PDP SWQMP

PRIORITY DEVELOPMENT PROJECT (PDP)
STORM WATER QUALITY MANAGEMENT PLAN (SWQMP)

Project Name Otay Ranch Village 7, R-3, R-4 & R-8 TM

Assessor's Parcel Number(s) 644-241-06, 07,08 & 644-241-10

Permit Application Number TM 23-0001

Drawing Numbers N/A

CIVIL ENGINEER NAME: Alisa S. Vialpando **; PE #** 47945

Alisa S. Vialpando
Wet Signature and Stamp

PREPARED FOR:
Applicant Name: Baldwin & Sons LLC & Otay Project, L.P.
Address: 20 Corporate Plaza Dr.
Newport Beach, CA 92660
Telephone # (949) 640-8300

PREPARED BY:
Company Name: Hunsaker & Associates, San Diego Inc.
Address: 9707 Waples Street
San Diego, CA 92121
Telephone # (858) 558-4500

DATE: 07/25/2024

Approved By: City of Chula Vista Date:
(print Name & Sign)

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Project Name/ Otay Ranch Village 7, R-3, R-4, & R-8

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- [x] **Acronym Sheet**
- [x] **Certification Page**
- [x] **Submittal Record**
- [x] **Project Vicinity Map**
- [x] **Attach a copy of the Intake Form: Storm Water Requirements Applicability Checklist**
- [ ] **HMP Exemption Exhibit (if Applicable)**
- [x] **FORM I-3B Site Information Checklist for PDPs**
- [x] **FORM I-4: Source Control BMP Checklist for All Development Projects**
- [x] **FORM I-5: Site Design BMP Checklist for All Development Projects**
- [x] **FORM I-6: Summary of PDP Structural BMPs**
- [x] **ATTACHEMNT 1: Backup for PDP Pollutant Control BMPs**

  Attachment 1A: DMA Exhibit

  Attachment 1B: Tabular Summary of DMAs and Design Capture Volume Calculations

  Attachment 1C: FORM I-7 Harvest and Use Feasibility Screening (when applicable)

  Attachment 1D: Infiltration Information Attachment 1E: Pollutant Control BMP Design Worksheets / Calculations for each DMA and Structural BMP Worksheets from Appendix B, as applicable

- [x] **ATTACHMENT 2: Backup for PDP Hydromodification Control Measures**
  - Attachment 2A: Hydromodification Management Exhibit
  - Attachment 2B: Management of Critical Coarse Sediment Yield Areas
  - Attachment 2C: Geomorphic Assessment of Receiving Channels
  - Attachment 2D: Flow Control Facility Design; Overflow Design Summary for each structural BMP
- [x] **ATTACHMENT 3: Structural BMP Maintenance Plan**
- [x] **ATTACHMENT 4: Copy of Plan Sheets Showing Permanent Storm Water BMPs**
- [x] **ATTACHMENT 5: Project's Drainage Report**
- [x] **ATTACHMENT 6: Project's Geotechnical and Groundwater Investigation Report**

ACRONYMS

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

Project Name/ Otay Ranch Village 7, R-3, R-4, & R-8

Certification Page

Project Name: Otay Ranch Village 7, R-8 & R-4

Permit Application Number: TM 23-0001

I hereby declare that I am the Engineer in Responsible Charge of design of storm water best management practices (BMPs) for this project, and that I have exercised responsible charge over the design of the BMPs as defined in Section 6703 of the Business and Professions Code, and that the design is consistent with the PDP requirements of the City of Chula Vista BMP Design Manual, which is based on the requirements of the San Diego Regional Water Quality Control Board Order No. R9-2013-0001 as amended by R9-2015-0001 and R9-2015-0100 (MS4 Permit).

I have read and understand that the City Engineer has adopted minimum requirements for managing urban runoff, including storm water, from land development activities, as described in the BMP Design Manual. I certify that this PDP SWQMP has been completed to the best of my ability and accurately reflects the project being proposed and the applicable BMPs proposed to minimize the potentially negative impacts of this project's land development activities on water quality. I understand and acknowledge that the plan check review of this PDP SWQMP by the City Engineer is confined to a review and does not relieve me, as the Engineer in Responsible Charge of design of storm water BMPs for this project, of my responsibilities for project design.

Alisa S. Vialpando , 07/25/2024

Engineer of Work's Signature — Date

47945 , 12/31/23

PE # — Expiration Date

Alisa S. Vialpando

Print Name

Hunsaker & Associates, San Diego Inc.

Company

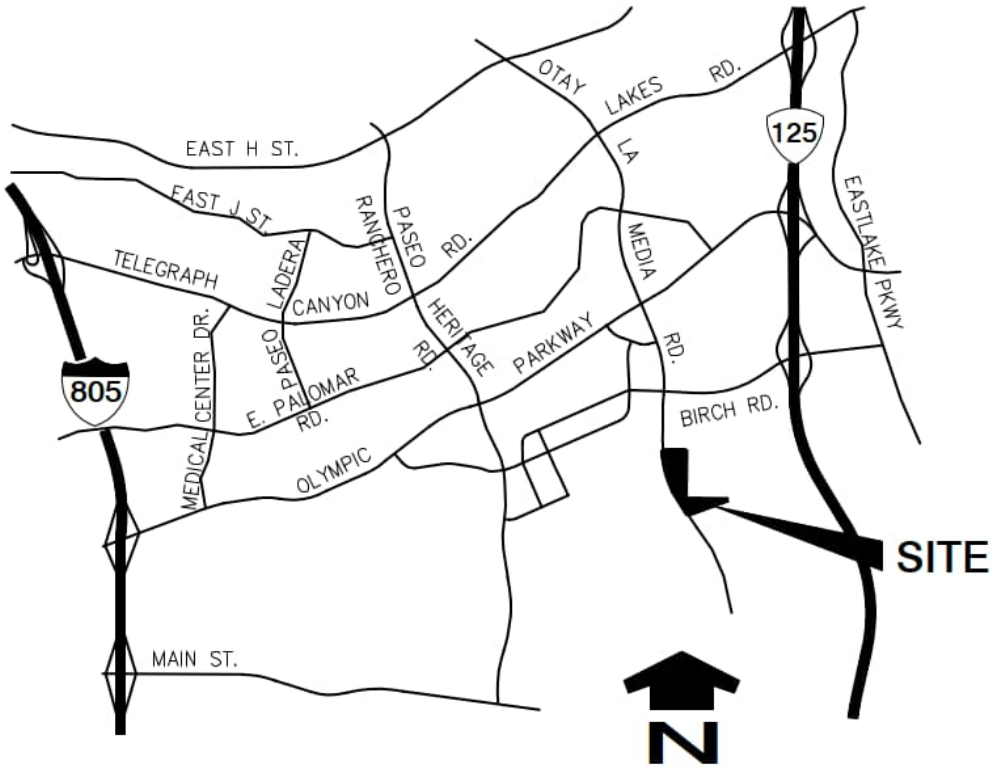
Project Name/ Otay Ranch Village 7, R-3, R-4, & R-8

