP Reviewer:</b>                                       |
| <b>WPP Reviewer's Signature:</b>                                                                                           | <b>Date Accepted:</b>                                      |
| <b>Notes:</b>                                                                                                              |                                                            |



County of San Diego  
Stormwater Quality Management Plan (SWQMP)  
**Attachment 10: BMP Installation Verification for PDPs**

|                                 |                   |                                       |
|---------------------------------|-------------------|---------------------------------------|
| <b>Project Record ID:</b>       | <b>INTAKE ID#</b> | <b>ACCEPTANCE ID#</b>                 |
| New Development / Redevelopment |                   | Residential / Commercial / Industrial |



## PART 4: BMP INVENTORY INFORMATION

Use this table to document the Structural BMPs (S-BMPs) and Significant Site Design BMPs (SSD-BMPs) seeking Acceptance within the PDP SWQMP.

- In **Part A** list all Structural BMPs (both Pollutant Control and Hydromodification) by DMA.
- In **Part B** list all Significant Site Design BMPs by DMA.
- The information provided for each BMP in the table must match the SWQMP, construction plans, maintenance agreements, and other relevant project documentation.

| DMA #                                                                                                  | BMP Information |                                    |          | Maintenance Category<br>(1, 2, 3, or 4) | Maintenance Agreement<br>Recorded DOC # | Construction Plan<br>Sheet # | Landscape Plan<br>Sheet # |
|--------------------------------------------------------------------------------------------------------|-----------------|------------------------------------|----------|-----------------------------------------|-----------------------------------------|------------------------------|---------------------------|
|                                                                                                        | Quantity        | Description/Type of Structural BMP | BMP ID # |                                         |                                         |                              |                           |
| <b>A. Structural BMPs (S-BMPs)</b>                                                                     |                 |                                    |          |                                         |                                         |                              |                           |
| 1                                                                                                      | 1               | Biofiltration (Planter Box)        | 1        | 2                                       |                                         | 2                            | TBD                       |
|                                                                                                        |                 |                                    |          |                                         |                                         |                              |                           |
|                                                                                                        |                 |                                    |          |                                         |                                         |                              |                           |
| Add rows as needed. Click into the last column in the row below this, then press TAB to add a new row. |                 |                                    |          |                                         |                                         |                              |                           |
|                                                                                                        |                 |                                    |          |                                         |                                         |                              |                           |
| <b>B. Significant Site Design BMPs (SSD-BMPs)</b>                                                      |                 |                                    |          |                                         |                                         |                              |                           |
|                                                                                                        |                 | Choose an item.                    |          | Choose                                  |                                         |                              |                           |
|                                                                                                        |                 | Choose an item.                    |          | Choose                                  |                                         |                              |                           |
| Add rows as needed. Click into the last column in the row below this, then press TAB to add a new row. |                 |                                    |          |                                         |                                         |                              |                           |
|                                                                                                        |                 |                                    |          |                                         |                                         |                              |                           |



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

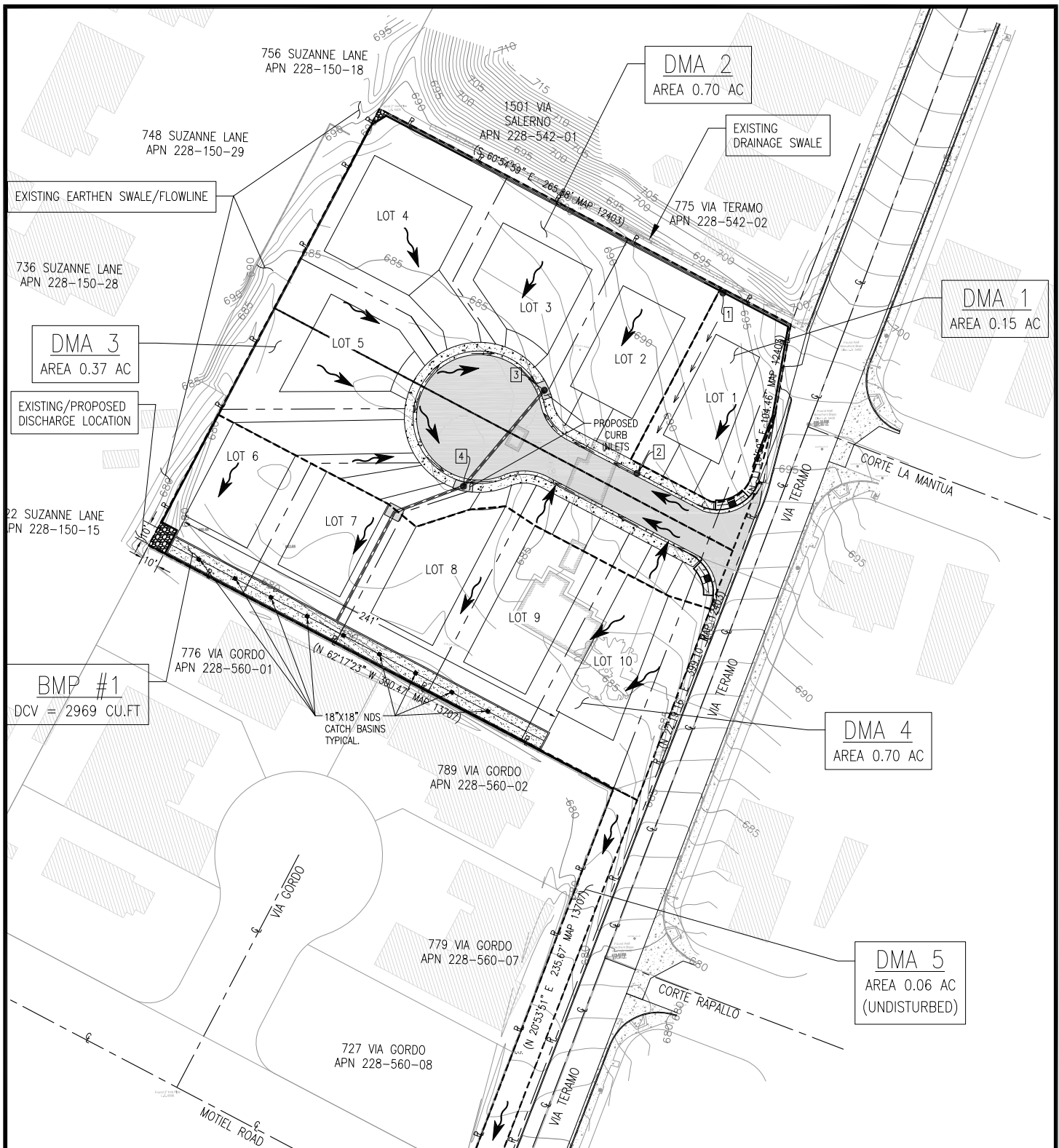
**\*\* THIS PAGE IS FOR PARTIAL VERIFICATIONS ONLY \*\***

If final grade release or granting of occupancy is being requested for only a portion of the Priority Development Project (PDP) SWQMP, please list ALL DMAs and BMPs in the table below. Provide Acceptance Date and ID if applicable. All DMAs that are not self-mitigating or de minimis must have at least one S-BMP or SSD-BMP.

| DMA & BMP Information - Include ALL Structural BMPs and Significant Site Design BMPs for the entire project |              |                 |                                                  |                                    |
|-------------------------------------------------------------------------------------------------------------|--------------|-----------------|--------------------------------------------------|------------------------------------|
| DMA #                                                                                                       | APN or Lot # | BMP ID # / Type | Acceptance Status<br>(Previous, Current, Future) | Acceptance ID#<br>(e.g. 20/21-001) |
|                                                                                                             |              |                 |                                                  |                                    |
|                                                                                                             |              |                 |                                                  |                                    |
|                                                                                                             |              |                 |                                                  |                                    |
|                                                                                                             |              |                 |                                                  |                                    |
|                                                                                                             |              |                 |                                                  |                                    |
|                                                                                                             |              |                 |                                                  |                                    |

**DMA & BMP MAP**

Please attach a mark-up of the DMA map from the approved SWQMP that clearly shows:  
(1) all BMPs & DMAs for the project site, (2) all DMAs or lots that were previously accepted, and  
(3) the DMA(s) you are requesting for approval with this submittal.



PROJECT: 1434 MONTEL ROAD  
ESCONDIDO CALIFORNIA

PROJECT NO: 25056

**ABI** ENGINEERING  
CONSULTANTS, INC.

1701 EAST EDINGER AVENUE, SUITE A9  
SANTA ANA, CALIFORNIA 92705

TEL: (888) 220-5596

FAX: (714) 866-4171

DMA  
EXHIBIT



## County of San Diego Stormwater Quality Management Plan (SWQMP)

### Attachment 11: BMP Maintenance Agreements and Plans

#### 11.0 Cover Sheet and General Requirements

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

##### a. Applicability of Maintenance Agreements

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

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

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

*CATEGORY 1 MAINTENANCE AGREEMENTS ARE RECORDED PRIOR TO OCCUPANCY.*

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

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

*CATEGORY 2 MAINTENANCE AGREEMENTS ARE RECORDED PRIOR TO PERMIT ISSUANCE.*

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

##### b. Maintenance Plan Requirements

Maintenance plans should include the following:

- ☒ Specific **maintenance indicators and actions** for proposed structural BMP(s). These must be based on maintenance indicators presented in BMP Design Manual Fact Sheets in Appendix E and enhanced to reflect actual proposed components of the structural BMP(s).
- ☒ **Access** to inspect and perform maintenance on the structural BMP(s).
- ☒ Features to **facilitate inspection** (e.g., observation ports, cleanouts, silt posts, or other features that allow the inspector to view necessary components of the structural BMP and compare to maintenance thresholds).
- ☒ Manufacturer and part number for **proprietary parts** of structural BMP(s) when applicable.
- ☒ **Maintenance thresholds** specific to the structural BMP(s), with a location-specific frame of reference (e.g., level of accumulated materials that triggers removal of the materials, to be identified based on viewing marks on silt posts or measured with a survey rod with respect to a fixed benchmark within the BMP).
- ☒ Recommended **equipment** to perform maintenance.
- ☒ When applicable, necessary special **training or certification** requirements for inspection and maintenance personnel such as confined space entry or hazardous waste management.

POST-  
CONSTRUCTION  
PERMANENT BMPs

| PROPOSED OPERATION AND MAINTENANCE PROCEDURE DETAILS (LID/SITE DESIGN AND SOURCE CONTROL BMPs) |                                    |                                                            |                   |                       |                                                                                                                                                                                                                                                                                        |
|------------------------------------------------------------------------------------------------|------------------------------------|------------------------------------------------------------|-------------------|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| O&M RESPONSIBLE PARTY DESIGNEE : HOA                                                           |                                    |                                                            |                   |                       |                                                                                                                                                                                                                                                                                        |
|                                                                                                | ROUTINE ACTION                     | MAINTENANCE INDICATOR                                      | FIELD MEASUREMENT | MEASUREMENT FREQUENCY | MAINTENANCE ACTIVITY                                                                                                                                                                                                                                                                   |
| <b><u>LID/SITE DESIGN:</u></b><br>- LANDSCAPE/VEGETATED SWALE AREA                             | REFUSE/TRASH PICK-UP, FERTILIZING  | TRASH, TALL GRASS, WEEDS, DEAD OR POORLY GROWING LANDSCAPE | VISUAL            | BIWEEKLY              | REMOVE TRASH & DEAD VEGETATION, REMOVE WEEDS, AND APPLY FERTILIZER                                                                                                                                                                                                                     |
| <b><u>SOURCE CONTROLS:</u></b>                                                                 |                                    |                                                            |                   |                       |                                                                                                                                                                                                                                                                                        |
| - SIDEWALK SWEEPING                                                                            | SWEEPING                           | DIRT ACCUMULATION                                          | VISUAL            | MONTHLY               | SWEEP PAVED AREAS REGULARLY TO COLLECT LOOSE DUST PARTICLES. WIPE UP SPILLS WITH RAGS AND OTHER ABSORBENT MATERIAL IMMEDIATELY, DO NOT HOSE DOWN THE AREA TO A STORM DRAIN                                                                                                             |
| - STORM DRAIN SYSTEM SIGNAGE                                                                   | RESIGNAGE/RESTENCILING             | ILLEGIBLE SIGNAGE/STENCILING                               | VISUAL            | AS REQUIRED           | PROVIDE EMPLOYEE TRAINING, INSPECT/REPAIR STORM DRAIN INLET SIGNAGE/STENCILING FOR LEGIBILITY                                                                                                                                                                                          |
| - NON-STORM WATER DISCHARGES                                                                   | PREVENT NON-STORM WATER DISCHARGES | NON-STORM WATER DISCHARGE/RELEASE                          | VISUAL            | AS REQUIRED           | PROVIDE EMPLOYEE TRAINING<br>MAINTAIN LEGIBILITY OF STORM DRAIN INLET<br><br>ISOLATE PROBLEM AREAS AND PLUG ILLEGAL DISCHARGE POINTS . ON PAVED AREAS, CLEAN UP SPILLS WITH AS LITTLE WATER AS POSSIBLE. FOR SMALL SPILLS, USE ABSORBENT MATERIALS RATHER THAN HOSING DOWN SPILL AREAS |



# PROPOSED OPERATION AND MAINTENANCE PROCEDURE DETAILS (TREATMENT CONTROL BMPs)

O&M RESPONSIBLE PARTY DESIGNEE : HOA

|                            | ROUTINE ACTION                                             | MAINTENANCE INDICATOR                                                                                      | FIELD MEASUREMENT | MEASUREMENT FREQUENCY | MAINTENANCE ACTIVITY                                                                                                                                        |
|----------------------------|------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|-------------------|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>BMP:</b><br>PLANTER BOX | FACILITY SOIL AND DRAINAGE WILL BE MAINTAINED.             | ERODED AREAS AND WHEN WATER STANDS BETWEEN STORM AND REMAINS ON THE SURFACE MORE THAN 48 HRS AFTER A STORM | VISUAL            | MONTHLY               | SOIL AND/OR MULCH WILL BE REPLACED AS NECESSARY TO MAINTAIN AN INFILTRATION RATE AT OR NEAR THE INITIAL KSAT, DESIGN VALUE FOR THE DURATION OF THE PROJECT. |
|                            | INSPECT FOR VEGETATION                                     | DEAD, DISEASED AND/OR OVERGROWN VEGETATION                                                                 | VISUAL            | SEMI-ANNUAL           | REMOVE AND REPLACE THE DEAD & DISEASED PLANTS WITH HEALTHY PLANTS. TRIM AND PURNE EXCESS VEGETATION                                                         |
|                            | BMP INLETS WILL BE INSPECTED AND MAINTAINED                | SEDIMENT COLLECTION                                                                                        | VISUAL            | SEMI-ANNUAL           | SEDIMENT COLLECTING AT THE INLET WILL BE REMOVED AS NECESSARY.                                                                                              |
| CATCH BASIN INSERTS        | REFER TO MANUFACTURER'S MAINTENANCE GUIDELINES FOR DETAILS |                                                                                                            |                   |                       |                                                                                                                                                             |
| OTHER SOURCE CONTROL BMPs  | REFER TO MANUFACTURER'S MAINTENANCE GUIDELINES FOR DETAILS |                                                                                                            |                   |                       |                                                                                                                                                             |

Attachment 12  
Table B.2-1 from Appendix B of the SD County BMP  
Design Manual

Preliminary Geotechnical Report

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

### B.2.2 Step 2B – Infiltration Restrictions

The SWQMP Preparer is responsible for evaluating the infiltration restrictions in Table B.2-1 below and characterizing each drainage area as Restricted or Unrestricted for infiltration.

Restriction elements are divided into Mandatory Considerations and Optional Considerations. Mandatory Considerations include elements that may pose a significant risk to human health and safety. These elements must always be evaluated and discretion regarding the setbacks is not permitted. Optional Considerations include elements that are not necessarily associated with human health and safety, so analysis is not mandated through this guidance document.

Analysis of these elements is outside of the scope of typical geotechnical engineering investigations; therefore, it is the responsibility of the SWQMP Preparer to perform this evaluation. If a geotechnical engineer is consulted to complete this portion of the analysis, additional discretion on the mandatory considerations may be permitted if supported by the geotechnical reporting.

**Table B.2-1: Infiltration Restrictions**

| Restriction Element      |                                                                                  | Is Element Applicable? (Yes/No) |
|--------------------------|----------------------------------------------------------------------------------|---------------------------------|
| Mandatory Considerations | BMP is within 100' of Contaminated Soils                                         | No                              |
|                          | BMP is within 100' of Industrial Activities Lacking Source Control               | No                              |
|                          | BMP is within 100' of Well/Groundwater Basin                                     | No                              |
|                          | BMP is within 50' of Septic Tanks/Leach Fields                                   | No                              |
|                          | BMP is within 10' of Structures/Tanks/Walls                                      | Yes                             |
|                          | BMP is within 10' of Sewer Utilities                                             | No                              |
|                          | BMP is within 10' of Groundwater Table                                           | No                              |
|                          | BMP is within Hydric Soils                                                       | No                              |
|                          | BMP is within Highly Liquefiable Soils and has Connectivity to Structures        | No                              |
|                          | BMP is within 1.5 Times the Height of Adjacent Steep Slopes ( $\geq 25\%$ )      | Yes                             |
|                          | County Staff has Assigned "Restricted" Infiltration Category                     | No                              |
| Optional Considerations  | BMP is within Predominantly Type D Soil                                          | No                              |
|                          | BMP is within 10' of Property Line                                               | Yes                             |
|                          | BMP is within Fill Depths of $\geq 5'$ (Existing or Proposed)                    | Yes                             |
|                          | BMP is within 10' of Underground Utilities                                       | No                              |
|                          | BMP is within 250' of Ephemeral Stream                                           | No                              |
|                          | Other (Provide detailed geotechnical support)                                    |                                 |
| Result                   | <b>Unrestricted.</b> None of the restriction elements above are applicable.      |                                 |
|                          | <b>Restricted.</b> One or more of the restriction elements above are applicable. | YES                             |

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October 25, 2022  
Project No. 22056

NOAA Group  
4990 North Harbor Drive, Suite 201  
San Diego, CA 92106

Attn.: Joseph Holasek

Subject: Preliminary Geotechnical Investigation Report for Proposed Residential Subdivision, 1434 Montiel Rd., Escondido, California

## REFERENCES

1. California Building Standards Commission, 2019 CBC.
2. California Geological Survey (CGS). Geologic Map of the Oceanside 30' x60' Quadrangle, compiled by Michael P. Kennedy and Siang S Tan, dated 2007.
3. Structural Engineers Association of California, [SEAOC/OSHPD Seismic Design Maps Tool](#), accessed on 7/21/2022e
4. USGS Earthquake Hazard Program, <https://earthquake.usgs.gov/hazards/>
5. USGS/California Geological Survey (CGS), Department of Conservation, Fault Activity Map of California, accessed July 21. 2022 at Fault Activity Map of California

Dear Mr. Holasek:

ABI Engineering Consultants, Inc. (ABI) has completed a preliminary geotechnical investigation at the subject site to provide geotechnical recommendations for the proposed residential subdivision project. It is planned to subdivide the lot into 10 residential lots. The proposed subdivision for single-family homes will require site grading for building pads, construction of driveways and access roads, utility installation and stormwater management structures. The site grading is anticipated to require cut and fill, retaining walls with heights up to 10 feet. The project is in the preliminary stages and detailed architectural plans were not available at the time of preparation of this report. The site is served by public sewer and water. The site location is shown on Figure 1, and the site plan is shown on Figure 2.