SUBMITTAL RECORD

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

Submittal Number	Date	Project Status	Summary of Changes
1	04/07/2023	☒ Preliminary Design / Planning/ CEQA ☐ Final Design	Initial Submittal
2	07/25/2024	☒ Preliminary Design / Planning/ CEQA ☐ Final Design	Addressed plan check comments
3		☐ Preliminary Design / Planning/ CEQA ☐ Final Design	
4		☐ Preliminary Design / Planning/ CEQA ☐ Final Design	

Project Vicinity Map



VICINITY MAP

NOT TO SCALE

Project Name/_____

Insert Completed Intake Form (Storm Water Requirements Applicability Checklist)

https://www.chulavistaca.gov/departments/public-works/services/storm-water-pollution-prevention/documents-and-reports

Storm Water Requirements Applicability Checklist for All Permit Applications

Intake Form

August 2023 Update

Project Information

Project Address: La Media Road and Santa Luna Street	Project Application # TM 23-0001
Project Name: Otay Ranch Village 7, R-3, R-4, & R-8	APN(s) 644-241-06,07,08 & 644-241-10
	Parcel Area (ft²) 818,811 / Project Disturbed Area (ft²) 745,217

Brief Description of Work Proposed:

Twenty nine (29) multi-family residential buildings, recreational and open space areas, associated roads, driveways, and sidewalks. One DG access road to the Vortac site

The project is (select one):

☒ New Development Total Impervious Area 374,952 **ft²**
(*New development is the creation of impervious surface on an undeveloped site.)*

☐ Redevelopment Total new and/or replaced Impervious Area _____ **ft²**
(Redevelopment is the creation and/or replacement of impervious surface on an already developed site).

☐ Other: _____
(Includes projects such as: Roof Mount Solar, Residential Minor Utility, Residential Interior Remodel, Commercial Interior Tenant Improvement, Cell Site Modification, etc.)

Name of Person Completing this Form: _____

Role: ☐ Property Owner ☐ Contractor ☐ Architect ☒ Engineer ☐ Other _____

Email: AVialpando@HunsakerSD.com Phone: (858) 558-4500

Signature: Alissa S. Vialpando Date Completed: 07/25/2024

Answer each section below, starting with Section 1 and progressing through each section. Additional information for determining the requirements is found in the Chula Vista BMP Design Manual available on the City's website at http://www.chulavistaca.gov/departments/public-works/services/storm-water-pollution-prevention/documents-and-reports.

SECTION 1: Storm Water BMP Requirements

Please answer the following two questions:

1)	Does the project involve repair or improvements to an existing building or structure that do not alter the size such as: tenant improvements, interior remodeling, electrical work, fire alarm, fire sprinkler system, HVAC work, gas, plumbing, etc.?	☐ **Yes** ☑ **No**
2)	Does the project involve routine maintenance activities such as: roof or exterior structure surface replacement; resurfacing existing roadways and parking lots including dig outs, slurry seal, overlay and restriping; repair damaged sidewalks or pedestrian ramps on existing roads without expanding the impervious footprint; routine replacement of damaged pavement, trenching and resurfacing associated with utility work (i.e. sewer, water, gas or electrical laterals, etc.), and pot holing or geotechnical investigation borings?	☐ **Yes** ☒ **No**

CHECK ONE:

☐ If you answered **YES** to **either** question 1 or 2**,** review and sign **"Construction Storm Water BMP Certification Statement"** on Page 2. **DO NOT** complete Sections 2, 3, 4, or 5. The Project is **NOT** subject to Permanent Storm Water BMP requirements**.** It **IS** subject to Construction BMP requirements.

☒ If you answered **NO** to **both** questions 1 and 2**, Skip to Section 2, Page 3.**

Construction Storm Water BMP Certification Statement

The following storm water quality protection measures are required by City Chula Vista Municipal Code Chapter 14.20 and the City's Jurisdictional Runoff Management Program.

1) All applicable construction BMPs and non-stormwater discharge BMPs shall be installed and maintained for the duration of the project in accordance with the Appendix K "Construction BMP Standards" of the Chula Vista BMP Design Manual.
2) Erosion control BMPs shall be implemented for all portions of the project area in which no work has been done or is planned to be done over a period of 14 or more days. All onsite drainage pathways that convey concentrated flows shall be stabilized to prevent erosion.
3) Run-on from areas outside the project area shall be diverted around work areas to the extent feasible. Run-on that cannot be diverted shall be managed using appropriate erosion and sediment control BMPs.
4) Sediment control BMPs shall be implemented, including providing fiber rolls, gravel bags, or other equally effective BMPs around the perimeter of the project to prevent transport of soil and sediment offsite. Any sediment tracked onto offsite paved areas shall be removed via sweeping at least daily.
5) Trash and other construction wastes shall be placed in a designated area at least daily and shall be disposed of in accordance with applicable requirements.
6) Materials shall be stored to avoid being transported in storm water runoff and non-storm water discharges. Concrete washout shall be directed to a washout area and shall not be washed out to the ground.
7) Stockpiles and other sources of pollutants shall be covered when the chance of rain within the next 48 hours is at least 50%.

I certify that the storm water quality protection measures listed above will be implemented at the project described on Intake Form. I understand that failure to implement these measures may result in monetary penalties or other enforcement actions. This certification is signed under penalty of perjury and does not require notarization.

Name: _____ Title: _____

Signature: _____ Date: _____

SECTION 2: Determine if Project is a Standard Project or Priority Development Project

Is the project in any of the following categories, (a) through (f)?

(a) New development that **creates 10,000 square feet** or more of impervious surfaces (collectively over the entire project site). This includes commercial, industrial, residential, mixed-use, and public development projects on public or private land. ☒ **Yes** ☐ **No**

(b) Redevelopment project that **creates and/or replaces 5,000 square feet** or more of impervious surface (collectively over the entire project site on an existing site of 10,000 square feet or more of impervious surfaces). This includes commercial, industrial, residential, mixed-use, and public development projects on public or private land. ☐ **Yes** ☒ **No**

(c) New development or redevelopment projects that **creates and/or replaces a combined total of 5,000 square feet** or more of impervious surface (collectively over the entire project site) and support one or more of the following uses: ☒ **Yes** ☐ **No**

(i) **Restaurant.** This category is defined as a facility that sells prepared foods and drinks for consumption, including stationary lunch counters and refreshment stands selling prepared foods and drinks for immediate consumption (Standard Industrial Classification Code 5812).

(ii) **Hillside development projects**. This category includes development on any natural slope that is twenty-five percent or greater.

(iii) **Parking Lots.** This category is defined as a land area or facility for the temporary parking or storage of motor vehicles used personally, for business, or for commerce.

(iv) **Streets, roads, highways, freeways, and driveways**. This category is defined as any paved impervious surface used for the transportation of automobiles, trucks, motorcycles, and other vehicles.

(d) New development or redevelopment project that **creates and/or replaces 2,500 square feet** or more of impervious surface (collectively over the entire project site), discharging directly to an Environmentally Sensitive Area (ESA). "Discharging directly to" includes flow that is conveyed overland a distance of 200 feet or less from the project to the ESA, or conveyed in a pipe or open channel any distance as an isolated flow from the project to the ESA (i.e. not commingled with flows from adjacent lands). ☐ **Yes** ☒ **No**

(e) New development or redevelopment project that creates and/or replaces a combined total of 5,000 square feet or more of impervious surface, that support one or more of the following used: ☐ **Yes** ☒ **No**

(i) **Automotive repair shops.** This category is defined as a facility that is categorized in any one of the following Standard Industrial Classification (SIC) codes: 5013, 5014, 5541, 7532-7534, or 7536-7539.

(ii) **Retail gasoline outlets.** This category includes retail gasoline outlets that meet the meet one of the following criteria: (a) 5,000 square feet or more or (b) a projected Average Daily Traffic (ADT) of 100 or more vehicles per day.

(f) New development or redevelopment that result in the disturbance of **one or more acres** of land and are expected to generate pollutants post construction.
NOTE: Pollutant generating development projects are those projects that generate pollutants at levels greater than background levels. Background pollutant levels means the pollutants generated from an undeveloped site. Projects disturbing one or more acres of land are presumed to generate pollutants post construction unless the applicant presents a design that satisfies the City Engineer that pollutants in storm water discharges will not exceed preconstruction background levels. ☒ **Yes** ☐ **No**

The project is (select one):

☐ If "No" is checked for every category in Section 2, Project is a **"Standard Development Project."** Site Design and Source Control BMP requirements apply. **Complete and submit Standard SWQMP** (refer to Chapter 4 and Appendix E of the BMP Design Manual for guidance).

Skip to Section 5.

☒ If "Yes" is checked for ANY category in Section 2, **Project is a "Priority Development Project (PDP)."** ***Complete next part, if applicable, and continue to Section 3.***

Complete for PDP *Redevelopment* Projects ONLY:

The total existing (pre-project) impervious area at the project site is: _____ ft^2 (A)

The total proposed newly created or replaced impervious area is _____ ft^2 (B)

Percent impervious surface created or replaced (B/A) x 100 = _____%

The percent impervious surface created or replaced is (select one based on the above calculation):

☐ Less than or equal to fifty percent (50%) – **only new impervious areas are considered a PDP**
OR

☐ Greater than fifty percent (50%) – **the entire project site is considered a PDP**

Continue to Section 3

SECTION 3: Determine if Project is PDP Exempt

1) Does the project ONLY include new or retrofit sidewalk, bicycle lane or trails that:

- Are designed and constructed to direct storm water runoff to adjacent vegetated areas, or other non-erodible permeable areas? Or;
- Are designed and constructed to be hydraulically disconnected from paved streets or roads? Or;
- Are designed and constructed with permeable pavements or surfaces in accordance with USEPA Green Streets guidance?

☐ **Yes. Project is PDP Exempt.**

Complete and submit **Standard SWQMP** (refer to Chapter 4 of the BMP Design Manual for guidance). **Continue to Section 5.**

☒ **No. Next question**

2) Does the project ONLY include retrofitting or redevelopment of existing paved alleys, streets or roads designed and constructed in accordance with Green Streets standards?

☐ **Yes. Project is PDP Exempt.**

Complete and submit Standard SWQMP (refer to Chapter 4 of the BMP Design Manual for guidance). **Continue to Section 5.**

☒ **No. Project is a PDP.**

Continue to Section 4.

SECTION 4: Alternative Compliance

Does the project elect to meet stormwater obligations onsite?

☒ **Yes. Onsite Compliance.**

Site design, source control, and structural pollutant control BMPs apply. Complete and submit **PDP SWQMP** (refer to Chapters 4, 5 & 6 of the BMP Design Manual for guidance). **Continue to Section 5.**

☐ **No. Please contact City Storm Water Management Section at stormwater@chulavistaca.gov**

On-site site design, source control, and flow-through pollutant control BMPs apply. Complete and submit **PDP SWQMP** (refer to Chapters 4, 5 & 6 of the BMP Design Manual for guidance) and **Alternative Compliance forms** for pollutant control obligations (refer to the Alternative Compliance Program Guidelines and Development in Appendix J of the BMP Design Manual).
Continue to Section 5.

SECTION 5: Construction Storm Water BMP Requirements:

All construction sites are required to implement construction BMPs in accordance with the performance standards in the BMP Design Manual. Some sites are additionally required to obtain coverage under the State Construction General Permit (CGP), which is administered by the State Water Resource Control Board.

1) Does the project include Building/Grading/Construction permits proposing less than 5,000 square feet of ground disturbance and has less than 5-foot elevation change over the entire project area?

☐ Yes. Review and sign Construction Storm Water Certification Statement on Page 2, *skip questions 2-4*

☒ No; next question

2) Does the project propose construction or demolition activity, including but not limited to, clearing grading, grubbing, excavation, or other activity that results in ground disturbance of less than one acre and more than 5,000 square feet?

☐ Yes. Complete and submit Construction Storm Water Pollution Control Plan (CSWPCP), *skip questions 3-4*

☒ No; next question

3) Does the project result in the disturbance of an acre or more of total land area and is considered a regular maintenance project performed to maintain original line and grade, hydraulic capacity, or original purpose of the facility? (Projects such as sewer/storm drain/utility replacement)

☐ Yes. Complete and submit Construction Storm Water Pollution Control Plan (CSWPCP), *skip question 4*

☒ No; next question

4) Is the project proposing land disturbance greater than or equal to one acre OR the project is part of a larger common plan of development disturbing 1 acre or more?