## PURPOSE

The purpose of this investigation was to characterize the subsurface soil conditions at the site and provide geotechnical recommendations for earthwork, foundation design parameters, lateral soil pressure parameters, seismic parameters, and associated site improvements. Percolation tests were also performed to determine the percolation and n

## **SCOPE OF WORK**

The scope of work included the following tasks:

- Literature and map review of the region and vicinity
- Review of site conditions
- Performing drilling and sampling at the site
- Performing laboratory testing of soil samples
- Performing percolation tests
- Engineering analysis, and
- Preparation of this report.

## **SITE CONDITIONS**

The project site is located on west of Via Teramo, approximately 250 feet north of Montiel Road in City of Escondido, California. The subject site is approximately 1.98 acres in a residential neighborhood. The site currently consists of a small single-story building and some shed structures. A number of trees and shrubs exist at the site. The site faces Via Terano Street, with a sliver of parcel at the southeast corner of the parcel extending to Montiel Road.

The site is relatively flat with grades gently from northeast to southwest with approximate elevation of between EL. 698 to 680 feet with respect to mean sea level (msl). An approximately 10- to 25 feet high slope exists beyond the northern boundary of this property.

## **SUBSURFACE INVESTIGATION**

The subsurface conditions beneath the site were explored on June 20, 2022, by drilling seven (7) soil borings labeled as B-1 through B-7 were drilled at the locations shown on Figure 2. The borings were advanced using 6-inch diameter hollow stem flight augers with aid of a truck mounted drill rig. The borings were drilled to depths ranging from 5 feet to 26.5 feet below adjacent ground surface level.

Standard Penetration Test blow counts (SPT-N) were obtained during drilling at approximately 5-foot intervals. Relatively undisturbed soil samples were obtained by driving 3.0-inch outer diameter Modified California Sampler lined with 2.42-inch internal diameter metal rings. Bulk soil samples were collected from drill cuttings. The collected soil samples were stored in plastic containers or bags to retain the natural moisture content. After completion of logging and sampling, the boreholes were backfilled with drill cuttings.

The soils were visually classified in the field in accordance with the Unified Soil Classification System (USCS) in accordance with ASTM D2488/ASTM D2487 standard procedure. The logs of the soil borings are attached. The logs represent our interpretations of the subsurface conditions based on our field observations, a visual examination of samples, and the indicated laboratory tests performed on selected samples. The line designating the interface between various strata on the soil boring log represents the

approximate positions of the interface. The actual transition between strata may be gradual. Ground water was not encountered during borings.

## **PERCOLATION TESTS**

Percolation tests were performed at the site to determine the percolation rate of water. The percolation rate will be used for estimating the infiltration rate of the subsurface soils. Percolation tests were performed on June 21, 22. Three percolation tests were performed at borings B-1, B-3 and B-5 to depth of 10 feet below existing grade (bgs). The percolation test holes were 6 inches in diameter. A 6-inch thick layer of gravel was placed at the bottom of each hole. A 3-inch diameter perforated PVC casing was inserted inside test hole. The annular space around the casing was filled with gravel to 12-inch below ground surface (bgs). The test was conducted after pre-soaking was completed. During the test, the drop in water levels with time was recorded at each test location.

The holes were pre-soaked prior to beginning the test. A sounder was used for water level measurements. Using percolation data, infiltration rate in each test hole was calculated using "Porchet Method". Field testing data and calculations are attached.

## **GEOTECHNICAL LABORATORY INVESTIGATION**

Laboratory tests were performed on collected samples obtained from the boring. Based on the soil type encountered, relevant tests required to provide the geotechnical recommendations were performed in general accordance with applicable ASTM standards. The following tests were performed:

1. In-situ Moisture Content and Density (ASTM D2216 and ASTM D 2937),
2. Particle-Size Distribution using Sieve Analysis (ASTM D 6913),
3. Atterberg Limits (Liquid Limit, Plastic Limit) (ASTM D 4318),
4. Direct Shear Test (ASTM D 3080),
5. R-Value (CA 301), and
6. Sulfate Content (CA 417).

The test results are attached to this report.

## **SITE GEOLOGY AND SUBSURFACE CONDITIONS**

Based on Geologic Map of Oceanside 30' x 60" Quadrangle, the site and vicinity area are underlain with Pleistocene old alluvial fan deposits, consisting of non-marine gravel, sand, and silts (Kennedy (1999). These deposits overlie weathered Cretaceous crystalline rocks.

During our subsurface investigation, soils encountered underneath the site were predominantly sand and silty sand to the explored depth. The subsurface soils were encountered in layers and in dense to very dense conditions to the maximum explored depth of 25 feet bgs.

## **Groundwater**

Groundwater was encountered at a depth of 22.5 feet (approx. elevation of 668 ft) in a borehole B-7. during our exploration at site. However, seasonal and long-term fluctuations in the groundwater may occur as a result of variations in subsurface conditions, rainfall, run-of conditions, and other factors

## **GEOLOGIC AND SEISMIC HAZARD EVALUATION**

### **Ground Surface Rupture**

The property is not located in an Alquist-Priolo (AP) Special Study Fault Zone. Based on CGS map review, no known active faults are mapped as crossing or projecting towards the site. Major faults near the site are Newport-Inglewood fault, located at the closest distance of about 15.7 miles to the southwest and Elsinore fault located at the closest distance about 15.7 miles at closest distance northeast from the site. Therefore, the possibility of ground surface fault rupture at the site is considered low at this time.

### **Liquefaction and Seismic Settlement**

Liquefaction involves sudden loss in strength of a saturated, cohesionless soil (predominantly sand) caused by the build-up of pore water pressure during cyclic loading, such as that produced by an earthquake. This increase in pore water pressure can temporarily transform the soil into a fluid mass, resulting in vertical settlement and can also cause lateral ground deformations. Typically, liquefaction occurs in areas where there are loose sands and the depth to groundwater is less than 50 feet from the surface. Seismic shaking can also cause soil compaction and ground settlement without liquefaction occurring, including settlement of dry sands above the water table.

The site is not located within a zone of required investigation for liquefaction (CGS maps). The underlying Pleistocene old alluvial fan deposits are not susceptible to liquefaction. The subsurface soils were encountered in dense to very dense conditions during our investigation. Therefore, we are of the opinion that the potential for liquefaction at the site is none.

### **Slope Stability**

Based on review of maps available in CGS webpages, the site is not located in a State of California Earthquake-Induced Landslide Zone. The site is anticipated to be graded to either to eliminate slope or to retain slope with retaining structure within the site. With engineered design of retaining structures and slope, slope instability issues is not anticipated for this project. Any slope if constructed with cut or fill should be engineered per recommendations provided in this report.

### **Oil Fields**

The site is not near to any active oil field, therefore, the potential for oil field gas or hydrocarbon hazard at the site is low.

### **Flood Hazards**

The site does not fall within a 100 or a 500-year FEMA flood zone.

### **Other Seismic and Geologic Hazards**

There are no adjacent bodies of water, and the site is located about 12 miles from the coast and has an elevation about +670 feet. Therefore, the site is not subject tsunamis or seiches. The site is not in a known natural asbestos, volcanic eruption area or within a radon-222 gas zone. Since the site is near a residential area, asbestos from fireproofing, household chemicals, lead from paint, total petroleum hydrocarbons from cars and/or pesticides and herbicides such as arsenic could be present.

### **Expansion Potential of Soil**

Subsurface material is predominantly coarse-grained granular materials with non-plastic fines. Therefore, the subsurface soil is anticipated to be non-expansive.

### **Soil Corrosivity**

Sulfate is an ion that can lead to damage to metallic and concrete structures. The test result performed on on-site soil shows that soluble sulfates on on-site soils range from 208 to 707 ppm<sup>8</sup> which indicates that sulfate attack on buried concrete is anticipated to be “moderate”. Concrete should be designed in accordance with the 2019 CBC Section 1904 and ACI 318 Section 4. Type II Portland cement may be used for concrete exposed to the native subsurface soils. The water-cement ratio should be 0.50 or less.

## **CONCLUSIONS**

It is our opinion that the proposed development is feasible from geotechnical considerations. The proposed construction will not adversely impact the structures on the property or neighboring properties from a geotechnical perspective provided recommendations provided herein will be implemented during design and construction.

## **GEOTECHNICAL RECOMMENDATIONS**

The following recommendations are based upon geotechnical conditions encountered in our subsurface investigation, laboratory investigation and our engineering analysis and judgement. It is recommended that all during grading and construction be monitored by representative from this firm to verify the findings and recommendations presented in this report. The appropriate changes in design or construction procedures are recommended if subsurface conditions differ from those described herein.

### **Site Preparation and Earthwork**

The construction areas should be cleared of any existing vegetation, debris, disturbed surficial soils, and any deleterious materials that may be present. All demolition debris and tree stumps/roots should be completely removed, and site graded per the recommendations in this section

After clearing the site, the exposed soils should be carefully inspected to verify the removal of all unsuitable deposits. Any unsuitable materials uncovered during grading excavation should be excavated to expose a firm surface or undisturbed natural soils. If soft or "pumping" areas are observed, the area



should be excavated beyond the limits of the soft pocket and re-compacted with suitable fill material according to the recommendations presented below in filling and compaction paragraphs.

Exposed soils at the bottom of slab-on-grade and pavement area excavations should be scarified to a depth of at least eight inches, brought close to optimum moisture content, and compacted to at least 90 percent of the maximum dry density determined by Modified Proctor Compaction Test per ASTM D1557 method of compaction

### **Fill Placement and Compaction**

On-site soils are generally considered to be suitable fill materials provided the soils are free of organic material, construction debris, and rocks bigger than 3 inches. All import fill material should be approved by the Geotechnical Engineer prior to importing to the site for use as compacted fill. Import soils shall be non-expansive granular soils.

Any required fills shall be placed in loose lifts not exceeding eight inches thick and compacted to a minimum of 90 percent at of the maximum dry density, at within 3 percent of the optimum moisture content, determined by Modified Proctor Compaction Test per ASTM D1557 test standards. All backfill for utility trenches shall be compacted to 90 percent relative compaction at near optimum moisture content.

The fill surface must be maintained during construction to achieve the recommended compaction. We recommend that the fill surface be sloped to provide drainage and to prevent water from ponding on the fill. If precipitation is expected, fill construction shall be temporarily halted and the surface shall be rolled with a steel drum or rubber-tire roller to improve surface runoff. If the surface soils become excessively wet, fill operations shall be halted and the geotechnical engineer shall be consulted prior to continuing fill operations.

### **Temporary Excavations**

Temporary excavations should be performed in accordance with Occupational Safety and Health Administration (OSHA) requirements. Based on our field investigation, the anticipated subsurface materials are predominantly "Type C Soils". Any excavations over 5 feet in height shall be sloped back at minimum gradient of 1.5:1 (horizontal to vertical) or be shored or braced for safety and should be protected from erosion during construction. Excavations extending below a 1.5:1 (H: V) plane extending down from any adjacent footings should be shored for safety.

The contractor is solely responsible for site safety during construction. The contractor should be aware of that the excavation height and slope inclination in no case exceed those specified in local, state, and federal safety regulations.

### **INFILTRATION RATE**

Infiltration rate of subsurface soils was estimated using "Porchet Method" utilizing percolation rates obtained from the tests. The lowest calculated infiltration rate at the site is 1.5 inches per hour or 40 minutes per inch. For the design of BMPs for stormwater, it is recommended to apply a factor of safety to the calculated infiltration rate to account for soil inconsistencies, possible compaction during site

grading and potential silting of the percolating soils. Infiltration rate can be affected by silt buildup, debris, degree of soil saturation and other factors.

On-site BMPs should be constructed at least 10 feet away from the external side of the building foundation to avoid any subsurface soil saturation underneath the building.

## **DESIGN RECOMMENDATIONS**

### **Foundation Design**

The foundation for the proposed building shall be designed to meet the setback requirement of the 2019 California Building Code. The proposed structures can be supported on a shallow foundation system established on competent native soil or certified compacted fill. The shallow foundations consisting of continuous strip footings and/or isolated spread footings may be designed to impose a net dead plus live load pressure of 2,500 pounds per square foot (psf). The allowable bearing capacity may be increased by one-third for short-term live loads (e.g. seismic and wind loads). The bottoms of the footings should be embedded below the lowest adjacent grade or floor level to a minimum of 18 inches for exterior footings as well as interior footings. The width of strip footings should be at least 12 inches. Isolated spread footings should have a minimum width of 2 feet. The

Steel reinforcement for footing should be designed by the structural engineer. Minimum reinforcement should be of 4 #4 bars, 2 at top and 2 at bottom in exterior and interior footings.

The foundation excavations should be observed by qualified special inspection personnel to verify that the excavations are clean, and that the bearing fill soils or subgrade have not been disturbed. In cases where the bearing soils have been disturbed during excavation or have become overly dry due to having been left open for extended periods, the bearing soils should be reconditioned and re-compacted.

### **Settlement**

The total static settlement of spread and continuous footings, established as recommended, is anticipated to be on the order of 1 inch or less with maximum differential settlements on the order of 1/2 inch over horizontal distance of 30 feet. However, the potential for additional differential settlement due to soil consolidation exists if the soils below the zone of excavation become saturated.

## **CONCRETE SLABS-ON-GRADE**

Design of the slab-on-grade supported on firm and non-yielding subgrade (compacted fill soils) may be designed based on a modulus of subgrade reaction of 150 pounds per cubic inch. Structural elements such as thickness, reinforcement, joint spacing should be selected based on the anticipated loading, the modulus of subgrade reaction, and minimum geotechnical requirement recommended as following.

The interior and exterior concrete slabs-on-grade should have a minimum thickness of 4 inches and be reinforced with #4 reinforcing bars placed at 18 inches on-center each way. It is recommended that a

minimum 4-inch-thick layer of granular material underlie the concrete pavement. This base layer should be compacted and should exhibit a firm and unyielding condition prior to concrete placement.

For interior slab with moisture sensitive floor covering, and to limit moisture infiltration and seepage through concrete slabs, a synthetic moisture barrier is recommended. A 15-mil thick polyethylene sheeting overlapped a minimum of 6 inches at seams is acceptable. The polyethylene sheet shall be protected from tears and rupture during the placement of rebar and formwork for concrete, by placing a 2-inch layer of sand above the synthetic barrier. The concrete slab should be allowed to cure properly before placing vinyl or another moisture-sensitive floor covering.

## **LATERAL RESISTANCE**

Lateral loads may be resisted by soil friction on the footings and by the passive resistance of the soils. A coefficient of friction of 0.35 may be used between the footings and the supporting soils. The allowable lateral bearing earth pressure (passive resistance) may be computed as an equivalent fluid having a density of 300 psf per foot of depth, to a maximum earth pressure of 3,000 psf. Passive resistance shall not be considered for the upper 12 inches of soil. A one-third reduction in the passive value may be combined with the frictional resistance without reduction in determining the total lateral resistance.

## **LATERAL EARTH PRESSURE PARAMETERS**

Assumption that typical granular compacted fill will be used as structural backfill materials, the lateral pressures can be calculated based on densities expressed as Equivalent Fluid Pressures (EFP). These values should be verified once the material has been selected and may be altered based on the gradation of the actual material to be used for the construction.

At rest pressure and active pressure should be used in the design of non-yielding and yielding walls respectively.

**Table 2: Lateral Earth Pressure Parameters**

| Parameter              | Level Backfill | Slope (2H:1V) Backfill |
|------------------------|----------------|------------------------|
| Active pressure (EFP)  | 35 pcf         | 45 pcf                 |
| At rest pressure (EFP) | 50 pcf         | 70 pcf                 |

## **RETAINING WALL DESIGN CRITERIA**

Recommendations presented herein may apply to typical masonry or concrete vertical retaining walls to a maximum height of 12 feet. Additional review and recommendations should be requested for higher walls. A minimum foundation width of 18 inches should be used. Retaining walls should be adequately designed to resist the lateral soil pressures, adjacent structure loadings, anticipated construction loadings and service conditions. The earth pressure acting on retaining walls depends primarily on allowable wall movement, backfill material types, backfill slopes, wall inclination, surcharges, and hydrostatic pressure.