☒ Yes. Storm Water Pollution Prevention Plan (SWPPP) is required. Refer to online CASQA or Caltrans Template. Visit the SWRCB web site at: https://www.waterboards.ca.gov/water_issues/programs/stormwater/construction.html

Note: Projects that result in disturbance of one to five acres of total land area and can demonstrate that there will be no adverse water quality impacts by applying for a Construction Rainfall Erosivity Waiver, may be allowed to submit a CSWPCP in lieu of a SWPPP.

Project Name/_____

HMP Exemption Exhibit

Attach this Exhibit (if Applicable) that shows direct storm water runoff discharge from the project site to HMP exempt area. Include project area, applicable underground storm drains line and/or concrete lined channels, outfall information and exempt waterbody. Reference applicable drawing number(s). **Exhibit must be provided on 11"x17" or larger paper.**

NOT APPLICABLE

Project Name/_____

Insert Completed Form I-3B: Site Information Checklist for PDPs

https://www.chulavistaca.gov/departments/public-works/services/storm-water-pollution-prevention/documents-and-reports

Project Name: Otay Ranch Village 7, R-3, R-4, & R-8

Site Information Checklist	Form I-3B
Project Summary Information	
Project Name	Otay Ranch Village 7, R-3, R-4 & R-8 North
Project Address	and South from intersection of La Media Road and Santa Luna Street
Assessor's Parcel Number(s) (APN(s))	644-241-07, 644-241-08 & 644-241-10
Permit Application Number	TM 23-0001
Project Watershed	☑ San Diego Bay
Hydrologic Subarea name with Numeric Identifier up to two decimal places	Select One: ☐ Pueblo San Diego 908 ☐ Sweetwater 909 ☑ Otay 910
Project Area (total area of Assessor's Parcel(s) associated with the project or total area of the right-of-way)	18.80 Acres (818,811 Square Feet) **This area includes all three lots (R-3, R-4, and R-8)**
Area to be Disturbed by the Project (Project Footprint)	17.05 Acres (745,217 Square Feet)
Project Proposed Impervious Area (subset of Project Footprint)	8.61 Acres (374,952 Square Feet)
Project Proposed Pervious Area (subset of Project Footprint)	8.44 Acres (370,265 Square Feet)
Note: Proposed Impervious Area + Proposed Pervious Area = Area to be Disturbed by the Project. This may be less than the Parcel Area.	
The proposed increase or decrease in impervious area in the proposed condition as compared to the pre-project condition	49 %

Please note that the no impervious area proposed per this permit . R-8 is to be mass graded with R-4 currently mass graded. Water quality, hydromodification, and minimum retention requirements for R-8 and R-4 do not have to be met within this SWQMP. However, the mass graded pads will be assumed to have 78% imperiousness so structural BMPs can be sized. Additional SWQMPs will be submitted to show compliance with this assumption and to cover minimum retention requirements. Imperiousness per this SWQMP: 7,432 SFT.
Assumed imperiousness for R-8 and R-4: 367,520 SFT

Project Name: Otay Ranch Village 7, R-3, R-4, & R-8

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Description of Existing Site Condition and Drainage Patterns

Current Status of the Site (select all that apply):

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

Description / Additional Information:

Lot R-8 is a vacant space with an asphalt access road through the site while lot R-4 is mass graded with a desilt basin on-site. R-3 is a slope with a portion of a mass graded pad.

Existing Land Cover Includes (select all that apply):

- ☒ Vegetative Cover
- ☒ Non-Vegetated Pervious Areas
- ☒ Impervious Areas

Description / Additional Information:

There's an existing asphalt access road. Almost 50% of the proposed area to be disturbed presents a vegetative cover, the other half is a non-vegetative pervious area

Underlying Soil belongs to Hydrologic Soil Group (select all that apply):

- ☐ NRCS Type A
- ☐ NRCS Type B
- ☒ NRCS Type C
- ☒ NRCS Type D

Approximate Depth to Groundwater (GW):

- ☐ GW Depth < 5 feet
- ☐ 5 feet < GW Depth < 10 feet
- ☐ 10 feet < GW Depth < 20 feet
- ☒ GW Depth > 20 feet

Existing Natural Hydrologic Features (select all that apply):

- ☐ Watercourses
- ☐ Seeps
- ☐ Springs
- ☐ Wetlands
- ☒ None

Description / Additional Information:

Project Name: _____

Form I-3B Page 3 of 10

Description of Existing Site Drainage Patterns

How is storm water runoff conveyed from the site? At a minimum, this description should answer:

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

Describe existing site drainage patterns:

Lot R-8 is a 12.60-acre site that is currently vacant and composed of slopes, brow ditches, and an asphalt road that crosses the site and provides access to Vortac site from La Media Road.
In existing conditions, runoff from R-8 site sheet-flows westerly and northwesterly towards La Media Road where is intercepted by brow ditches that slopes northwesterly to direct the flows to catch basins and storm drain system that discharges into the existing detention basin at node 850, immediately north of the project site.
The existing graded slopes, brow ditches, road and storm drain were constructed per the Rough Grading Plans for Otay Ranch Village 7 (DWG 05017), prepared by Hunsaker and Associates, San Diego Inc. and dated 09-29-2005. The 50-year and 100-year storm events for the existing detention basin and storm drain were calculated in the Rough Grading Hydrology Study for Otay Ranch Village 7, prepared by Hunsaker and Associates, San Diego Inc. and dated 07-19-2005. The mentioned study and plans were used as the existing conditions for R-8 in this report.

Lot R-4 is approximately 3.11 acres that has been mass graded as part of the Otay Ranch Village 8 West Mass Grading Plan DWG. 14011-07 prepared by hale Engineering and dated 11/13/2023. Runoff from the site sheet flows southwesterly to be captured and routed via brow ditches and swales to the existing sediment basin at the southwest corner of the lot, where sediment control is provided. The discharge from the sediment basin is routed through a 30" CMP riser to the existing 18" storm drain pipe before tying into the exiting 60" pipe along La Media Road that ultimately discharges into the existing Village 8 West Wolf Canyon basin.

Lot R-3 is approximately 3.08 acres and consists of a slope and a portion of a mass-graded pad, which was graded as part of the Rough Grading Plans for Otay Ranch Village 7, DWG 05017. The site includes a vegetated slope adjacent to Magdalena Avenue, which slopes away from the street. The slope's runoff is directed to the pad either through brow ditches or surface flow. The flows from both the slope and the pad drain westerly, where they are captured and routed by the existing brow ditches. These flows then converge with runoff from the Vortac site, eventually discharging into the existing headwall at node 893.

Project Name: Otay Ranch Village 7, R-3, R-4, & R-8

Form I-3B Page 4 of 10

Description of Proposed Site Development and Drainage Patterns

Project Description / Proposed Land Use and/or Activities:

The project will be developed to be multi-family housing for both lots R-8 and R-4. The sites will include recreational areas, open space, roads, sidewalks, and underground utilities. Lot R-3 will remain in its current condition and no grading or improvement will occur under this permit. Otay Ranch Village 7 Neighborhood R-3 has been added to Tentative Map CVT 23-0001 in order to transfer residential units to this neighborhood for a future development. Any future development will need to process entitlements for a site plan and preliminary grading plan. The future site plan and preliminary grading plan will include a drainage report and SWQMP to comply with City requirements. Future development will not be required to process a tentative map.

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

Imperiousness features include roofs from the attached buildings, sidewalks, and roads.

List/describe proposed pervious features of the project (e.g., landscape areas):

Landscape areas and slopes.

Does the project include grading and changes to site topography?

- [x] Yes
- [ ] No

Description / Additional Information:

The project will create a triangular 7.97-acre pad draining southerly towards the intersection of La Media Road and Santa Luna Street for lot R-8.
There will not be grading activities for lot R-4 under this permit.
An access road will be provided for the Vortac site off Magdalena Avenue; grading will include ditches around the road, the road itself, slopes, and a biofiltration basin.

Form I-3B Page 5 of 10

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

- ☐ Yes
- ☐ No

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

Describe proposed site drainage patterns:

The Otay Ranch Village 7 R-8 site will be mass graded with 1.5% slope developed with 21 multi-family buildings, recreational area, landscaped area, associated parking areas, sidewalks and roads. This development will involve the removal of the road providing access to the Vortac Site off La Media Road. A new access road is being proposed as part of this project east of R-8 and connecting to Magdalena Avenue. This area is tributary to the basin within Village 8 West but it's imperviousness was not accounted for. A flow-based proprietary biofiltration unit will be proposed adjacent to the road to meet water quality requirements. The road will be super elevated to the south and will include cuts to allow runoff generated from the road to disperse in the landscape adjacent to the road. The use of dispersion areas will help meet minimum retention for this segment of the project.
Runoff from developed conditions of the project site will be captured via inlets, catch basins, area drains and will be routed by a proposed storm drain to the proprietary biofiltration BMPs located immediately north of the project site's entrance to address water quality requirements and routed again to the existing detention basin located immediately north of the project site to address hydromodification and detention requirements.

Lot R-4 will also consist of multu-family buildings with associated open space areas, roads, and sidewalks. The run-off from the project will be conveyed on the streets to a low-point at the site's entrance. Storm water generated on-site will leave in a 18" pipe and tie into the exisiting 60" pipe that runs on La Media Road. The drainage report for Village 8 West assumes a runoff coefficient of 0.78 which is consistent with the assumed imperviousness in this report. Therefore no increase in runoff is expected from this site. However, the approved SWQMP assumes the lot to be open space and pervious. Due to the increase in imperviousness, a MWS unit will be proposed downstream of the inlets to provide water quality measures associated with the development. The SWMM model prepared to address the imperviousness of the access road mentioned above will also include this lot as part of the analysis.

Lot R-3 will remain in its current condition and no grading or improvement will occur under this permit.

Table 1 - Summary of R-4 Existing Peak Flows

	Existing Conditions			
Discharge Location	Area (acres)	Runoff Coeff. "C"	Q50 (cfs))	Q100 (cfs)
Node 164	92.5	0.71	217.12	269.46

Table 2 - Summary of Peak Flows

	Designed Conditions [1]				Proposed Conditions [2]				Difference		
Discharge Location	Area (acres)	Runoff Coeff. "C"	Q50 (cfs))	Q100 (cfs)	Area (acres)	Runoff Coeff. "C"	Q50 (cfs)	Q100 (cfs)	Area (acres)	Q50 (cfs)	Q100 (cfs)
Inflow to Basin	152.7	0.678	331.03	378.37	152.7	0.682	310.50	355.27	**0**	**-20.53**	**-23.10**
Outflow from Basin	152.7	0.678	**151.20**[3]	151.20	152.7	0.682	**119.00**[4]	**146.55**[4]	**0**	**-32.20**	**-4.65**
Node 893	28.9	0.60	29.15	33.74	28.9	0.60	**28.76**[5]	**33.30**[5]	**0**	**-0.39**	**-0.44**
Node 164	93.9	0.72	221.91	274.89	92.5	0.72	221.24	274.14	**-1.4**[6]	**-0.67**	**-0.75**

(1) For Node 850, 851, and 893 values are from Rough Grading Hydrology Study for Otay Ranch Village 7 prepared by H&A and dated July 19, 2005. For Node 164 values from the Drainage Study for Otay Ranch Village 8 West, prepared by Hale Engineering, and dated October 25, 2019. The peak flows under existing conditions are the design flow rates presented in the approved studies for Village 7 and Village 8 West, which were used to design the downstream infrastructure.

(2) Assuming ultimate conditions for R-8 and R-4

(3) Rough Grading Hydrology Study for Otay Ranch Village 7 does not provide detention performance for 100-yr event. It uses the same peak flow as the 50-yr result. It is expected that the flows for the 100-yr are higher.

(4) The unmitigated flows in proposed conditions are lower than the existing unmitigated flows, so mitigation is not required. However, the riser in the existing basin is being modified per PDP SWQMP for this site to meet hydromodification requirements. Due to the proposed modification, the existing riser alters the detention capabilities of the basin. Chapter 4 analyzes this change.

(5) No mitigation is proposed for these areas as the generated runoff decreases slightly due to the increased time of concentration.

(6) The 1.4-acre difference in areas between the existing and proposed delineations originates from the preliminary area delineation in the master drainage study Drainage Study for Otay Ranch Village 8 West, prepared by Hale Engineering, and dated October 25, 2019. Initially, the slope south of R-4 drained towards the existing browditch and discharged into the sediment basin on R-4, making it part of the studied area for R-4. This slope has since been graded and incorporated into Parcel D. Consequently, the flows from this area were included and addressed in the Drainage Report for Parcel D, Permit No. GR23-0002, DWG No. 23021 Therefore, this minor area difference does not increase the calculated peak flow or negatively impact the downstream storm drain, as the routed flow to Parcel D and capacity of the existing storm drain were evaluated in the Drainage Report for Parcel D.