The lateral earth pressure load recommended above shall be used for design of retaining structures. The surcharge effects of any adjacent loading conditions (eg. structures, slopes, traffic loads, floor loads, etc.) should be included in retaining walls design, as appropriate. Lateral resistance provided by soil shall be taken as per recommended value in paragraph "Lateral Resistance" above.

For retaining height exceeding 6 feet, the seismically induced earth pressures should be applied in addition to the static lateral earth pressures and should be considered in combination with the static lateral pressures. For simplified analysis, an additional seismically induced earth load of  $12H^2$  for level backfill and  $21H^2$  for sloping backfill not steeper than 2H:1V gradient is recommended. The seismic load would act at  $0.33H$  above the base of wall, where  $H$  is retaining height of wall.

Sub-drains should be provided in the wall backfill or weep holes/slits and they should be installed at the base of retaining walls, where feasible. At a minimum, sub-drains should consist of 4-inch diameter, perforated Schedule 40 PVC pipe or equivalent, embedded in approximately 1 cubic feet per lineal foot of permeable material meeting the State of California Standard Specification Section 68-1.025, Class 1, Type A, or equivalent. This permeable material should be enveloped in Supac 5NP geotextile fabric filter fabric or equivalent. The pipe should be located approximately 6 inches above the footing, and the pipe and trench bottom should be sloped at a minimum gradient of 1 percent to a suitable discharge outlet.

### **SEGMENTAL BLOCK RETAINING WALLS/REINFORCED SLOPE**

Segmental Block Retaining Walls or Mechanically Stabilized Earth (MSE) walls may be designed using the following soils parameters, provided additional testing during construction confirms that the foundation, retained and backfill soils have minimum angle of internal friction recommended below.

**Table 3: Segmental Block Retaining Walls Design Parameters**

| Soil Parameters                   | Foundation Soils and Retained Soils | Reinforced Fill (Imported or onsite Soil) |
|-----------------------------------|-------------------------------------|-------------------------------------------|
| Internal Friction Angle, $\phi$ ° | 32                                  | 32                                        |
| Cohesion, $C$ (psf)               | 0                                   | 0                                         |
| Soil Unit Weight, $\gamma$ (pcf)  | 125                                 | 125                                       |

Based on the site location, a seismic peak acceleration coefficient of  $0.47g$  is recommended for the wall design.

During construction of the walls, the backfill shall be compacted to minimum 90% of the maximum dry density determined using Modified Proctor Compaction Test (ASTM D1557). The embedment of the wall shall be a minimum of 6 inches below-grade for level grade at the base of the wall, or shall be to sufficient depth that results in 5-feet to daylight at the base of the wall. The leveling pad consisting of crushed rock shall be placed to a minimum depth of 6 inches below the base of the wall. The wall shall be designed to have a subdrain at the base of the wall. Area drains for surface water drainage shall be installed the top of the walls to drain surface water away from the wall to minimize saturation of wall backfill.

## **SEISMIC DESIGN PARAMETERS**

Seismically resistant structural design in accordance with local building ordinances shall be followed during the design of all structures. Building Codes have been developed to reduce the potential for structural damage. However, some level of damage as the result of ground shaking generated by nearby earthquakes is considered likely in the general area. Following table provides the most recent seismic coefficients and seismic data in accordance with requirements included in the 2013 California Building Code of Regulations:

Seismically resistant structural design in accordance with local building ordinances should be followed during the design of all structures. Based on site subsurface conditions, the site is classified as Site Class D: stiff soil. The following table summarizes site-specific design parameters obtained from computer based [SEAOC/OSHPD Seismic Design Maps Tool](#)

**Table 4: Seismic Design Parameters**

| <b>Parameter</b>                                                        | <b>Value</b> |
|-------------------------------------------------------------------------|--------------|
| Site Class                                                              | D            |
| Mapped Spectral Response Acceleration-Short Period (0.2 Sec), ( $S_s$ ) | 0.898 g      |
| Mapped Spectral Response Acceleration-1 Second Period, ( $S_1$ )        | 0.329 g      |
| Adjusted Spectral Response Acceleration @ 0.2 Sec. Period, ( $S_{MS}$ ) | 1.783 g      |
| Adjusted Spectral Response Acceleration @ 1Sec.Period, ( $S_{M1}$ )     | 0.979 g      |
| Design Spectral Response Acceleration @ 0.2 Sec. Period, ( $S_{DS}$ )   | 1.188 g      |
| Design Spectral Response Acceleration @ 1-Sec. Period, ( $S_{D1}$ )     | 0.652 g      |
| Site Specific Peak Ground Acceleration ( $PGA_M$ ), per ASCE 7-10       | 0.47 g       |

Conformance to the criteria in the table above for seismic design does not constitute any guarantee or assurance that significant structural damage or ground failure will not occur if a large earthquake occurs. The primary goal of seismic design is to protect life and not to avoid all damage, as such design may be economically prohibitive.

## **ASPHALT CONCRETE (FLEXIBLE) PAVEMENT**

For design of asphalt concrete pavement, R-value of 50 for subgrade soils and an R-Value of 78 for the aggregate were used. The recommended asphalt pavement sections for various traffic indices (TIs) are presented in the table below. Appropriate traffic index (TI) should be selected by the project civil engineer.

**Table 5: Asphalt Pavement Design**

| <b>Traffic Index</b> | <b>Minimum Asphalt Thickness (in.)</b> | <b>Minimum Base Course Thickness (in.)</b> |
|----------------------|----------------------------------------|--------------------------------------------|
| 4                    | 2.5                                    | 6                                          |
| 5                    | 3.0                                    | 6                                          |
| 6                    | 3.5                                    | 6                                          |
| 7                    | 4.0                                    | 6                                          |

Prior to placing the base materials, the upper 12 inches of the subgrade soil should be scarified, moisture conditioned as necessary, and recompacted to a minimum 95 percent of maximum dry density determined per Modified Proctor Compaction test (ASTM D1557) at near optimum moisture content (per ASTM D1557). Base course material shall consist of  $\frac{3}{4}$  inch Class 2 AB or equivalent and should be compacted to a minimum of 95 percent relative compaction (per ASTM D 1557).

Subgrade soil in the upper 12" of the driveways and parking areas should be compacted to 90 percent relative compaction. Base course material shall consist of  $\frac{3}{4}$  inch Aggregate base, Class 2 material or equivalent and should be compacted to a minimum of 95 percent of the maximum value obtained from ASTM D1557 test method

## **UTILITY TRENCHES**

Any soft and/or unstable material encountered at the bottom of excavations for such facilities should be removed and be replaced with an adequate bedding material. The on-site soils, if free of any particles greater than 3 inches, may be used for bedding or shading of utilities and piping. A non-expansive granular material with a sand equivalent greater than 30 may be imported for this purpose.

The on-site soils are suitable for backfill of utility and pipe trenches from one foot above the top of the pipe to the final ground surface, provided the material is free of organic matter and deleterious substances, and non-granular expansive soils. Trench backfill should be mechanically placed and compacted in thin lifts to at least 90 percent of the maximum dry density as determined by ASTM Test Method D1557. Flooding or jetting for placement and compaction of backfill is not recommended.

## **SITE GRADING FOR SURFACE DRAINAGE**

Proper site drainage is critical to reduce the potential for differential soil movement, soil expansion, erosion, and subsurface seepage. Under no circumstances should water be allowed to pond adjacent to building foundations. We recommend that the site should be graded in accordance with the 2013 CBC or other applicable standards and maintained such that positive drainage should be established away from structures.

We recommend all roofs should be guttered and discharge away from the structure in a non-erosive manner. It is recommended that trees should not be planted a minimum of one half their anticipated mature height from a footing. Alternatively, all planters adjacent to footings should be sealed.

Underground utilities should be leak free. Utility and irrigation lines should be checked periodically for leaks, and detected leaks should be repaired promptly. If water is allowed to infiltrate the subgrade soil, differential soil movement and expansion could occur.

## **LID BMP CONSTRUCTION**

For LID BMP design, results of measured infiltration tests are presented in attached Percolation Test Data. It is advised to use appropriate factor of safety to determine the design infiltration rate. Infiltration BMP shall be setback from property lines, public right-of-way, building foundations per applicable setback requirements presented below:

1. The invert of LID infiltration BMP shall be set back at least 15 feet, and outside a 1:1 plane drawn up from the bottom of adjacent foundations.
2. LID infiltration BMP shall not be located near utility lines where the introduction of stormwater could cause damage to utilities or settlement of trench backfill.

## **CONSTRUCTION OBSERVATION**

The firm should also be retained to perform on-site construction observations and testing to ascertain those conditions correspond to the findings and conclusions presented herein and that construction generally conforms to the recommendations presented herein. If variations in subsurface soil conditions become evident during construction, the recommendations presented herein may warrant a revision. The geotechnical and geological consultants should be called for testing and observations as indicated in this report and at least for the following:

1. All excavation bottoms should be observed by a geotechnical representative prior to fill placement.
2. Structural fill and backfill should be placed and compacted during continuous observation and testing. For fill soils placed on the site, we recommend that a minimum of one in-place field density test be conducted for every foot of compacted layer placed.
3. Observation and testing of utility trenches beneath and adjacent to structures.
4. Observation of the sand and vapor barrier placement prior to placement of reinforcement and concrete.

Please notify this office 48 hours in advance of any required sampling or observations, so that the appropriate personnel can be made available.

## **LIMITATIONS**

The recommendations provided in this report are based on our understanding of the subject property to, and on our interpretation of the data collected. We have made our recommendations based on experience with similar subsurface conditions under similar development conditions. These recommendations apply to the project specifically discussed in this report; therefore, any changes in load conditions or site grades should be provided to us so that we may review our conclusions and recommendations and make any

necessary modifications. Our professional services have been performed using that degree of care and skill ordinarily exercised, under similar circumstances, by reputable geotechnical consultants practicing in this or similar localities. No other warranty, expressed or implied, is made as to the professional advice included in this report. The report has not been prepared for use by other parties and may not contain sufficient information for purposes of other parties or other uses.

If you have any questions on this letter report, please feel free to contact me at (888) 220-5596.

Sincerely,  
ABI Engineering Consultants, Inc.



Daya Bettadapura, P.E.  
Principal Engineer

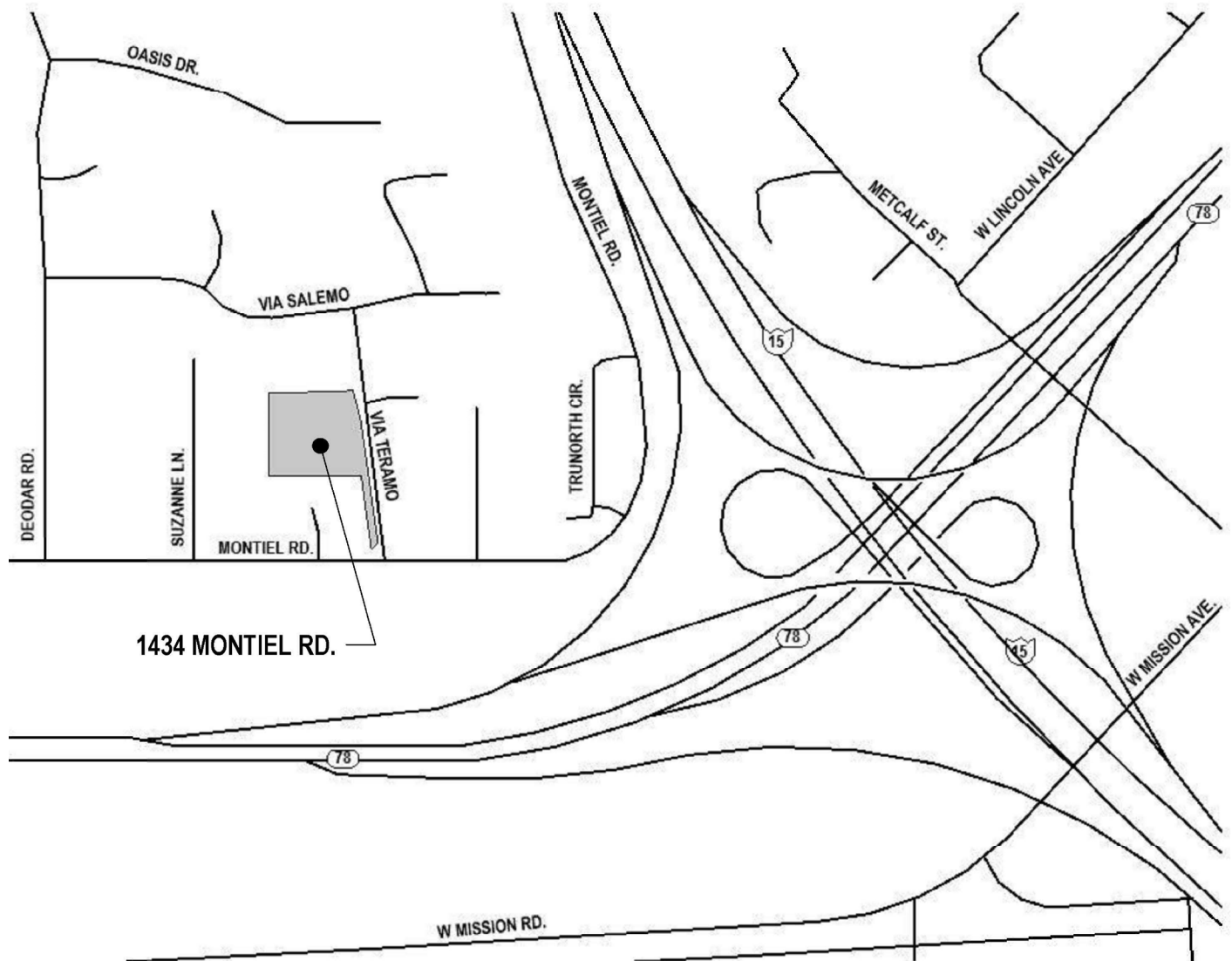


Jimmy Wang, P.E.  
Sr. Project Engineer

Attachments:

Figure 1 – Site Vicinity Map  
Figure 2 – Site Plan  
Figure 3 – Regional Geology Map  
Figure 4 – Seismic Hazards Map  
Figure 5 – Site Plan: Geology Map  
Figure 5A – Geologic Cross Section  
Boring Logs  
Laboratory Test Results  
Percolation Test Reports





# SITE VICINITY MAP

NOT TO SCALE



PROJECT: 1434 MONTIEL ROAD  
ESCONDIDO, CA 92026

PROJECT NO: 22056

**ABI** *ENGINEERING*  
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FIGURE

1



2

Project: **Montiel Road Subdivision**Project Location: **1434 Montiel Road Escondido, CA**Project Number: **22056**

## Log of Boring B-1

Sheet 1 of 1

|                                                               |                                                 |                                                 |
|---------------------------------------------------------------|-------------------------------------------------|-------------------------------------------------|
| Date(s) Drilled<br><b>06/20/22</b>                            | Logged By<br><b>JCW</b>                         | Checked By<br><b>DB</b>                         |
| Drilling Method<br><b>8" USA</b>                              | Drill Bit Size/Type<br><b>8"</b>                | Total Depth of Borehole<br><b>11.5 feet bgs</b> |
| Drill Rig Type<br><b>Mobile B-53</b>                          | Drilling Contractor<br><b>CAL PAC</b>           | Approximate Surface Elevation<br><b>N/A</b>     |
| Groundwater Level and Date Measured<br><b>Not Encountered</b> | Sampling Method(s)<br><b>Cal-Mod, SPT, Bulk</b> | Hammer Data<br><b>N/A</b>                       |
| Borehole Backfill                                             | Location <b>33.129820 N 117.109620 W</b>        |                                                 |

| Elevation (feet) | Depth (feet) | Sample Type | Sample Number | Sampling Resistance, blows/ft | Material Type | Graphic Log | MATERIAL DESCRIPTION                                           | Water Content, % | Dry Unit Weight, pcf | Percent Fines | LL, % | PI, % | REMARKS AND OTHER TESTS |
|------------------|--------------|-------------|---------------|-------------------------------|---------------|-------------|----------------------------------------------------------------|------------------|----------------------|---------------|-------|-------|-------------------------|
| 0                |              |             | B1 @0-5       |                               | SM            |             | Silty SAND, Brown, Moist, Medium Dense, Fine to Medium Grained |                  |                      |               |       |       |                         |
|                  | 7            |             |               |                               |               |             |                                                                |                  |                      |               |       |       |                         |
|                  | 11           |             | B1@2.5        |                               |               |             |                                                                | 5.5              | 119.3                |               |       |       |                         |
|                  | 15           |             |               |                               |               |             |                                                                |                  |                      |               |       |       |                         |
| 5                |              |             | B1@5          | 17                            | SM            |             | Silty SAND, Brown, Moist, Very Dense, Fine to Medium Grained   |                  |                      |               |       |       |                         |
|                  | 26           |             |               |                               |               |             |                                                                |                  |                      |               |       |       |                         |
|                  | 50-5"        |             |               |                               |               |             |                                                                |                  |                      |               |       |       |                         |
|                  |              |             |               |                               | SC            |             | Becomes Clayey SAND, Moist, Brown, Very Dense                  |                  |                      |               |       |       |                         |
| 10               |              |             | B1@10         | 6                             | SC            |             | Becomes Clayey SAND, Moist, Brown, Very Dense, Coarse,         |                  |                      |               |       |       |                         |
|                  | 50-3"        |             |               |                               |               |             | Bottom of Boring                                               |                  |                      |               |       |       |                         |
| 15               |              |             |               |                               |               |             |                                                                |                  |                      |               |       |       |                         |
| 20               |              |             |               |                               |               |             |                                                                |                  |                      |               |       |       |                         |
| 25               |              |             |               |                               |               |             |                                                                |                  |                      |               |       |       |                         |
| 30               |              |             |               |                               |               |             |                                                                |                  |                      |               |       |       |                         |

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Project: **Montiel Road Subdivision**Project Location: **1434 Montiel Road Escondido, CA**Project Number: **22056**