Form I-3B Page 6 of 10

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

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

Description / Additional Information:

The development will consist of multi-family residential units. The BMPs above reflect the proposed source control BMPs which are typically applicable to this type of development. The site will include inlet stenciling for public awareness of pollution concerns
related to street pollutants. The use of pesticides for landscape use will be discouraged and designated refuse areas (where applicable) will be protected from stormwater.

Project Name: _____

Form I-3B Page 7 of 10

Identification and Narrative of Receiving Water and Pollutants of Concern

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

The runoff from the project has two POCs that discharge into the wolf canyon at different location and ultimately flow into the San Diego Bay. POC 1 is an existing detention basin that outlets into the Wolf canyon through a riser structure and underground storm drain. POC 2 is an existing clean out on La Media Road where the flows of Village 7 and R-4 commingle before entering the Village 8 West development. The storm water continues downstream in an existing 60" RCP pipe and eventually discharge into an existing biofiltration/hydromodification basin in Village 8 West. Similarly, the flows go through a riser and into underground storm drain that discharges into the Wolf Canyon.

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

303(d) Impaired Water Body	Pollutant(s)/Stressor(s)	TMDLs / WQIP Highest Priority Pollutant
San Diego Bay	PCBs, Mercuty, and PAHs	Bacteria

Identification of Project Site Pollutants*

*Identifi…s are implemen…cipate in an alte…ments is demon…

Not applicable since the MWS units are designed as proprietary biofiltration

Identify … BMP Design M…

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

Form I-3B Page 8 of 10

Hydromodification Management Requirements

Do hydromodification management requirements apply (see Section 1.6)?

- ☒ Yes, hydromodification management flow control structural BMPs required.
- ☐ No, the project will discharge runoff directly to existing underground storm drains discharging directly to water storage reservoirs, lakes, enclosed embayments, or the Pacific Ocean.
- ☐ No, the project will discharge runoff directly to conveyance channels whose bed and bank are concrete-lined all the way from the point of discharge to water storage reservoirs, lakes, enclosed embayments, or the Pacific Ocean.
- ☐ No, the project will discharge runoff directly to an area identified as appropriate for an exemption by the WMAA for the watershed in which the project resides.

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

Note: If "No" answer has been selected the SWQMP must include an exhibit that shows the storm water conveyance system from the project site to an exempt water body. The exhibit should include details about the conveyance system and the outfall to the exempt water body.

Critical Coarse Sediment Yield Areas*
***This Section only required if hydromodification management requirements apply**

Based on Section 6.2 and Appendix H does CCSYA exist on the project footprint or in the upstream area draining through the project footprint?

- ☐ Yes
- ☒ No

Description / Additional Information:

Project Name: _____

Form I-3B Page 9 of 10

Flow Control for Post-Project Runoff*

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

List and describe point(s) of compliance (POCs) for flow control for hydromodification management (see Section 6.3.1). For each POC, provide a POC identification name or number correlating to the project's HMP Exhibit and a receiving channel identification name or number correlating to the project HMP Exhibit.

Point of compliance 1 (POC 1) is located northwest of R-8 and downstream of the existing Village 7 detention basin. Lot R-8 discharges into the existing detention basin and converges with other flows from the northern residential areas as well as runoff from La Media Road. An existing riser structure controls the peak flows and helps mitigate for the Village 7 existing development.
The riser will be modified so that the impact of R-8 can also be mitigated for hydromodification and detention.
Point of compliance 2 (POC 2) is being analyzed at the cleanout where the flows from Village 7 commingle with the runoff from lot R-4. This storm drain cleanout is tributary to a portion of the Olympian High school, as well as public roads, the Vortac site, lot R-3, and the access road proposed at Magdalena Avenue. Please see page 7 for additional information.

Has a geomorphic assessment been performed for the receiving channel(s)?

- ☒ No, the low flow threshold is 0.1Q2 (default low flow threshold)
- ☐ Yes, the result is the low flow threshold is 0.1Q2
- ☐ Yes, the result is the low flow threshold is 0.3Q2
- ☐ Yes, the result is the low flow threshold is 0.5Q2

If a geomorphic assessment has been performed, provide title, date, and preparer:

Discussion / Additional Information: (optional)

Project Name: _____

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

Project Name/_____

Insert Completed Form I-4: Source Control BMP Checklist for All Development Projects

https://www.chulavistaca.gov/departments/public-works/services/storm-water-pollution-prevention/documents-and-reports

Otay Ranch Village 7, R-3, R-4, & R-8

Project Name: _____

Source Control BMP Checklist for All Development Projects	Form I-4

All development projects must implement source control BMPs. Refer to **Chapter 4** and **Appendix E** of the BMP Design Manual for information to implement BMPs shown in this checklist.

Note: All selected BMPs must be shown on the site/construction plans.

Answer each category below pursuant to the following:

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

Source Control Requirement	Applied?		
4.2.1 Prevention of Illicit Discharges into the MS4	☒ Yes	☐ No	☐ N/A
Discussion / justification if 4.2.1 not implemented:			
4.2.2 Storm Drain Stenciling or Signage	☒ Yes	☐ No	☐ N/A
Discussion / justification if 4.2.2 not implemented:			
4.2.3 Protect Outdoor Materials Storage Areas from Rainfall, Run-On, Runoff, and Wind Dispersal	☐ Yes	☐ No	☒ N/A
Discussion / justification if 4.2.3 not implemented:			
4.2.4 Protect Materials Stored in Outdoor Work Areas from Rainfall, Run-On, Runoff, and Wind Dispersal	☐ Yes	☐ No	☒ N/A
Discussion / justification if 4.2.4 not implemented:			
4.2.5 Protect Trash Storage Areas from Rainfall, Run-On, Runoff, and Wind Dispersal	☐ Yes	☐ No	☒ N/A
Discussion / justification if 4.2.5 not implemented:			

Project Name: Otay Ranch Village 7, R-3, R-4, & R-8

Source Control BMP Checklist for All Development Projects			Form I-4 (Page 2 of 2)
4.2.6 Additional BMPs Based on Potential Sources of Runoff Pollutants (must answer for each source listed below)	☐ Yes	☐ No	☐ N/A
SC-A Onsite storm drain inlets	☒ Yes	☐ No	☐ N/A
SC-B Interior floor drains and elevator shaft sump pumps	☐ Yes	☐ No	☒ N/A
SC-C Interior parking garages	☐ Yes	☐ No	☒ N/A
SC-D1 Need for future indoor & structural pest control	☒ Yes	☐ No	☐ N/A
SD-D2 Landscape/outdoor pesticide use	☒ Yes	☐ No	☐ N/A
SC-E Pools, spas, ponds, decorative fountains, and other water features	☒ Yes	☐ No	☐ N/A
SC-F Food Service	☐ Yes	☐ No	☒ N/A
SC-G Refuse areas	☐ Yes	☐ No	☒ N/A
SC-H Industrial processes	☐ Yes	☐ No	☒ N/A
SC-I Outdoor storage of equipment or materials	☐ Yes	☐ No	☒ N/A
SC-J Vehicle and equipment cleaning	☐ Yes	☐ No	☒ N/A
SC-K Vehicle/equipment repair and maintenance	☐ Yes	☐ No	☒ N/A
SC-L Fuel dispensing areas	☐ Yes	☐ No	☒ N/A
SC-M Loading docks	☐ Yes	☐ No	☒ N/A
SC-N Fire sprinkler test water	☒ Yes	☐ No	☐ N/A
SC-O Miscellaneous drain or wash water	☒ Yes	☐ No	☐ N/A
SC-P Plazas, sidewalks, and parking lots	☒ Yes	☐ No	☐ N/A
SC-Q: Large Trash Generating Facilities	☐ Yes	☐ No	☒ N/A
SC-R: Animal Facilities	☐ Yes	☐ No	☒ N/A
SC-S: Plant Nurseries and Garden Centers	☐ Yes	☐ No	☒ N/A
SC-T: Automotive Facilities	☐ Yes	☐ No	☒ N/A

Discussion / justification if 4.2.6 not implemented. Justification must be provided for all "No" answers shown above.

Project Name/_____

Insert Completed Form I-5: Site Design BMP Checklist for All Development Projects

https://www.chulavistaca.gov/departments/public-works/services/storm-water-pollution-prevention/documents-and-reports

Otay Ranch Village 7, R-3, R-4, & R-8

Project Name.: _____

Site Design BMP Checklist for All Development Projects	Form I-5

All development projects must implement site design BMPs where applicable and feasible. See **Chapter 4 and Appendix E** of the manual for information to implement site design BMPs shown in this checklist. **Note: All selected BMPs must be shown on the site/construction plans.**

Answer each category below pursuant to the following.

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

Site Design Requirement	Applied?		
4.3.1 Maintain Natural Drainage Pathways and Hydrologic Features	☒ Yes	☐ No	☐ N/A
4.3.2 Conserve Natural Areas, Soils, and Vegetation	☒ Yes	☐ No	☐ N/A
4.3.3 Minimize Impervious Area	☒ Yes	☐ No	☐ N/A
4.3.4 Minimize Soil Compaction	☒ Yes	☐ No	☐ N/A
4.3.5 Impervious Area Dispersion	☐ Yes	☐ No	☒ N/A

There are no impervious surfaces proposed under this permit. The access road will be decomposed granite or equivalent semi-pervious surface and will be considered a self retaining DMA.
Impervious area dispersion will be incorporated into the site design by proposing roof downspouts that drain into adjacent landscaped areas. The typical locations of these downspouts will be shown on the DMA Exhibit.

Site Design BMP Checklist for All Development Projects			Form I-5
Site Design Requirement	**Applied?**		
4.3.6 Runoff Collection	☐ Yes	☒ No	☐ N/A
Treatment of onsite stormwater will be treated via the proposed proprietary biofiltration MWS units.			
4.3.7 Landscaping with Native or Drought Tolerant Species	☒ Yes	☐ No	☐ N/A
4.3.8 Harvesting and Using Precipitation	☐ Yes	☒ No	☐ N/A
Discussion / justification for all "No" answers shown above: This site design is not feasible for this project.			

Project Name/_____

Insert Completed Form I-6: Summary of PDP Structural BMPs

https://www.chulavistaca.gov/departments/public-works/services/storm-water-pollution-prevention/documents-and-reports

Project Name: _____

Summary of PDP Structural BMPs	Form I-6

PDP Structural BMPs

All PDPs must implement structural BMPs for storm water pollutant control (see **Chapter 5 of the manual**). Selection of PDP structural BMPs for storm water pollutant control must be based on the selection process described in **Chapter 5**. PDPs subject to hydromodification management requirements must also implement structural BMPs for flow control for hydromodification management (see **Chapter 6 of the manual**). Both storm water pollutant control and flow control for hydromodification management can be achieved within the same structural BMP(s).

PDP structural BMPs must be verified by City at the completion of construction. This may include requiring the project owner or project owner's representative to certify construction of the structural BMPs (see Section 1.12 of the manual). PDP structural BMPs must be maintained into perpetuity (**see Section 7 of the manual**).

Use this form to provide narrative description of the general strategy for structural BMP implementation at the project site in the box below. Then complete the PDP structural BMP summary information sheet (page **3 of this form**) for each structural BMP within the project (copy the BMP summary information page as many times as needed to provide summary information for each individual structural BMP).

Describe the general strategy for structural BMP implementation at the site. This information must describe how the steps for selecting and designing storm water pollutant control BMPs presented in Section 5.1 of the manual were followed, and the results (type of BMPs selected). For projects requiring hydromodification flow control BMPs, indicate whether pollutant control and flow control BMPs are integrated or separate.

This site will include three Proprietary biofiltration MWS units at the downstream portion of the R-8, R-4, and the access road which will act to address pollution control. Two MWS units are sized and will be proposed as a flow-based units downstream R-8. R-4 will have a single MWS unit downstream of the site and of an underground storage unit. These BMPs are designed to address pollution and hydromodification control. Finally, there will be one flow-based Filterra located adjacent to the access road off Magdalena Avenue.

In selection of the biofiltration BMP, the following steps were taken as presented in Section 5.1 of the BMP Design Manual.

1. Delineate the DMAs and identify the self-mitigating (5.2.1) and De minimis areas (per 5.2.2).
2. Estimated DCV for each remaining area using worksheet B.2.1 .
3. Harvest considered not feasible per Harvest and use feasibility checklist Form I-7 .
4. Infiltration considered not feasible per infiltration feasibility checklist FormC-4-1 .
5. Computed sizing requirements.
6. Design BMP for DCV per design criteria and considerations listed in the fact sheets.
7. Provide minimum retention requirements using the MWS units capabilities as well as dispersion areas with amended soils.