## Log of Boring B-2

Sheet 1 of 1

|                                                               |                                                 |                                               |
|---------------------------------------------------------------|-------------------------------------------------|-----------------------------------------------|
| Date(s) Drilled<br><b>06/20/22</b>                            | Logged By<br><b>JCW</b>                         | Checked By<br><b>DB</b>                       |
| Drilling Method<br><b>8" USA</b>                              | Drill Bit Size/Type<br><b>8"</b>                | Total Depth of Borehole<br><b>12 feet bgs</b> |
| Drill Rig Type<br><b>Mobile B-53</b>                          | Drilling Contractor<br><b>CAL PAC</b>           | Approximate Surface Elevation<br><b>N/A</b>   |
| Groundwater Level and Date Measured<br><b>Not Encountered</b> | Sampling Method(s)<br><b>Cal-Mod, SPT, Bulk</b> | Hammer Data<br><b>N/A</b>                     |
| Borehole Backfill                                             | Location <b>33.130010 N 117.110070 W</b>        |                                               |

| Elevation (feet) | Depth (feet) | Sample Type | Sample Number | Sampling Resistance, blows/ft | Material Type | Graphic Log | MATERIAL DESCRIPTION                                                           | Water Content, % | Dry Unit Weight, pcf | Percent Fines | LL, % | PI, % | REMARKS AND OTHER TESTS |
|------------------|--------------|-------------|---------------|-------------------------------|---------------|-------------|--------------------------------------------------------------------------------|------------------|----------------------|---------------|-------|-------|-------------------------|
|                  | 0            |             | B2 @0-5       |                               | SM            |             | Silty SAND, Brown, Moist, Medium Dense, Fine to Medium Grained                 |                  |                      | 18.3          | 24    | 7     |                         |
|                  | 8            |             | B2@2.5        | 11                            |               |             |                                                                                |                  |                      |               |       |       |                         |
|                  | 5            |             | B2@5          | 10                            |               |             |                                                                                |                  |                      |               |       |       |                         |
|                  | 10           |             | B2@10         | 12                            |               |             | Becomes Silty SAND, Brown, Moist, Medium Dense, Fine to Medium Grained w/Rocks |                  |                      |               |       |       |                         |
|                  |              |             |               |                               | SM            |             | Terminate Boring Due to Refusal                                                | 5.6              | 112.3                |               |       |       |                         |
|                  | 15           |             |               |                               |               |             |                                                                                |                  |                      |               |       |       |                         |
|                  | 20           |             |               |                               |               |             |                                                                                |                  |                      |               |       |       |                         |
|                  | 25           |             |               |                               |               |             |                                                                                |                  |                      |               |       |       |                         |
|                  | 30           |             |               |                               |               |             |                                                                                |                  |                      |               |       |       |                         |

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Project: **Montiel Road Subdivision**Project Location: **1434 Montiel Road Escondido, CA**Project Number: **22056**

## Log of Boring B-3

Sheet 1 of 1

|                                                               |                                                 |                                              |
|---------------------------------------------------------------|-------------------------------------------------|----------------------------------------------|
| Date(s) Drilled<br><b>06/20/22</b>                            | Logged By<br><b>JCW</b>                         | Checked By<br><b>DB</b>                      |
| Drilling Method<br><b>8" USA</b>                              | Drill Bit Size/Type<br><b>8"</b>                | Total Depth of Borehole<br><b>6 feet bgs</b> |
| Drill Rig Type<br><b>Mobile B-53</b>                          | Drilling Contractor<br><b>CAL PAC</b>           | Approximate Surface Elevation<br><b>N/A</b>  |
| Groundwater Level and Date Measured<br><b>Not Encountered</b> | Sampling Method(s)<br><b>Cal-Mod, SPT, Bulk</b> | Hammer Data<br><b>N/A</b>                    |
| Borehole Backfill                                             | Location <b>33.130170 N 117.110020 W</b>        |                                              |

| Elevation (feet) | Depth (feet)   | Sample Type | Sample Number | Sampling Resistance, blows/ft | Material Type | Graphic Log | MATERIAL DESCRIPTION                                           | Water Content, % | Dry Unit Weight, pcf | Percent Fines | LL, % | PI, % | REMARKS AND OTHER TESTS |
|------------------|----------------|-------------|---------------|-------------------------------|---------------|-------------|----------------------------------------------------------------|------------------|----------------------|---------------|-------|-------|-------------------------|
|                  | 0              |             | B3 @0-5       |                               | SM            |             | Silty SAND, Brown, Moist, Medium Dense, Fine to Medium Grained |                  |                      |               |       |       |                         |
|                  | 11<br>14<br>16 |             | B3@2.5        |                               | SM            |             | Silty SAND, Brown, Moist, Medium Dense, Fine to Medium Grained |                  |                      |               |       |       |                         |
|                  | 5              |             | B3@5          | 10<br>12<br>50-4"             | SM            |             | Silty SAND, Brown, Moist, Very Dense, Fine to Medium Grained   | 3.6              | 115.5                |               |       |       |                         |
|                  |                |             |               |                               |               |             | Terminate Boring Due to Refusal                                |                  |                      |               |       |       |                         |
|                  | 10             |             |               |                               |               |             |                                                                |                  |                      |               |       |       |                         |
|                  | 15             |             |               |                               |               |             |                                                                |                  |                      |               |       |       |                         |
|                  | 20             |             |               |                               |               |             |                                                                |                  |                      |               |       |       |                         |
|                  | 25             |             |               |                               |               |             |                                                                |                  |                      |               |       |       |                         |
|                  | 30             |             |               |                               |               |             |                                                                |                  |                      |               |       |       |                         |

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Project: **Montiel Road Subdivision**Project Location: **1434 Montiel Road Escondido, CA**Project Number: **22056**

## Log of Boring B-4

Sheet 1 of 1

|                                                               |                                                 |                                               |
|---------------------------------------------------------------|-------------------------------------------------|-----------------------------------------------|
| Date(s) Drilled<br><b>06/20/22</b>                            | Logged By<br><b>JCW</b>                         | Checked By<br><b>DB</b>                       |
| Drilling Method<br><b>8" USA</b>                              | Drill Bit Size/Type<br><b>8"</b>                | Total Depth of Borehole<br><b>15 feet bgs</b> |
| Drill Rig Type<br><b>Mobile B-53</b>                          | Drilling Contractor<br><b>CAL PAC</b>           | Approximate Surface Elevation<br><b>N/A</b>   |
| Groundwater Level and Date Measured<br><b>Not Encountered</b> | Sampling Method(s)<br><b>Cal-Mod, SPT, Bulk</b> | Hammer Data<br><b>N/A</b>                     |
| Borehole Backfill                                             | Location <b>33.130110 N 117.109800 W</b>        |                                               |

| Elevation (feet) | Depth (feet) | Sample Type | Sample Number | Sampling Resistance, blows/ft | Material Type | Graphic Log | MATERIAL DESCRIPTION                                            | Water Content, % | Dry Unit Weight, pcf | Percent Fines | LL, % | PI, % | REMARKS AND OTHER TESTS |
|------------------|--------------|-------------|---------------|-------------------------------|---------------|-------------|-----------------------------------------------------------------|------------------|----------------------|---------------|-------|-------|-------------------------|
|                  | 0            |             | B4 @0-5       |                               | SM            |             | SAND w/Silt, Brown, Moist, Medium Dense, Fine to Medium Grained |                  |                      | 21.1          |       |       |                         |
|                  | 4            |             | B4@2.5        | 6                             | SM            |             | SAND w/Silt, Brown, Moist, Medium Dense, Fine to Medium Grained |                  |                      |               |       |       |                         |
|                  | 5            |             | B4@5          | 5                             |               |             |                                                                 |                  |                      |               |       |       |                         |
|                  | 10           |             | B4@10         | 9                             | SM            |             | SAND w/Silt, Brown, Moist, Very Dense, Fine to Medium Grained   |                  |                      |               |       |       |                         |
|                  | 15           |             | B4@15         | 50-1"                         | SW            |             | SAND, Brown, Wet, Very Dense, Fine to Medium Grained            |                  |                      |               |       |       |                         |
|                  |              |             |               |                               |               |             | Bottom of Boring                                                |                  |                      |               |       |       |                         |
|                  | 20           |             |               |                               |               |             |                                                                 |                  |                      |               |       |       |                         |
|                  | 25           |             |               |                               |               |             |                                                                 |                  |                      |               |       |       |                         |
|                  | 30           |             |               |                               |               |             |                                                                 |                  |                      |               |       |       |                         |

Project: **Montiel Road Subdivision**Project Location: **1434 Montiel Road Escondido, CA**Project Number: **22056**

## Log of Boring B-5

Sheet 1 of 1

|                                                               |                                                 |                                               |
|---------------------------------------------------------------|-------------------------------------------------|-----------------------------------------------|
| Date(s) Drilled<br><b>06/20/22</b>                            | Logged By<br><b>JCW</b>                         | Checked By<br><b>DB</b>                       |
| Drilling Method<br><b>8" USA</b>                              | Drill Bit Size/Type<br><b>8"</b>                | Total Depth of Borehole<br><b>10 feet bgs</b> |
| Drill Rig Type<br><b>Mobile B-53</b>                          | Drilling Contractor<br><b>CAL PAC</b>           | Approximate Surface Elevation<br><b>N/A</b>   |
| Groundwater Level and Date Measured<br><b>Not Encountered</b> | Sampling Method(s)<br><b>Cal-Mod, SPT, Bulk</b> | Hammer Data<br><b>N/A</b>                     |
| Borehole Backfill                                             | Location <b>33.129830 N 117.109260 W</b>        |                                               |

| Elevation (feet) | Depth (feet) | Sample Type | Sample Number | Sampling Resistance, blows/ft | Material Type | Graphic Log | MATERIAL DESCRIPTION                                             | Water Content, % | Dry Unit Weight, pcf | Percent Fines | LL, % | PI, % | REMARKS AND OTHER TESTS |
|------------------|--------------|-------------|---------------|-------------------------------|---------------|-------------|------------------------------------------------------------------|------------------|----------------------|---------------|-------|-------|-------------------------|
|                  | 0            |             | B5 @0-5       |                               | SM            |             | Silty SAND, Brown, Moist, Medium Dense, Fine to Medium Grained   |                  |                      |               |       |       |                         |
|                  | 8            |             | B5@2.5        | 8                             |               |             |                                                                  |                  |                      |               |       |       |                         |
|                  | 10           |             |               | 10                            |               |             |                                                                  |                  |                      |               |       |       |                         |
|                  | 14           |             |               | 14                            |               |             |                                                                  |                  |                      |               |       |       |                         |
|                  | 5            |             | B5@5          | 17                            | SC            |             | Clayey SAND, Brown, Moist, Dense, Fine to Medium Grained         | 9.1              | 115.4                | 27            |       |       |                         |
|                  | 24           |             |               | 24                            |               |             |                                                                  |                  |                      |               |       |       |                         |
|                  | 26           |             |               | 26                            |               |             |                                                                  |                  |                      |               |       |       |                         |
|                  | 10           |             | B5@10         | 4                             | SC            |             | Clayey SAND, Brown, Moist, Medium, Dense, Fine to Medium Grained |                  |                      |               |       |       |                         |
|                  | 7            |             |               | 7                             |               |             |                                                                  |                  |                      |               |       |       |                         |
|                  | 9            |             |               | 9                             |               |             |                                                                  |                  |                      |               |       |       |                         |
|                  |              |             |               |                               |               |             | Bottom of Boring                                                 |                  |                      |               |       |       |                         |
|                  | 15           |             |               |                               |               |             |                                                                  |                  |                      |               |       |       |                         |
|                  | 20           |             |               |                               |               |             |                                                                  |                  |                      |               |       |       |                         |
|                  | 25           |             |               |                               |               |             |                                                                  |                  |                      |               |       |       |                         |
|                  | 30           |             |               |                               |               |             |                                                                  |                  |                      |               |       |       |                         |

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Project: **Montiel Road Subdivision**Project Location: **1434 Montiel Road Escondido, CA**Project Number: **22056**

## Log of Boring B-6

Sheet 1 of 1

|                                                               |                                                 |                                               |
|---------------------------------------------------------------|-------------------------------------------------|-----------------------------------------------|
| Date(s) Drilled<br><b>06/20/22</b>                            | Logged By<br><b>JCW</b>                         | Checked By<br><b>DB</b>                       |
| Drilling Method<br><b>8" USA</b>                              | Drill Bit Size/Type<br><b>8"</b>                | Total Depth of Borehole<br><b>11 feet bgs</b> |
| Drill Rig Type<br><b>Mobile B-53</b>                          | Drilling Contractor<br><b>CAL PAC</b>           | Approximate Surface Elevation<br><b>N/A</b>   |
| Groundwater Level and Date Measured<br><b>Not Encountered</b> | Sampling Method(s)<br><b>Cal-Mod, SPT, Bulk</b> | Hammer Data<br><b>N/A</b>                     |
| Borehole Backfill                                             | Location <b>33.130370 N 117.109800 W</b>        |                                               |

| Elevation (feet) | Depth (feet) | Sample Type | Sample Number | Sampling Resistance, blows/ft | Material Type | Graphic Log | MATERIAL DESCRIPTION                                         | Water Content, % | Dry Unit Weight, pcf | Percent Fines | LL, % | PI, % | REMARKS AND OTHER TESTS |
|------------------|--------------|-------------|---------------|-------------------------------|---------------|-------------|--------------------------------------------------------------|------------------|----------------------|---------------|-------|-------|-------------------------|
| 0                |              |             | B6 @0-5       |                               | SM            |             | Silty SAND, Brown, Moist, Very Dense, Fine to Medium Grained |                  |                      |               |       |       |                         |
|                  |              |             | B6@2.5        | 6<br>12<br>50-5"              |               |             |                                                              |                  |                      |               |       |       |                         |
| 5                |              |             | B6@5          | 50-6"                         | SM            |             | Partial Recovery 5"                                          | 2.8              | 102.9                |               |       |       |                         |
|                  |              |             |               |                               | SW            |             | SAND, Tan, Moist, Very Dense, Fine to Medium Grained         |                  |                      |               |       |       |                         |
| 10               |              |             | B6@10         | 50-5"                         |               |             | Terminate Boring Due to Refusal                              |                  |                      |               |       |       |                         |
| 15               |              |             |               |                               |               |             |                                                              |                  |                      |               |       |       |                         |
| 20               |              |             |               |                               |               |             |                                                              |                  |                      |               |       |       |                         |
| 25               |              |             |               |                               |               |             |                                                              |                  |                      |               |       |       |                         |
| 30               |              |             |               |                               |               |             |                                                              |                  |                      |               |       |       |                         |

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Project: **Montiel Road Subdivision**Project Location: **1434 Montiel Road Escondido, CA**Project Number: **22056**

## Log of Boring B-7

Sheet 1 of 1

|                                                       |                                                 |                                               |
|-------------------------------------------------------|-------------------------------------------------|-----------------------------------------------|
| Date(s) Drilled<br><b>06/20/22</b>                    | Logged By<br><b>JCW</b>                         | Checked By<br><b>DB</b>                       |
| Drilling Method<br><b>8" USA</b>                      | Drill Bit Size/Type<br><b>8"</b>                | Total Depth of Borehole<br><b>25 feet bgs</b> |
| Drill Rig Type<br><b>Mobile B-53</b>                  | Drilling Contractor<br><b>CAL PAC</b>           | Approximate Surface Elevation<br><b>N/A</b>   |
| Groundwater Level and Date Measured<br><b>@ 22.5'</b> | Sampling Method(s)<br><b>Cal-Mod, SPT, Bulk</b> | Hammer Data<br><b>N/A</b>                     |
| Borehole Backfill                                     | Location <b>33.130280 N 117.109280 W</b>        |                                               |

| Elevation (feet) | Depth (feet) | Sample Type | Sample Number | Sampling Resistance, blows/ft | Material Type | Graphic Log | MATERIAL DESCRIPTION                                                | Water Content, % | Dry Unit Weight, pcf | Percent Fines | LL, % | PI, % | REMARKS AND OTHER TESTS |
|------------------|--------------|-------------|---------------|-------------------------------|---------------|-------------|---------------------------------------------------------------------|------------------|----------------------|---------------|-------|-------|-------------------------|
| 0                |              |             | B7 @0-5       |                               | SM            |             | Silty SAND, Tan, Dry to Moist, Medium Dense, Fine to Medium Grained |                  |                      |               |       |       |                         |
|                  | 9            |             | B7@2.5        | 12                            |               |             |                                                                     |                  |                      |               |       |       |                         |
|                  | 16           |             |               |                               |               |             |                                                                     |                  |                      |               |       |       |                         |
| 5                |              |             | B7@5          | 50-2"                         | SM            |             | Silty SAND, Tan, Dry to Moist, Very Dense, Fine to Medium Grained   | 3.5              | 95.6                 |               |       |       |                         |
| 10               |              |             | B7@10         | 50-4"                         | SM            |             | Silty SAND, Tan, Moist, Medium Dense, Fine to Medium Grained        |                  |                      |               |       |       |                         |
| 15               |              |             | B7@15         | 50-1"                         | SM            |             | Silty SAND, Tan, Moist, Medium Dense, Fine to Medium Grained        |                  |                      |               |       |       |                         |
| 20               |              |             | B7@20         | 50-5"                         | SM            |             | Silty SAND, Tan, Moist, Medium Dense, Fine to Medium Grained        |                  |                      |               |       |       |                         |
|                  |              |             |               |                               |               |             | Water                                                               |                  |                      |               |       |       |                         |
| 25               |              |             |               |                               |               |             | Bottom of Boring/No Recovery                                        |                  |                      |               |       |       |                         |
| 30               |              |             |               |                               |               |             |                                                                     |                  |                      |               |       |       |                         |

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Project: **Montiel Road Subdivision**

Project Location: **1434 Montiel Road Escondido, CA**

Project Number: **22056**

## Key to Log of Boring

**Sheet 1 of 1**

| Elevation (feet) | Depth (feet) | Sample Type | Sample Number | Sampling Resistance, blows/ft | Material Type | Graphic Log | MATERIAL DESCRIPTION | Water Content, % | Dry Unit Weight, pcf | Percent Fines | LL, % | PI, % | REMARKS AND OTHER TESTS |
|------------------|--------------|-------------|---------------|-------------------------------|---------------|-------------|----------------------|------------------|----------------------|---------------|-------|-------|-------------------------|
| 1                | 2            | 3           | 4             | 5                             | 6             | 7           | 8                    | 9                | 10                   | 11            | 12    | 13    | 14                      |

### COLUMN DESCRIPTIONS

- |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>1</b> Elevation (feet): Elevation (MSL, feet).</p> <p><b>2</b> Depth (feet): Depth in feet below the ground surface.</p> <p><b>3</b> Sample Type: Type of soil sample collected at the depth interval shown.</p> <p><b>4</b> Sample Number: Sample identification number.</p> <p><b>5</b> Sampling Resistance, blows/ft: Number of blows to advance driven sampler one foot (or distance shown) beyond seating interval using the hammer identified on the boring log.</p> <p><b>6</b> Material Type: Type of material encountered.</p> <p><b>7</b> Graphic Log: Graphic depiction of the subsurface material encountered.</p> <p><b>8</b> MATERIAL DESCRIPTION: Description of material encountered. May include consistency, moisture, color, and other descriptive text.</p> | <p><b>9</b> Water Content, %: Water content of the soil sample, expressed as percentage of dry weight of sample.</p> <p><b>10</b> Dry Unit Weight, pcf: Dry weight per unit volume of soil sample measured in laboratory, in pounds per cubic foot.</p> <p><b>11</b> Percent Fines: The percent fines (soil passing the No. 200 Sieve) in the sample. WA indicates a Wash Sieve, SA indicates a Sieve Analysis.</p> <p><b>12</b> LL, %: Liquid Limit, expressed as a water content.</p> <p><b>13</b> PI, %: Plasticity Index, expressed as a water content.</p> <p><b>14</b> REMARKS AND OTHER TESTS: Comments and observations regarding drilling or sampling made by driller or field personnel.</p> |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

### FIELD AND LABORATORY TEST ABBREVIATIONS

CHEM: Chemical tests to assess corrosivity  
 COMP: Compaction test  
 CONS: One-dimensional consolidation test  
 LL: Liquid Limit, percent

PI: Plasticity Index, percent  
 SA: Sieve analysis (percent passing No. 200 Sieve)  
 UC: Unconfined compressive strength test, Qu, in ksf  
 WA: Wash sieve (percent passing No. 200 Sieve)

### MATERIAL GRAPHIC SYMBOLS



Clayey SAND (SC)



Silty SAND (SM)



Well graded SAND (SW)

### TYPICAL SAMPLER GRAPHIC SYMBOLS



Auger sampler



CME Sampler



Bulk Sample



Grab Sample



3-inch-OD California w/ brass rings



2.5-inch-OD Modified California w/ brass liners



Pitcher Sample



2-inch-OD unlined split spoon (SPT)



Shelby Tube (Thin-walled, fixed head)

### OTHER GRAPHIC SYMBOLS



Water level (at time of drilling, ATD)



Water level (after waiting)



Minor change in material properties within a stratum



Inferred/gradational contact between strata



Queried contact between strata

### GENERAL NOTES

- Soil classifications are based on the Unified Soil Classification System. Descriptions and stratum lines are interpretive, and actual lithologic changes may be gradual. Field descriptions may have been modified to reflect results of lab tests.
- Descriptions on these logs apply only at the specific boring locations and at the time the borings were advanced. They are not warranted to be representative of subsurface conditions at other locations or times.

**MOISTURE AND DENSITY TEST RESULTS**

Project Name: Montiel Rd Subdivision  
Project No.: 22056  
Location: 1424 Montiel Rd, Escondino, CA

Tested By: DW  
Checked By: DB  
Report Date: 7/18/2022

| Boring Number | Depth (ft.) | Sample Type* | Moisture Content (%) | Dry Density (pcf) |
|---------------|-------------|--------------|----------------------|-------------------|
| B-1           | 2.5         | Cal-Mod      | 5.5                  | 119.3             |
| B-2           | 10          | Cal-Mod      | 5.6                  | 112.3             |
| B-3           | 5           | Cal-Mod      | 3.6                  | 115.5             |
| B-5           | 5           | Cal-Mod      | 9.1                  | 115.4             |
| * B-6         | 5           | Cal-Mod      | 2.8                  | 102.9             |
| B-7           | 5           | Cal-Mod      | 3.5                  | 95.6              |

Note:  
Cal-Mod: California Modified Sampler

## GRADATION OF SOILS USING SIEVE ANALYSIS

(ASTM D 6913)

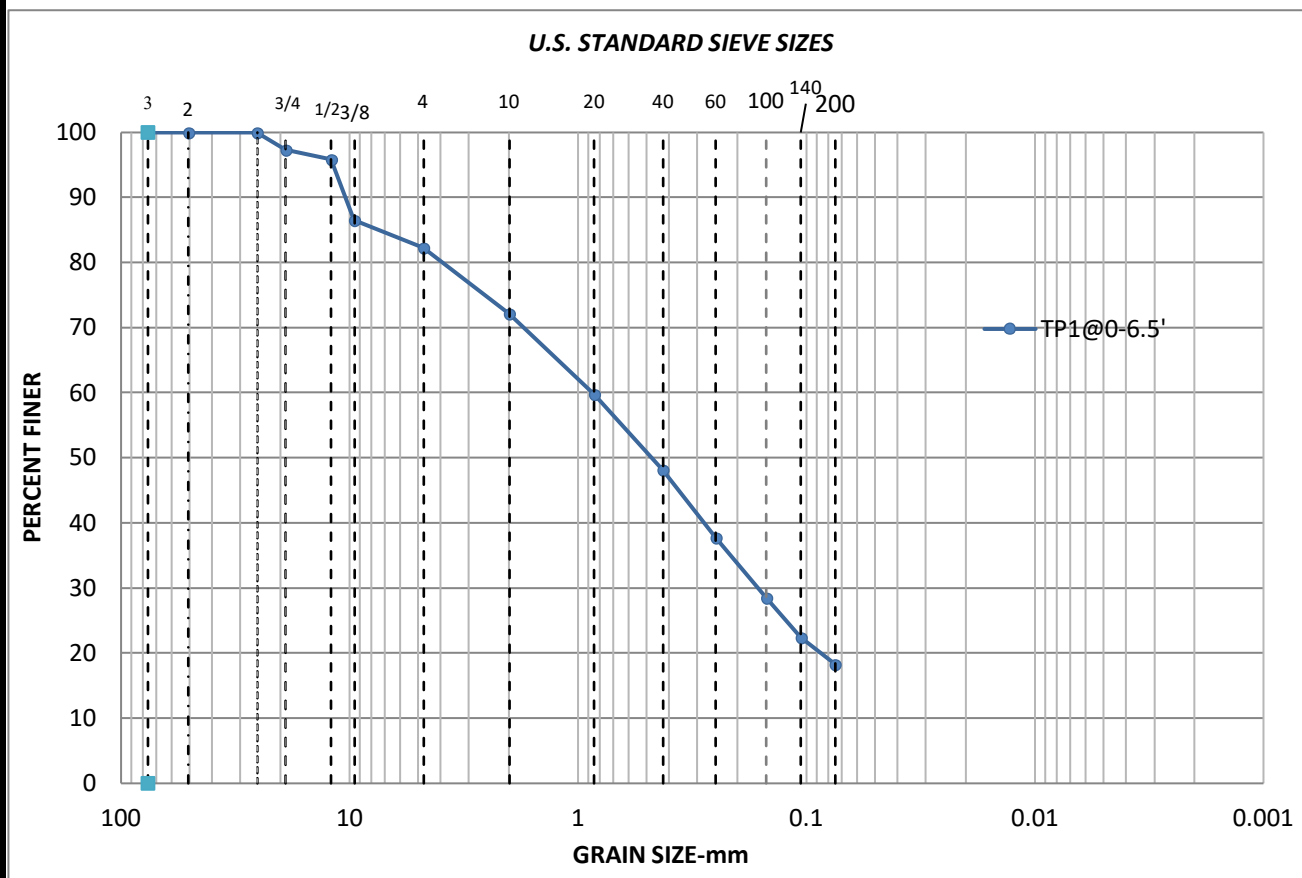
Project: Montiel Rd Subdivision  
Project No.: 22056  
Location: 1424 Montiel Rd, Escondino, CA

Tested By: DW  
Checked By: JR  
Date: 7/15/2022

Boring No: B-2 Depth (ft) : 0-5  
Sample ID/No.: B2@0-5

Soil Description (Visual): Silty SAND (SM)

| GRAVEL |      | SAND   |        |      | FINES (SILT AND CLAY) |
|--------|------|--------|--------|------|-----------------------|
| COARSE | FINE | COARSE | MEDIUM | FINE |                       |



Percent Distribution

| Sieve Designation | Percent Passing |
|-------------------|-----------------|
| 3"                | 100.0           |
| 0.75"             | 97.3            |
| #4                | 82.3            |
| #20               | 72.1            |
| #40               | 48.2            |
| #60               | 37.7            |
| #200              | 18.3            |

Percent Distribution

|        | Coarse | Medium | Fine | Total |
|--------|--------|--------|------|-------|
| Gravel | 2.7    | -      | 15.1 | 17.7  |
| Sand   | 10.1   | 23.9   | 29.9 | 64.0  |
| Fines  | 18.3   |        |      |       |

## GRADATION OF SOILS USING SIEVE ANALYSIS

(ASTM D 6913)

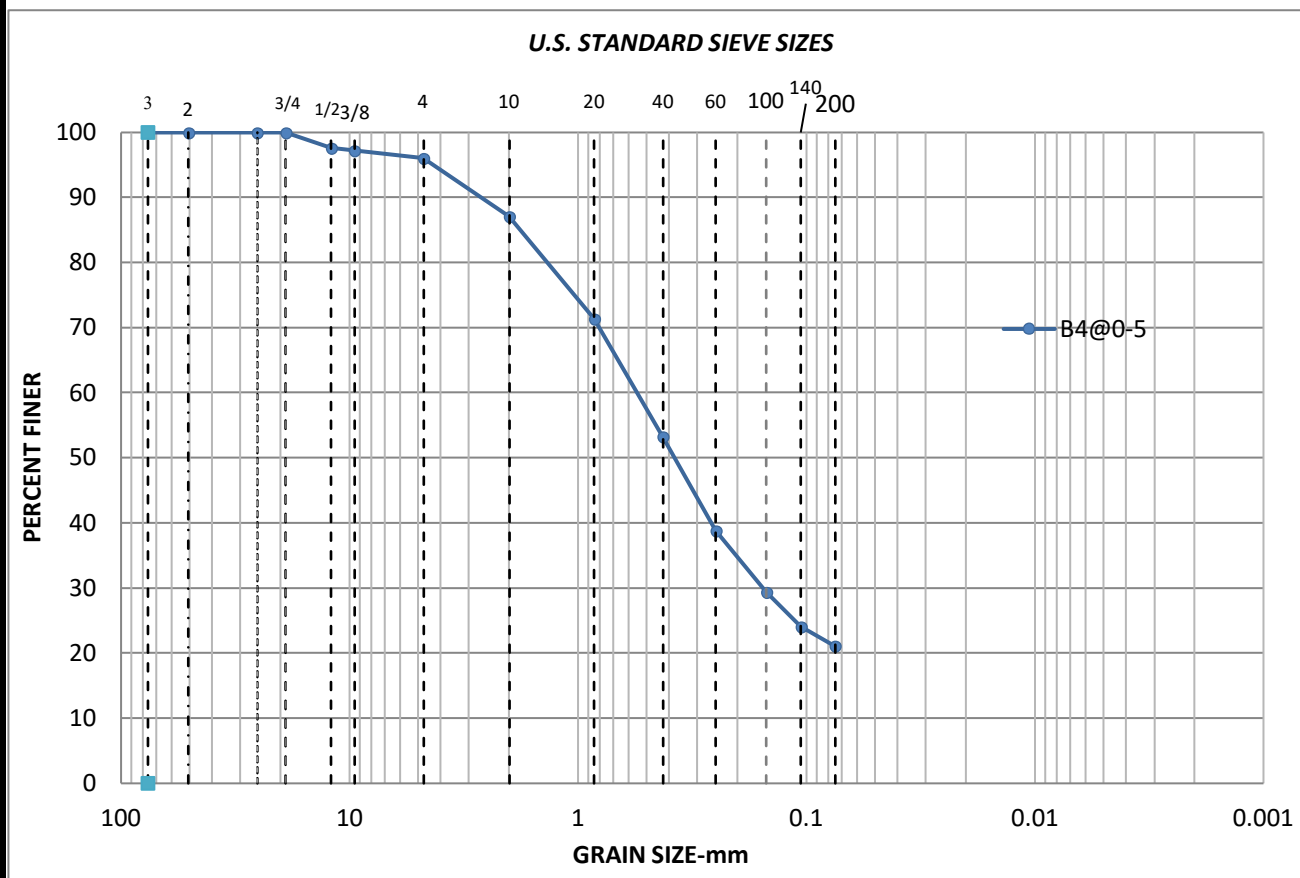
Project: Montiel Rd Subdivision  
Project No.: 22056  
Location: 1424 Montiel Rd, Escondino, CA

Tested By: DW  
Checked By: JR  
Date: 7/15/2022

Boring No: B-4 Depth (ft) : 0-5  
Sample ID/No.: B4@0-5

Soil Description (Visual): Silty SAND (SM)

| GRAVEL |      | SAND   |        |      | FINES (SILT AND CLAY) |
|--------|------|--------|--------|------|-----------------------|
| COARSE | FINE | COARSE | MEDIUM | FINE |                       |



Percent Distribution

| Sieve Designation | Percent Passing |
|-------------------|-----------------|
| 3"                | 100.0           |
| 0.75"             | 100.0           |
| #4                | 96.1            |
| #20               | 87.1            |
| #40               | 53.3            |
| #60               | 38.8            |
| #200              | 21.1            |

Percent Distribution

|        | Coarse | Medium | Fine | Total |
|--------|--------|--------|------|-------|
| Gravel | 0.0    | -      | 3.9  | 3.9   |
| Sand   | 9.0    | 33.8   | 32.2 | 75.0  |
| Fines  | 21.1   |        |      |       |

## GRADATION OF SOILS USING SIEVE ANALYSIS

(ASTM D 6913)

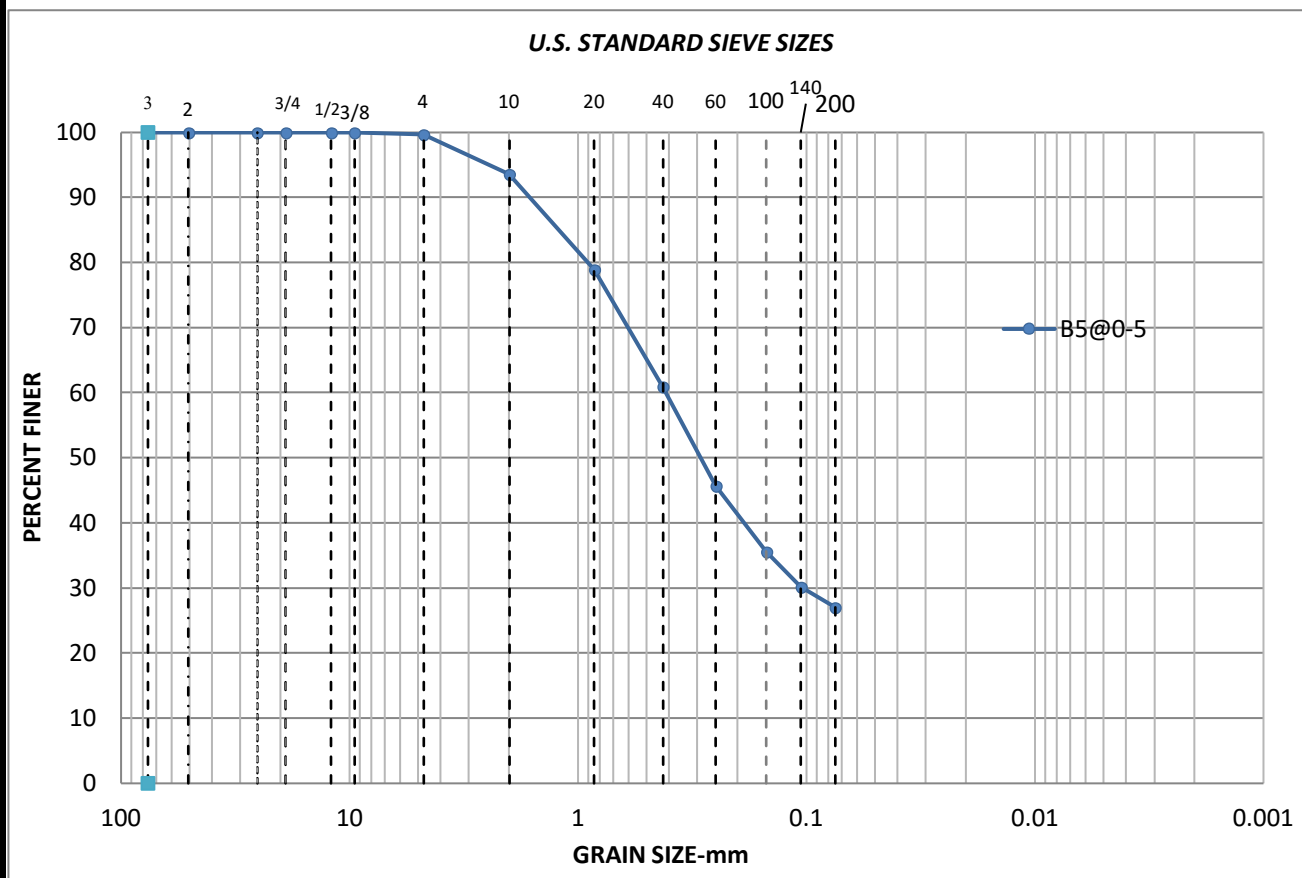
Project: Montiel Rd Subdivision  
Project No.: 22056  
Location: 1424 Montiel Rd, Escondino, CA

Tested By: DW  
Checked By: JR  
Date: 7/15/2022

Boring No: B-5 Depth (ft) : 0-5  
Sample ID/No.: B5@0-5

Soil Description (Visual): Silty SAND (SM)

| GRAVEL |      | SAND   |        |      | FINES (SILT AND CLAY) |
|--------|------|--------|--------|------|-----------------------|
| COARSE | FINE | COARSE | MEDIUM | FINE |                       |



Percent Distribution

| Sieve Designation | Percent Passing |
|-------------------|-----------------|
| 3"                | 100.0           |
| 0.75"             | 100.0           |
| #4                | 99.6            |
| #20               | 93.5            |
| #40               | 60.9            |
| #60               | 45.7            |
| #200              | 27.0            |

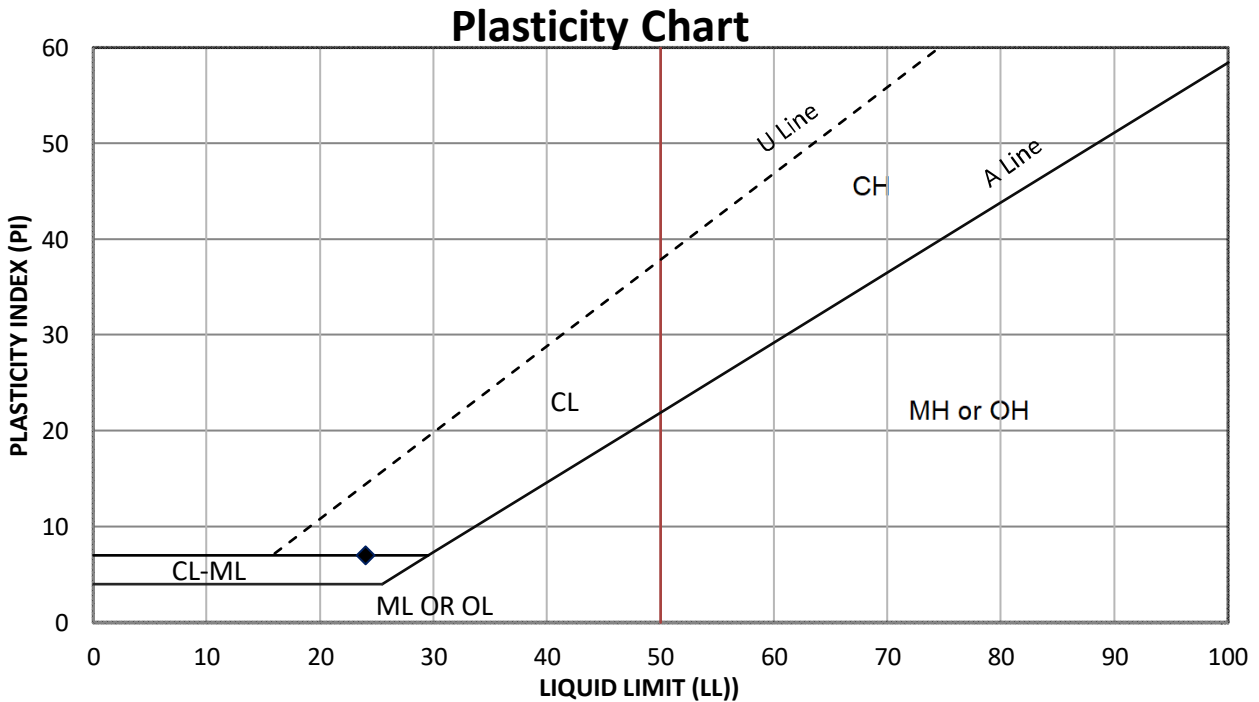
Percent Distribution

|        | Coarse | Medium | Fine | Total |
|--------|--------|--------|------|-------|
| Gravel | 0.0    | -      | 0.4  | 0.4   |
| Sand   | 6.1    | 32.6   | 33.9 | 72.6  |
| Fines  | 27.0   |        |      |       |

## LIQUID LIMIT, PLASTIC LIMIT TEST (ASTM D 4318)

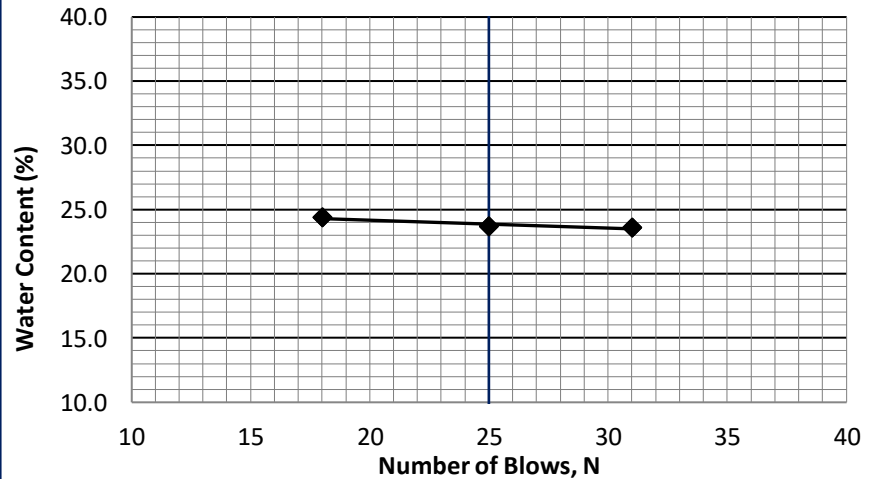
Project Name: Montiel Rd Subdivision  
Project No.: 22056  
Project Location: 1424 Montiel Rd, Escondido, CA

Tested By: DW  
Checked By: JR  
Report Date: 7/18/2022



#### PROCEDURE USED

- |   |                                |
|---|--------------------------------|
| X | Wet preparation                |
|   | Dry preparation                |
| X | Manual liquid limit device     |
|   | Mechanical liquid limit device |
| X | Method A: Multipoint           |
|   | Method B: 1-Point              |
| X | Hand rolled                    |
|   | Mechanical rolled              |
| X | Flat grooving tool             |
|   | Curve grooving tool            |



| Symbol | Boring Number | Depth (ft.) | Sample ID/# | As received water content (w) | Liquid Limit (LL) | Plastic Limit (PL) | Plasticity Index (PI) | Plasticity Chart Symbol |
|--------|---------------|-------------|-------------|-------------------------------|-------------------|--------------------|-----------------------|-------------------------|
| ◆      | B-2           | 0-5         | B-2@0-5     |                               | 24                | 17                 | 7                     | CL-ML                   |
|        | B-4           | 0-5         | B-4@0-5     |                               | Non-Plastic       |                    |                       | ML                      |
|        | B-5           | 0-5         | B-5@0-5     |                               | Non-Plastic       |                    |                       | ML                      |

Note:

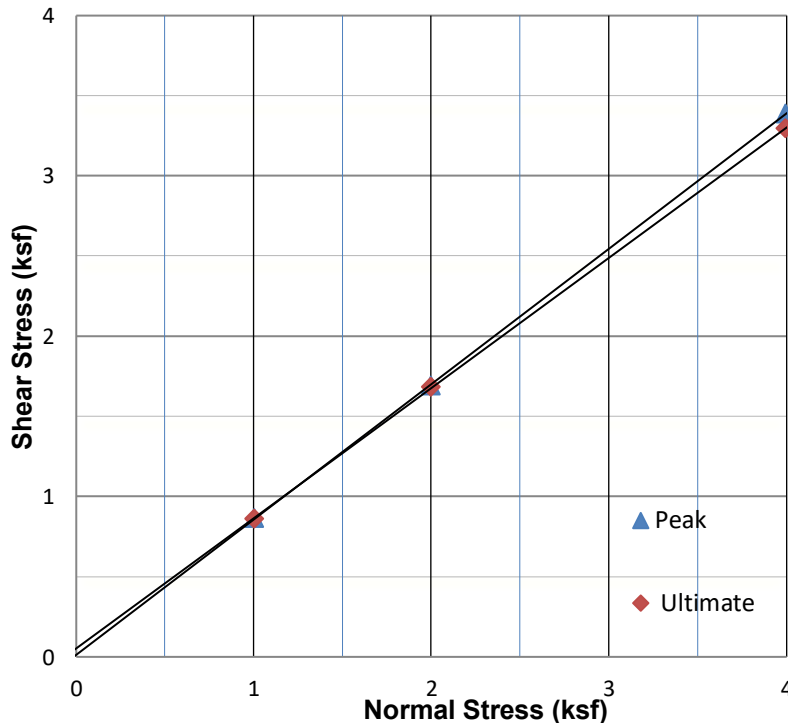
## DIRECT SHEAR TEST RESULTS

(ASTM D 3080)

Project Name: Montiel Rd Subdivision  
Project No.: 22056  
Project Location: 1424 Montiel Rd, Escondino, CA

Tested By : DW  
Checked By : DB  
Report Date : 7/18/2022

Boring No. B-1 Depth(ft): 2.5' Sample ID: 220523-002 Shape of shear box: Circular  
Sample type: Cal -Mod Diameter of shear box (in): 2.416  
Soil description: Silty Sand Initial specimen thickness (in): 1.000  
Rate of shearing (in/min): 0.024



### Strength Parameters

|                          | Peak | Ultimate |
|--------------------------|------|----------|
| Cohesion (psf)           | 13   | 51       |
| Friction angle (degrees) | 40   | 39       |

|                                 |                               | Normal Stress (ksf) |        |        |        |                                    |  |
|---------------------------------|-------------------------------|---------------------|--------|--------|--------|------------------------------------|--|
| Specimen Data                   |                               | Test number         | 1      | 2      | 3      |                                    |  |
|                                 | Wet density (pcf)             |                     | 127.9  | 123.8  | 132.7  |                                    |  |
|                                 | Water content (%)             |                     | 5.5    | 5.5    | 5.5    |                                    |  |
|                                 | Dry mass of test specimen (g) |                     | 145.9  | 141.3  | 151.4  |                                    |  |
|                                 | Dry density (pcf)             |                     | 121.2  | 117.4  | 125.8  |                                    |  |
|                                 | Void ratio                    |                     | 0.39   | 0.43   | 0.34   |                                    |  |
|                                 | Degree of saturation,S (%)    |                     | 38.1   | 34.1   | 43.7   |                                    |  |
| Preshear/After Shear Data       |                               |                     |        |        |        |                                    |  |
|                                 | Wet density (pcf)             |                     | 143.5  | 134.2  | 142.0  |                                    |  |
|                                 | Water content (%)             |                     | 19.5   | 16.2   | 15.1   |                                    |  |
|                                 | Dry density (pcf)             |                     | 120.1  | 115.5  | 123.4  |                                    |  |
|                                 | Void ratio                    |                     | 0.40   | 0.46   | 0.36   |                                    |  |
|                                 | Degree of saturation,S (%)    |                     | 100.0  | 95.9   | 100.0  | ( Assumed specific gravity of 2.7) |  |
| Results                         |                               |                     |        |        |        |                                    |  |
| Nominal normal stress (ksf)     |                               |                     | 1.00   | 2.00   | 3.99   |                                    |  |
| Nominal shear stress (ksf)      | Peak                          |                     | 0.86   | 1.69   | 3.39   |                                    |  |
|                                 | Ultimate                      |                     | 0.86   | 1.68   | 3.29   |                                    |  |
| Total normal displacement (in.) |                               |                     | -0.010 | -0.017 | -0.020 |                                    |  |
| Total shear displacement (in.)  |                               |                     | 0.394  | 0.394  | 0.394  |                                    |  |



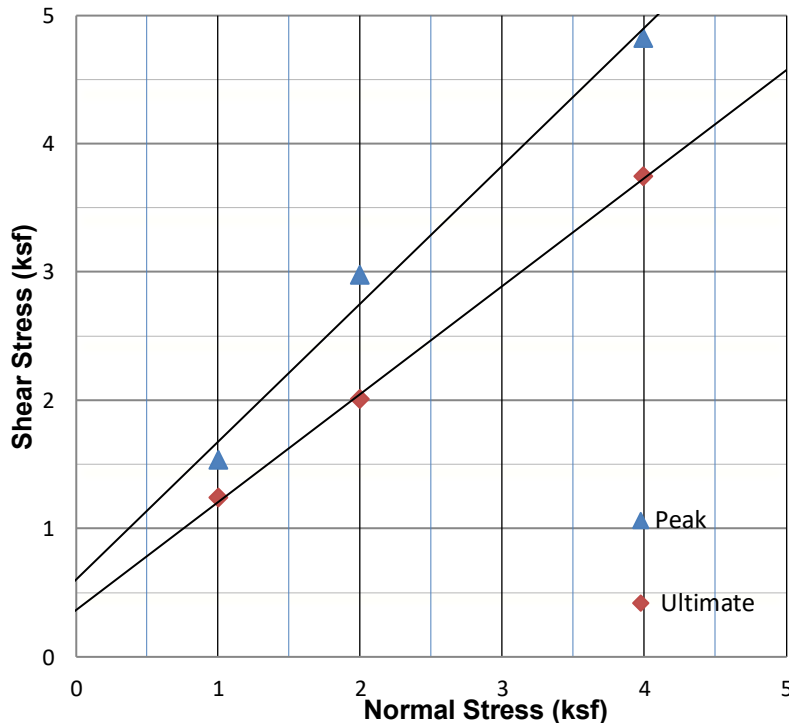
## DIRECT SHEAR TEST RESULTS

(ASTM D 3080)

Project Name: Montiel Rd Subdivision  
Project No.: 22056  
Project Location: 1424 Montiel Rd, Escondino, CA

Tested By : DW  
Checked By : DB  
Report Date : 7/18/2022

Boring No. B-6 Depth(ft): 5 Sample ID: 1/0/1900 Shape of shear box: Circular  
Sample type: Cal -Mod Diameter of shear box (in): 2.416  
Soil description: Silty Sand Initial specimen thickness (in): 1.000  
Rate of shearing (in/min): 0.024



### Strength Parameters

|                          | Peak | Ultimate |
|--------------------------|------|----------|
| Cohesion (psf)           | 600  | 360      |
| Friction angle (degrees) | 47   | 40       |

| Normal Stress (ksf)             |                               |             |        |       |        |                                    |  |
|---------------------------------|-------------------------------|-------------|--------|-------|--------|------------------------------------|--|
| Specimen Data                   |                               | Test number | 1      | 2     | 3      |                                    |  |
|                                 | Wet density (pcf)             |             | 125.8  | 129.6 | 131.3  |                                    |  |
|                                 | Water content (%)             |             | 2.8    | 2.8   | 2.8    |                                    |  |
|                                 | Dry mass of test specimen (g) |             | 147.3  | 151.8 | 153.8  |                                    |  |
|                                 | Dry density (pcf)             |             | 122.4  | 126.1 | 127.8  |                                    |  |
|                                 | Void ratio                    |             | 0.37   | 0.33  | 0.32   |                                    |  |
|                                 | Degree of saturation,S (%)    |             | 19.9   | 22.3  | 23.6   |                                    |  |
| Preshear/After Shear Data       |                               |             |        |       |        |                                    |  |
|                                 | Wet density (pcf)             |             | 138.9  | 147.7 | 148.6  |                                    |  |
|                                 | Water content (%)             |             | 14.9   | 17.0  | 20.2   |                                    |  |
|                                 | Dry density (pcf)             |             | 120.8  | 126.3 | 123.6  |                                    |  |
|                                 | Void ratio                    |             | 0.39   | 0.33  | 0.36   |                                    |  |
|                                 | Degree of saturation,S (%)    |             | 100.0  | 100.0 | 100.0  | ( Assumed specific gravity of 2.7) |  |
| Results                         |                               |             |        |       |        |                                    |  |
| Nominal normal stress (ksf)     |                               |             | 1.00   | 2.00  | 3.99   |                                    |  |
| Nominal shear stress (ksf) Peak |                               |             | 1.53   | 2.97  | 4.82   |                                    |  |
| Ultimate                        |                               |             | 1.24   | 2.01  | 3.74   |                                    |  |
| Total normal displacement (in.) |                               |             | -0.013 | 0.001 | -0.034 |                                    |  |
| Total shear displacement (in.)  |                               |             | 0.394  | 0.394 | 0.394  |                                    |  |

# ANAHEIM TEST LAB, INC

196 Technology Drive, Unit D  
Irvine, CA 92618  
Phone (949) 336-6544

TO:

ABI ENGINEERING  
1701 E. EDENGER AVE., STE A9  
SANTA ANA, CA 92705

DATE: 7/5/2022

P.O. NO.: Verbal

LAB NO.: C-6145

SPECIFICATION: CA-301

MATERIAL: Brown, Silty Sand w.  
trace Clay

Project No.: 22056  
Project: 1434 Montiel Rd  
Sample ID: B-5 @ 0-5' Bulk  
Sample Date: 6/20/2022

## ANALYTICAL REPORT

### "R" VALUE

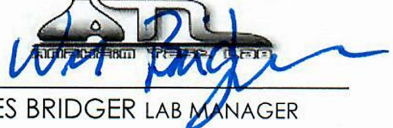
BY EXUDATION

BY EXPANSION

59

N/A

RESPECTFULLY SUBMITTED

  
WES BRIDGER LAB MANAGER

# "R" VALUE CA 301

Client: ABI Engineering  
Client Reference No.: 22056  
Sample: B-5 @ 0-5' Bulk

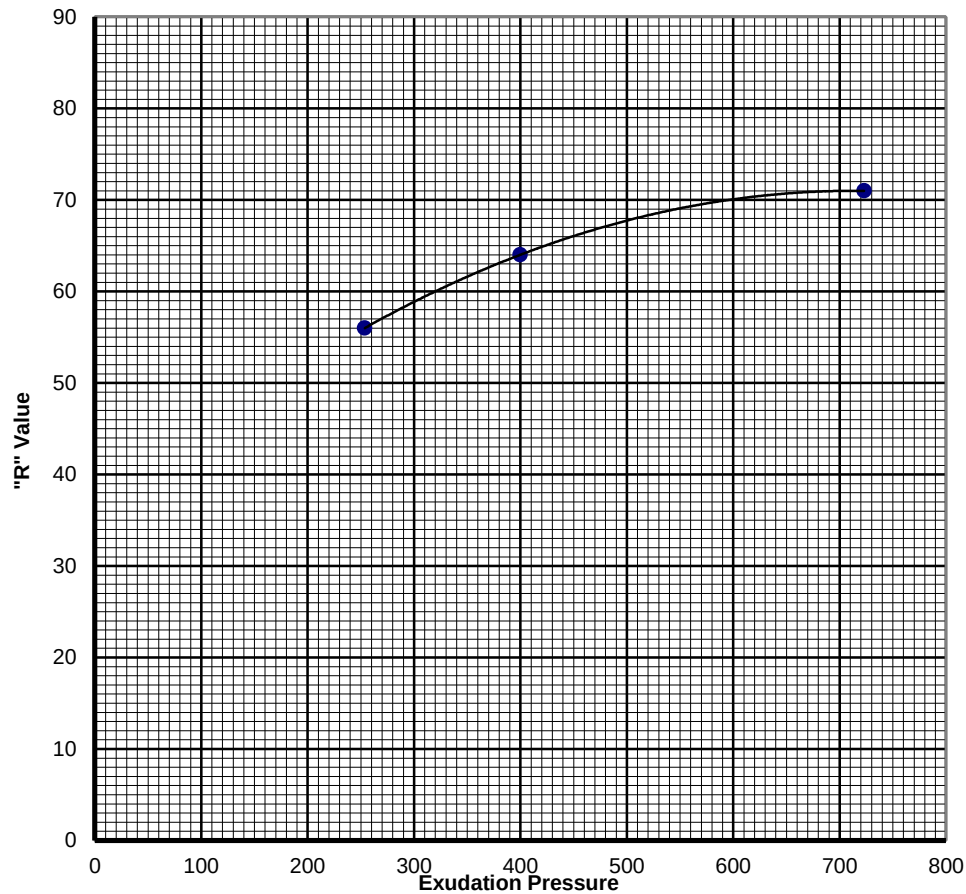
ATL No.: C 6145 Date: 7/5/2022

Soil Type: Brown, Silty Sand w. trace Clay

| TEST SPECIMEN            |       | A     | B     | C     | D |
|--------------------------|-------|-------|-------|-------|---|
| Compactor Air Pressure   | psi   | 200   | 350   | 300   |   |
| Initial Moisture Content | %     | 5.1   | 5.1   | 5.1   |   |
| Moisture at Compaction   | %     | 9.9   | 9.0   | 9.4   |   |
| Briquette Height         | in.   | 2.52  | 2.47  | 2.51  |   |
| Dry Density              | pcf   | 125.0 | 126.0 | 125.4 |   |
| EXUDATION PRESSURE       | psi   | 254   | 723   | 400   |   |
| EXPANSION PRESSURE       | psf   | 35    | 100   | 69    |   |
| Ph at 1000 pounds        | psi   | 25    | 19    | 22    |   |
| Ph at 2000 pounds        | psi   | 48    | 32    | 39    |   |
| Displacement             | turns | 4.65  | 4.15  | 4.29  |   |
| "R" Value                |       | 56    | 71    | 64    |   |
| CORRECTED "R" VALUE      |       | 56    | 71    | 64    |   |

## Final "R" Value

|                            |     |
|----------------------------|-----|
| BY EXUDATION:<br>@ 300 psi | 59  |
| BY EXPANSION:<br>TI = 5.0  | N/A |



# ANAHEIM TEST LAB, INC

196 Technology Drive, Unit D  
Irvine, CA 92618  
Phone (949) 336-6544

TO:

ABI ENGINEERING  
1701 E. EDINGER AVE., STE A9  
SANTA ANA, CA 92705

DATE: 7/1/2022

P.O. NO.: Verbal

LAB NO.: C-6140 1-2

SPECIFICATION: CTM-417

MATERIAL: Soil

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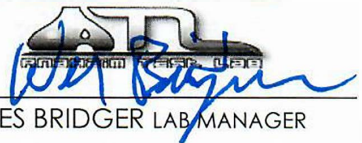
Project No.: 22056  
Project: Montiel Rd Subdivision  
Sample Date: 6/20/2022

## **ANALYTICAL REPORT**

SOLUBLE SULFATES  
per CT. 417  
ppm

|               |     |
|---------------|-----|
| 1) B-2 @ 0-5' | 218 |
| 2) B-7 @ 0-5' | 707 |

RESPECTFULLY SUBMITTED

  
WES BRIDGER LAB MANAGER

## Boring Percolation Testing Field Log

Date 6/20/2021

|                         |                                     |                                         |                                                |
|-------------------------|-------------------------------------|-----------------------------------------|------------------------------------------------|
| Project Location        | <u>1434 Montiel Rd., Escondidos</u> | Boring/Test Number                      | <u>B-1</u>                                     |
| Earth Description       | <u>Br. Sand w/Clay</u>              | Diameter of Boring                      | <u>8.0 in</u> Diameter of Casing <u>3.0 in</u> |
| Tested By               | <u>DW</u>                           | Depth of Boring                         | <u>10</u> ft                                   |
| Liquid Description      | <u>Clear Clean Tap water</u>        | Depth of Invert of BMP                  | _____                                          |
| Measurement Method      | <u>Sounder</u>                      | Depth to Water table                    | _____                                          |
|                         |                                     | Depth to Initial Water Depth (d1)       | _____ ft                                       |
| Time Interval Standard  |                                     | Depth to bottom from reference          | <u>10</u> ft.)                                 |
| Start Time for Pre-Soak | <u>7:20AM</u> on <u>6/20/22</u>     | Water Remaining in Boring (Y/N)         | <u>Y</u>                                       |
| Start Time for Standard | <u>7:00AM</u> on <u>6/21/22</u>     | Standard Time Interval Between Readings | <u>30</u>                                      |

(Sandy Soil Criteria)

| Reading Number | Time Start/End (hh:mm) | Elapsed Time Δtime (mins) | Water Drop During Standard Time Interval Δd (inches) | Percolation Rate Reading (in/hr) | Soil Description/Notes/Comments |
|----------------|------------------------|---------------------------|------------------------------------------------------|----------------------------------|---------------------------------|
| 1              | 8:01                   | 30                        | 1.30'                                                | 28.2                             | 56.4                            |
|                | 8:31                   |                           | 3.65'                                                |                                  |                                 |
| 2              | 8:32                   | 30                        | 1.40'                                                | 23.4                             | 46.8                            |
|                | 9:02                   |                           | 3.35'                                                |                                  |                                 |
| 3              | 9:04                   | 30                        | 1.64'                                                | 19.9                             | 39.8                            |
|                | 9:34                   |                           | 3.30'                                                |                                  |                                 |
| 4              | 9:36                   | 30                        | 1.80'                                                | 18.5                             | 37.0                            |
|                | 10:06                  |                           | 3.34'                                                |                                  |                                 |
| 5              | 10:08                  | 30                        | 1.40'                                                | 21.6                             | 43.2                            |
|                | 10:38                  |                           | 3.20'                                                |                                  |                                 |
| 6              | 10:40                  | 30                        | 1.40'                                                | 21.0                             | 42.0                            |
|                | 11:10                  |                           | 3.15'                                                |                                  |                                 |
| 7              | 11:11                  | 30                        | 1.56'                                                | 19.4                             | 38.9                            |
|                | 11:41                  |                           | 3.18'                                                |                                  |                                 |
| 8              | 11:42                  | 30                        | 1.52'                                                | 19.3                             | Stabilized rate                 |
|                | 12:12                  |                           | 3.13'                                                |                                  |                                 |
|                |                        |                           |                                                      |                                  |                                 |
|                |                        |                           |                                                      |                                  |                                 |

Calculation of Infiltration rate using Poechet (aks inverse hole method)

|                                                                              |                   |     |                     |
|------------------------------------------------------------------------------|-------------------|-----|---------------------|
| Total depth to test hole, DT =                                               | <u>10.0</u>       | ft  | (from Last Reading) |
| Initial depth to water, Do =                                                 | <u>1.52</u>       | ft  |                     |
| Final depth to water, Df =                                                   | <u>3.13</u>       | ft. |                     |
| Initial Height of water, H <sub>0</sub> = DT - D <sub>0</sub> =              | <u>101.8</u>      | in  |                     |
| Final Height of water, H <sub>f</sub> = DT - D <sub>f</sub> =                | <u>82.4</u>       | in  |                     |
| Average Height, H <sub>avg.</sub> = (H <sub>0</sub> + H <sub>f</sub> ) / 2 = | <u>92.1</u>       | in  |                     |
| Change in Height, ΔH = H <sub>f</sub> - H <sub>0</sub> =                     | <u>19.32</u>      |     |                     |
| Tested Infiltration Rate, I <sub>t</sub> =                                   | <u>1.6 in./hr</u> |     |                     |

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

## Boring Percolation Testing Field Log

Date 6/20/2021

|                         |                                     |                                                |                                                |
|-------------------------|-------------------------------------|------------------------------------------------|------------------------------------------------|
| Project Location        | <u>1434 Montiel Rd., Escondidos</u> | Boring/Test Number                             | <u>B-3</u>                                     |
| Earth Description       | <u>Br. Sand w/Clay</u>              | Diameter of Boring                             | <u>8.0 in</u> Diameter of Casing <u>3.0 in</u> |
| Tested By               | <u>DW</u>                           | Depth of Boring                                | <u>6 ft</u>                                    |
| Liquid Description      | <u>Clear Clean Tap water</u>        | Depth of Invert of BMP                         | <u>                    </u>                    |
| Measurement Method      | <u>Sounder</u>                      | Depth to Water table                           | <u>                    </u> ft                 |
|                         |                                     | Depth to Initial Water Depth (d <sub>i</sub> ) | <u>                    </u> ft                 |
| Time Interval Standard  |                                     | Depth to bottom from reference                 | <u>10 ft.)</u>                                 |
| Start Time for Pre-Soak | <u>8:10AM on 6/20/22</u>            | Water Remaining in Boring (Y/N)                | <u>N</u>                                       |
| Start Time for Standard | <u>10:00AM om 6/21/22</u>           | Standard Time Interval Between Readings        | <u>10</u>                                      |
|                         |                                     | <i>(Sandy Soil Criteria)</i>                   |                                                |

| Reading Number | Time Start/End (hh:mm) | Elapsed Time Δtime (mins) | Water Drop During Standard Time Interval Δd (inches) | Percolation Rate Reading (in/hr) | Soil Description/Notes/Comments |
|----------------|------------------------|---------------------------|------------------------------------------------------|----------------------------------|---------------------------------|
| 1              | 12:02                  | 10                        | 1.30'                                                | 28.2                             | Brown Silty Sand                |
|                | 12:12                  |                           | 3.65'                                                |                                  |                                 |
| 2              | 12:14                  | 10                        | 1.40'                                                | 23.4                             | Bottom- Bedrock                 |
|                | 12:24                  |                           | 3.35'                                                |                                  |                                 |
| 3              | 12:26                  | 10                        | 1.64'                                                | 19.9                             |                                 |
|                | 12:36                  |                           | 3.30'                                                |                                  |                                 |
| 4              | 12:38                  | 10                        | 1.80'                                                | 18.5                             |                                 |
|                | 12:48                  |                           | 3.34'                                                |                                  |                                 |
| 5              | 12:50                  | 10                        | 1.40'                                                | 21.6                             |                                 |
|                | 13:00                  |                           | 3.20'                                                |                                  |                                 |
| 6              | 13:02                  | 10                        | 1.40'                                                | 21.0                             |                                 |
|                | 13:12                  |                           | 3.15'                                                |                                  |                                 |
| 7              | 13:14                  | 10                        | 1.56'                                                | 19.4                             |                                 |
|                | 13:24                  |                           | 3.18'                                                |                                  |                                 |
| 8              | 13:26                  | 10                        | 1.52'                                                | 19.3                             |                                 |
|                | 13:36                  |                           | 3.13'                                                |                                  |                                 |
| 9              | 13:38                  | 10                        | 1.52'                                                | 19.3                             |                                 |
|                | 13:48                  |                           | 3.13'                                                |                                  |                                 |
| 10             | 13:50                  | 10                        | 1.52'                                                | 19.3                             | Stabilized rate                 |
|                | 14:00                  |                           | 3.13'                                                |                                  |                                 |

Calculation of Infiltration rate using Poechet (aks inverse hole method)

|                                                                           |                   |     |                                                      |
|---------------------------------------------------------------------------|-------------------|-----|------------------------------------------------------|
| Total depth to test hole, DT =                                            | <u>10.0</u>       | ft  | (from Last Reading)                                  |
| Initial depth to water, Do =                                              | <u>1.52</u>       | ft  |                                                      |
| Final depth to water, Df =                                                | <u>3.13</u>       | ft. |                                                      |
| Initial Height of water, H <sub>0</sub> = DT - D <sub>0</sub> =           | <u>101.8</u>      | in  |                                                      |
| Final Height of water, H <sub>f</sub> = DT - D <sub>f</sub> =             | <u>82.4</u>       | in  | $I_t = \frac{\Delta H(60r)}{\Delta t(r + 2H_{avg})}$ |
| Average Height, H <sub>avg</sub> = (H <sub>0</sub> + H <sub>f</sub> )/2 = | <u>92.1</u>       | in  |                                                      |
| Change in Height, ΔH = H <sub>f</sub> - H <sub>0</sub> =                  | <u>19.32</u>      |     |                                                      |
| Tested Infiltration Rate, I <sub>t</sub> =                                | <u>4.8 in./hr</u> |     |                                                      |

## Boring Percolation Testing Field Log

Date 6/20/2021

|                         |                                     |                                                |                                                |
|-------------------------|-------------------------------------|------------------------------------------------|------------------------------------------------|
| Project Location        | <u>1434 Montiel Rd., Escondidos</u> | Boring/Test Number                             | <u>B-5</u>                                     |
| Earth Description       | <u>Br. Sand w/Clay</u>              | Diameter of Boring                             | <u>8.0 in</u> Diameter of Casing <u>3.0 in</u> |
| Tested By               | <u>DW</u>                           | Depth of Boring                                | <u>10</u> ft                                   |
| Liquid Description      | <u>Clear Clean Tap water</u>        | Depth of Invert of BMP                         | _____ ft                                       |
| Measurement Method      | <u>Sounder</u>                      | Depth to Water table                           | _____ ft                                       |
|                         |                                     | Depth to Initial Water Depth (d <sub>m</sub> ) | _____ ft                                       |
| Time Interval Standard  |                                     | Depth to bottom from reference                 | <u>10</u> ft.)                                 |
| Start Time for Pre-Soak | <u>11:00AM on 6/20/22</u>           | Water Remaining in Boring (Y/N)                | <u>Y</u>                                       |
| Start Time for Standard | <u>7:00AM om 6/21/22</u>            | Standard Time Interval Between Readings        | <u>30</u>                                      |

(Sandy Soil Criteria)

| Reading Number | Time Start/End (hh:mm) | Elapsed Time Δtime (mins) | Water Drop During Standard Time Interval Δd (inches) | Percolation Rate Reading (in/hr) | Soil Description/Notes/Comments |
|----------------|------------------------|---------------------------|------------------------------------------------------|----------------------------------|---------------------------------|
| 1              | 8:03                   |                           | 1.80'                                                |                                  |                                 |
|                | 8:33                   | 30                        | 3.41'                                                | 19.3                             | 38.6                            |
| 2              | 8:34                   |                           | 1.74'                                                |                                  |                                 |
|                | 9:04                   | 30                        | 3.37'                                                | 19.6                             | 39.1                            |
| 3              | 9:06                   |                           | 1.55'                                                |                                  |                                 |
|                | 9:36                   | 30                        | 3.22'                                                | 20.0                             | 40.1                            |
| 4              | 9:38                   |                           | 1.50'                                                |                                  |                                 |
|                | 10:08                  | 30                        | 3.16'                                                | 19.9                             | 39.8                            |
| 5              | 10:10                  |                           | 1.48'                                                |                                  |                                 |
|                | 10:40                  | 30                        | 3.15'                                                | 20.0                             | 40.1                            |
| 6              | 10:42                  |                           | 1.45'                                                |                                  |                                 |
|                | 11:12                  | 30                        | 3.12'                                                | 20.0                             | 40.1                            |
| 7              | 11:14                  |                           | 1.46'                                                |                                  |                                 |
|                | 11:44                  | 30                        | 3.10'                                                | 19.7                             | 39.4                            |
| 8              | 11:45                  |                           | 1.49'                                                |                                  |                                 |
|                | 12:15                  | 30                        | 3.05'                                                | 18.7                             | 37.4                            |
|                |                        |                           |                                                      |                                  |                                 |
|                |                        |                           |                                                      |                                  |                                 |
|                |                        |                           |                                                      |                                  |                                 |

Calculation of Infiltration rate using Poechet (aks inverse hole method)

|                                                                            |                   |     |                     |
|----------------------------------------------------------------------------|-------------------|-----|---------------------|
| Total depth to test hole, DT =                                             | <u>10.0</u>       | ft  |                     |
| Initial depth to water, Do =                                               | <u>1.49</u>       | ft  | (from Last Reading) |
| Final depth to water, Df =                                                 | <u>3.05</u>       | ft. |                     |
| Initial Height of water, H <sub>0</sub> = DT - D <sub>0</sub> =            | <u>102.1</u>      | in  |                     |
| Final Height of water, H <sub>f</sub> = DT - D <sub>f</sub> =              | <u>83.4</u>       | in  |                     |
| Average Height, H <sub>avg.</sub> = (H <sub>0</sub> + H <sub>f</sub> )/2 = | <u>92.8</u>       | in  |                     |
| Change in Height, ΔH = H <sub>f</sub> - H <sub>0</sub> =                   | <u>18.72</u>      |     |                     |
| Tested Infiltration Rate, I <sub>t</sub> =                                 | <u>1.5 in./hr</u> |     |                     |

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



## County of San Diego Stormwater Quality Management Plan (SWQMP) Attachment 13: Green Streets PDP Exempt Form

This form must accompany applications for projects proposing Green Street Surfaces and elect to meet the Green Street Performance Standard. Refer to Section 1.4.3 and Appendix K of the County BMP Design Manual for additional guidance.

### Project Description

*Describe project intent, existing/proposed drainage patterns, net increase in impervious area, and green street performance strategies.*

*If the project consists entirely of "routine maintenance" activities as outlined in Table 1-2 of the County BMP Design Manual (i.e. road resurfacing, utility trenching, etc), clearly state so and provide a thorough description of these activities. Routine maintenance projects are not required to complete the rest of this SWQMP form.*

**Project Intent:** The Montiel Road project consists of a multi-lot development featuring private roadways and shared structural Best Management Practices (BMPs). To ensure compliance and ongoing functionality, the project includes the establishment of a Homeowners' Association (HOA) that will assume full responsibility for the long-term operation, inspection, and maintenance of all private roads and shared stormwater facilities. Access and maintenance easements will be dedicated across applicable lots to guarantee unrestricted HOA access.

**Existing/Proposed Drainage Patterns:** Proposed drainage patterns are designed to route both on-site and off-site runoff into dedicated water quality facilities. Specifically, all newly created on-site runoff, along with a portion of the contributing off-site run-on, will be directed via sheet flow and pipe networks into a primary 235-foot by 10-foot Lined Biofiltration Planter Box. The remaining off-site runoff will be routed and managed through designated SD-B Dispersion Areas.

**Green Street Performance Strategies:** To meet stormwater pollutant control and hydromodification requirements, the project utilizes structural BMPs and dispersion techniques. Performance strategies include:

- **Lined Biofiltration Planters:** Utilizing an 18-inch Engineered Soil Media (ESM) layer, an 18-inch gravel storage layer, and an underdrain system highly restricted by a 0.89-inch primary orifice and a 0.1-inch secondary HMP orifice.
- **SD-B Dispersion Areas:** Receiving runoff via sheet flow, engineered with a maximum 5% surface slope and constructed with a minimum of 11 inches of amended soil per County HMP requirements.

**Net Increase in Impervious Area:** The project results in a net increase in impervious area of 4815 square feet.





## County of San Diego Stormwater Quality Management Plan (SWQMP) **Attachment 13: Green Streets PDP Exempt Form**

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### **Stormwater Pollutant Control Calculations**

Include calculations showing that the Green Streets Performance Standard has been met. The performance standard can be found in Section K.2.1 of Appendix K of the County BMP Design Manual. The County's Automated Pollutant Control Worksheet can be found on the Development Resources website:

<https://www.sandiegocounty.gov/content/sdc/dpw/watersheds/DevelopmentandConstruction.html>

Please see the attached County Automated Pollutant Control Worksheet demonstrating that the Design Capture Volume (DCV) and required pollutant control standards have been fully satisfied for this project.

**County of San Diego Automated Worksheets for Significant Site Design BMPs (SSD-BMPs)**  
**SD-A Tree Wells and SD-B Impervious Area Dispersion (Dispersion Areas)**  
**(Version 1.0)**

**WELCOME:**

Welcome to the County of San Diego Automated Worksheets for Significant Site Design BMPs. These worksheets may be used to demonstrate compliance with stormwater pollutant control standards and hydromodification flow control standards set forth in the 2013 MS4 Permit for Priority Development Projects (PDPs).

This workbook is intended for use to demonstrate compliance when significant site design BMPs (SSD-BMPs) are proposed. SSD-BMPs are passive treatment systems that include SD-A Tree Wells and SD-B Dispersion Areas. This worksheet does not support the use of underdrains in SD-A or SD-B. If underdrains are proposed, then continuous simulation modeling should be performed.

When structural BMPs (INF-1, INF-2, INF-3, PR-1, BF-1, BF-2) are proposed, a different workbook, "County of San Diego Automated Stormwater Pollutant Control Worksheets" must be used.

**INSTRUCTIONS:**

**General:** To use this workbook, navigate to each of the worksheet tabs below and populate all light green cells with project specific information. Light green cells require user input, white cells are locked for editing and are automatically calculated, bright green cells are also locked for editing and are automatically populated based on results from previous worksheet tabs, grey cells are items that do not require user input because of previous user inputs, orange cells represent warnings where supplemental information and/or revisions may be required for compliance. The worksheets are formatted to accommodate calculations for up to 10 drainage areas and associated BMPs. Each drainage area and BMP is represented as a discrete column with corresponding user inputs and calculations appearing in the rows below. Please note that projects with more than 10 drainage areas may need to use more than one workbook to accommodate the entire project.

**Step 1. DCV:** Provide the required inputs to determine the design capture volume (DCV) for each PDP drainage management area (DMA). The calculations in this worksheet determine the initial design capture volume and also apply any applicable reductions associated with dispersion to pervious surfaces and incorporation of rain barrels. For DMAs intended to satisfy pollutant control and hydromodification control (when applicable) requirements using Dispersion Areas alone (i.e., not in combination with Tree Wells), the data entered in this tab must provide sufficient pervious area to reduce the remaining DCV in Line 37 to zero. Note that the use of semi-pervious surfaces as dispersion area will not reduce DCV to zero, but the use of engineered pervious surfaces and/or natural pervious surfaces can. For DMAs intended to incorporate Tree Wells, the remaining DCV in Line 37 is the amount to be managed by Tree Wells.

**Step 2. Dispersion Areas:** [Projects that do not use Dispersion Areas skip this step and go on to Step 3.] When the project includes Dispersion Areas per SD-B, provide required inputs to demonstrate that the requirements for Dispersion Areas are satisfied. If the DMA will also use SD-A Tree Wells downstream of the Dispersion Area to satisfy pollutant control and hydromodification control (when applicable), continue to Step 3. Tree Wells.

**Step 3. Tree Wells:** [Projects that do not use Tree Wells do not use this Step.] When the project includes Tree Wells per SD-A, provide required inputs to demonstrate that the requirements for Tree Wells are satisfied.

**DISCLAIMER:**

The County of San Diego has developed this tool in an effort to streamline traditionally complex efforts associated with planning, design, submittal, and review of PDPs. While the calculations performed herein are deemed to be in compliance with 2013 MS4 Permit requirements, applicants may elect to provide their own calculations. Use of this tool is optional and the County will not be held liable for any errors or other negative impacts associated with its use. In the event that the County performs updates to these worksheets, applicants that have not established reliance on previous versions of the worksheet via discretionary approval may be required to utilize the latest version of the worksheets. A summary of version releases is included below.

**QUESTIONS:**

-Questions relating to specific projects, submittal requirements, approval process, and/or policy-related issues should be directed your PDS Land Development Project Manager (link below).

[PDS Land Development Project Manager](#)

-General questions/comments on this worksheet may be directed via email to [BMP.Program@sdcounty.ca.gov](mailto:BMP.Program@sdcounty.ca.gov) with the subject line "SSD-BMP assistance."

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

| Category                                            | #  | Description                                                                       | i     | ii   | iii  | iv   | v    | vi   | vii  | viii | ix   | x    | Units      |
|-----------------------------------------------------|----|-----------------------------------------------------------------------------------|-------|------|------|------|------|------|------|------|------|------|------------|
| Standard Drainage Basin Inputs                      | 1  | Drainage Basin ID or Name                                                         | 2     |      |      |      |      |      |      |      |      |      | unitless   |
|                                                     | 2  | 85th Percentile 24-hr Storm Depth                                                 | 0.81  |      |      |      |      |      |      |      |      |      | inches     |
|                                                     | 3  | Is Hydromodification Control Applicable?                                          | No    |      |      |      |      |      |      |      |      |      | yes/ no    |
|                                                     | 4  | Impervious Surfaces <b>Not Directed to Dispersion Area</b> (C=0.90)               |       |      |      |      |      |      |      |      |      |      | sq-ft      |
|                                                     | 5  | Semi-Pervious Surfaces <b>Not Serving as Dispersion Area</b> (C=0.30)             |       |      |      |      |      |      |      |      |      |      | sq-ft      |
|                                                     | 6  | Engineered Pervious Surfaces <b>Not Serving as Dispersion Area</b> (C=0.10)       |       |      |      |      |      |      |      |      |      |      | sq-ft      |
|                                                     | 7  | Natural Type A Soil <b>Not Serving as Dispersion Area</b> (C=0.10)                |       |      |      |      |      |      |      |      |      |      | sq-ft      |
|                                                     | 8  | Natural Type B Soil <b>Not Serving as Dispersion Area</b> (C=0.14)                |       |      |      |      |      |      |      |      |      |      | sq-ft      |
|                                                     | 9  | Natural Type C Soil <b>Not Serving as Dispersion Area</b> (C=0.23)                |       |      |      |      |      |      |      |      |      |      | sq-ft      |
|                                                     | 10 | Natural Type D Soil <b>Not Serving as Dispersion Area</b> (C=0.30)                |       |      |      |      |      |      |      |      |      |      | sq-ft      |
| SSD-BMPs Proposed                                   | 11 | Does Tributary Incorporate Dispersion and/or Rain Barrels?                        | Yes   |      |      |      |      |      |      |      |      |      | yes/ no    |
|                                                     | 12 | Does Tributary Incorporate Tree Wells?                                            | No    |      |      |      |      |      |      |      |      |      | yes/ no    |
| Dispersion Area & Rain Barrel Inputs (Optional)     | 13 | Impervious Surfaces <b>Directed to Dispersion Area</b> per SD-B (Ci=0.90)         | 4,815 |      |      |      |      |      |      |      |      |      | sq-ft      |
|                                                     | 14 | Semi-Pervious Surfaces <b>Serving as Dispersion Area</b> per SD-B (Ci=0.30)       |       |      |      |      |      |      |      |      |      |      | sq-ft      |
|                                                     | 15 | Engineered Pervious Surfaces <b>Serving as Dispersion Area</b> per SD-B (Ci=0.10) | 2,350 |      |      |      |      |      |      |      |      |      | sq-ft      |
|                                                     | 16 | Natural Type A Soil <b>Serving as Dispersion Area</b> per SD-B (Ci=0.10)          |       |      |      |      |      |      |      |      |      |      | sq-ft      |
|                                                     | 17 | Natural Type B Soil <b>Serving as Dispersion Area</b> per SD-B (Ci=0.14)          |       |      |      |      |      |      |      |      |      |      | sq-ft      |
|                                                     | 18 | Natural Type C Soil <b>Serving as Dispersion Area</b> per SD-B (Ci=0.23)          |       |      |      |      |      |      |      |      |      |      | sq-ft      |
|                                                     | 19 | Natural Type D Soil <b>Serving as Dispersion Area</b> per SD-B (Ci=0.30)          |       |      |      |      |      |      |      |      |      |      | sq-ft      |
|                                                     | 20 | Number of Rain Barrels Proposed per SD-E                                          |       |      |      |      |      |      |      |      |      |      | #          |
| Initial Runoff Factor Calculation                   | 21 | Average Rain Barrel Size                                                          |       |      |      |      |      |      |      |      |      |      | gal        |
|                                                     | 22 | Total Tributary Area                                                              | 7,165 | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | sq-ft      |
|                                                     | 23 | Initial Runoff Factor for Standard Drainage Areas                                 | 0.00  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | unitless   |
|                                                     | 24 | Initial Runoff Factor for Dispersed & Dispersion Areas                            | 0.64  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | unitless   |
|                                                     | 25 | Initial Weighted Runoff Factor                                                    | 0.64  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | unitless   |
| Dispersion Area Adjustment & Rain Barrel Adjustment | 26 | Initial Design Capture Volume                                                     | 310   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | cubic-feet |
|                                                     | 27 | Total Impervious Area Dispersed to Pervious Surface                               | 4,815 | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | sq-ft      |
|                                                     | 28 | Total Pervious Dispersion Area                                                    | 2,350 | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | sq-ft      |
|                                                     | 29 | Ratio of Dispersed Impervious Area to Pervious Dispersion Area for DCV Reduction  | 2.00  | n/a  | n/a  | n/a  | n/a  | n/a  | n/a  | n/a  | n/a  | n/a  | ratio      |
|                                                     | 30 | Adjustment Factor for Dispersed & Dispersion Areas                                | 0.00  | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | ratio      |
|                                                     | 31 | Runoff Factor After Dispersion Techniques                                         | 0.00  | n/a  | n/a  | n/a  | n/a  | n/a  | n/a  | n/a  | n/a  | n/a  | unitless   |
|                                                     | 32 | Design Capture Volume After Dispersion Techniques                                 | 0     | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | cubic-feet |
|                                                     | 33 | Total Rain Barrel Volume Reduction                                                | 0     | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | cubic-feet |
| Results                                             | 34 | Final Adjusted Runoff Factor                                                      | 0.00  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | unitless   |
|                                                     | 35 | Final Effective Tributary Area                                                    | 0     | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | sq-ft      |
|                                                     | 36 | Initial Design Capture Volume Retained by Dispersion Area and Rain Barrel(\$      | 310   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | cubic-feet |
|                                                     | 37 | Remaining Design Capture Volume Tributary to Tree Well(\$                         | 0     | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | cubic-feet |
| No Warning Messages                                 |    |                                                                                   |       |      |      |      |      |      |      |      |      |      |            |

| SSD-BMP Automated Worksheet I-2: Step 2. Dispersion Area Validation (V1.0) |    |                                                                                                                                            |            |    |     |    |   |    |     |      |    |   |            |
|----------------------------------------------------------------------------|----|--------------------------------------------------------------------------------------------------------------------------------------------|------------|----|-----|----|---|----|-----|------|----|---|------------|
| Category                                                                   | #  | Description                                                                                                                                | i          | ii | iii | iv | v | vi | vii | viii | ix | x | Units      |
| Standard Dispersion Area Inputs                                            | 1  | Drainage Basin ID or Name                                                                                                                  | 2          | -  | -   | -  | - | -  | -   | -    | -  | - | unitless   |
|                                                                            | 2  | Final Design Capture Volume (DCV)                                                                                                          | 0          | -  | -   | -  | - | -  | -   | -    | -  | - | cubic-feet |
|                                                                            | 3  | Is Hydromodification Control Applicable?                                                                                                   | No         | -  | -   | -  | - | -  | -   | -    | -  | - | yes/no     |
|                                                                            | 4  | Total Impervious Area Dispersed to Pervious Surface                                                                                        | 4,815      | -  | -   | -  | - | -  | -   | -    | -  | - | sq-ft      |
|                                                                            | 5  | Total Engineered Pervious Surface and/or Natural Soil Dispersion Area (Does Not Include Semi-Pervious Surfaces Serving as Dispersion Area) | 2,350      | -  | -   | -  | - | -  | -   | -    | -  | - | sq-ft      |
|                                                                            | 6  | Ratio of Dispersed Impervious Area to Total Engineered Pervious Surface and/or Natural Soil Dispersion Area                                | 2.05       | -  | -   | -  | - | -  | -   | -    | -  | - | unitless   |
|                                                                            | 7  | Dispersion Area Length (Length of Sheet Flow Across Dispersion Area)                                                                       | 10         |    |     |    |   |    |     |      |    |   | feet       |
|                                                                            | 8  | Dispersion Area Slope                                                                                                                      | 1.0        |    |     |    |   |    |     |      |    |   | %          |
|                                                                            | 9  | Thickness of Amended Soil                                                                                                                  | 0          |    |     |    |   |    |     |      |    |   | inches     |
|                                                                            | 10 | How is Flow Dispersed Across Width of Dispersion Area (definitions below)?                                                                 | Sheet Flow |    |     |    |   |    |     |      |    |   | unitless   |
| Results                                                                    | 11 | Is DCV Requirement Fully Satisfied by Dispersion Area?                                                                                     | Yes        | -  | -   | -  | - | -  | -   | -    | -  | - | yes/no     |
|                                                                            | 12 | Is Hydromodification Control Requirement Satisfied by Dispersion Area?                                                                     | n/a        | -  | -   | -  | - | -  | -   | -    | -  | - | yes/no     |
|                                                                            | 13 | Are Dispersion Area Length, Slope, and Thickness of Amended Soil (when applicable) Adequate?                                               | Yes        | -  | -   | -  | - | -  | -   | -    | -  | - | yes/no     |
| No Warning Messages                                                        |    |                                                                                                                                            |            |    |     |    |   |    |     |      |    |   |            |

Notes:

**\*How is Flow Dispersed Across Width of Pervious Dispersion Area?**

Sheet Flow: Flow arrives as sheet flow across the width of the adjacent impervious area

Spreader(s): Flow is discharged from flow spreader(s) across the width of the pervious area

Roof Drains: Discharge from roof drains distributed across the width of the pervious area

Curb Cuts: Discharge from curb cuts distributed across the width of the pervious area

Other: Other (Describe in PDP SWQMP)

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

Notes:

\*If using more than one mature canopy diameter within the same DMA, only the smallest mature canopy diameter should be entered. Alternatively, if more than one mature canopy diameter is proposed and/or the dimensions of multiple tree well installations will vary, separate DMAs may be delineated.

\*\*If the actual proposed installation depth is not available in the table of standard depths, select the next lower depth.

\*\*\*Tree Canopy or Agency Requirements May Also Influence the Minimum Spacing of Trees.