Otay Ranch Village 7, R-3, R-4, & R-8

Project Name: _____

Form I-6 Page 2 of __7__ *(Copy and attach as many as needed)*

Structural BMP ID No. BF-3-1

Construction Plan Sheet No. N/A

Type of structural BMP:

- ☐ Retention by harvest and use (e.g. HU-1, cistern)
- ☐ Retention by infiltration basin (INF-1)
- ☐ Retention by bioretention (INF-2)
- ☐ Retention by permeable pavement (INF-3)
- ☐ Partial retention by biofiltration with partial retention (PR-1)
- ☐ Biofiltration (BF-1)
- ☐ Flow-thru treatment control with prior lawful approval to meet earlier PDP requirements (provide BMP type/description in discussion section below)
- ☐ Flow-thru treatment control included as pre-treatment/forebay for an onsite retention or biofiltration BMP (provide BMP type/description and indicate which onsite retention or biofiltration BMP it serves in discussion section below)
- ☐ Flow-thru treatment control with alternative compliance (provide BMP type/description in discussion section below)
- ☐ Detention pond or vault for hydromodification management
- ☒ Other (describe in discussion section below)

Flow-based Proprietary Biofiltration

Purpose:

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

Who will certify construction of this BMP? Provide name and contact information for the party responsible to sign BMP verification forms if required by the City Engineer (See Section 1.12 of the manual)	Alisa S. Vialpando , PE # 47945 Hunsaker & Associates SD, Inc. 9707 Waples St, San Diego,CA 92121 (858) 558-4500
Who will be the final owner of this BMP?	Baldwin & Son LLC
Who will maintain this BMP into perpetuity?	Baldwin & Son LLC
What is the funding mechanism for maintenance?	Rent and fees to the Homeowners Association (HOA)

Project Name: _____

Form I-6 Page 3 of 7 *(Copy and attach as many as needed)*

Structural BMP ID No. BF-3-1

Construction Plan Sheet No. N/A

Discussion (as needed, must include worksheets showing BMP sizing calculations in the SWQMP):

* 85th percentile 24-hr storm depth from iso map Figure B.1.1 is d =0.56 in

*The area drains to the biofiltration Proprietary MWS unit is delineated A= 347,130 sf

* Total impervious area is 270,761 sf, and pervious area is 76,369 sf

*The weighted area runoff factor is calculated as a composite coefficient made of the different runoff factor for the surfaces of the DMA area per equation
C ={(0.9 * Impervious surfaces)+ (0.1 * pervious areas)} / (total area)
C = {(0.9*347,130)+(0.1*76,369)}/ (645559)= 0.72

* Calculate DCV = 3630 x C x d x A = 3630 x 0.72 x 0.53 x (347,130/43560)= 11,100 cft
1.5 DCV = 16,650 cft

*Water Quality Flow Rate = AF x (C x i x A) x 1.5
Q = 1(0.72 x 0.2 x 7.97) x 1.5 = 1.731 cfs

*2-8 x 24 MWS w/treatment capacity of 0.870 will be proposed.

Otay Ranch Village 7, R-3, R-4, & R-8

Project Name: _____

Form I-6 Page 4 **of** __7__ *(Copy and attach as many as needed)*

Structural BMP ID No. BF-3-2

Construction Plan Sheet No. N/A

Type of structural BMP:

- ☐ Retention by harvest and use (e.g. HU-1, cistern)
- ☐ Retention by infiltration basin (INF-1)
- ☐ Retention by bioretention (INF-2)
- ☐ Retention by permeable pavement (INF-3)
- ☐ Partial retention by biofiltration with partial retention (PR-1)
- ☐ Biofiltration (BF-1)
- ☐ Flow-thru treatment control with prior lawful approval to meet earlier PDP requirements (provide BMP type/description in discussion section below)
- ☐ Flow-thru treatment control included as pre-treatment/forebay for an onsite retention or biofiltration BMP (provide BMP type/description and indicate which onsite retention or biofiltration BMP it serves in discussion section below)
- ☐ Flow-thru treatment control with alternative compliance (provide BMP type/description in discussion section below)
- ☐ Detention pond or vault for hydromodification management
- ☒ Other (describe in discussion section below)

Flow-based Proprietary Biofiltration

Purpose:

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

Who will certify construction of this BMP? Provide name and contact information for the party responsible to sign BMP verification forms if required by the City Engineer (See Section 1.12 of the manual)	Alisa S. Vialpando , PE # 47945 Hunsaker & Associates SD, Inc. 9707 Waples St, San Diego,CA 92121 (858) 558-4500
Who will be the final owner of this BMP?	Otay Project, L.P.
Who will maintain this BMP into perpetuity?	Otay Project, L.P.
What is the funding mechanism for maintenance?	Rent and fees to the Homeowners Association (HOA) .

Project Name: _____

Form I-6 Page 5 of 7 *(Copy and attach as many as needed)*

Structural BMP ID No. BF-3-2

Construction Plan Sheet No. N/A

Discussion (as needed, must include worksheets showing BMP sizing calculations in the SWQMP):

* 85th percentile 24-hr storm depth from iso map Figure B.1.1 is d =0.56 in

*The area drains to the biofiltration Proprietary MWS unit is delineated A= 124,050 sf

* Total impervious area is 96,759 sf, and pervious area is 27,291 sf

*The weighted area runoff factor is calculated as a composite coefficient made of the different runoff factor for the surfaces of the DMA area per equation
C ={(0.9 * Impervious surfaces)+ (0.1 * pervious areas)} / (total area)
C = {(0.9*96,759)+(0.1*27,291)}/ (124,050)= 0.72

* Calculate DCV = 3630 x C x d x A = 3630 x 0.72 x 0.53 x (124,050/43560)= 3,967 cft
1.5 DCV = 5,950 cft

*Water Quality Flow Rate = AF x (C x i x A) x 1.5
Q = 1(0.72 x 0.2 x 2.85) x 1.5 = 0.619 cfs

*1-8 x 24 MWS w/treatment capacity of 0.693 will be proposed.

Project Name: _____

Form I-6 Page 6 of __7__ *(Copy and attach as many as needed)*

Structural BMP ID No. HMP-1

Construction Plan Sheet No. N/A/

Type of structural BMP:

- ☐ Retention by harvest and use (e.g. HU-1, cistern)
- ☐ Retention by infiltration basin (INF-1)
- ☐ Retention by bioretention (INF-2)
- ☐ Retention by permeable pavement (INF-3)
- ☐ Partial retention by biofiltration with partial retention (PR-1)
- ☐ Biofiltration (BF-1)
- ☐ Flow-thru treatment control with prior lawful approval to meet earlier PDP requirements (provide BMP type/description in discussion section below)
- ☐ Flow-thru treatment control included as pre-treatment/forebay for an onsite retention or biofiltration BMP (provide BMP type/description and indicate which onsite retention or biofiltration BMP it serves in discussion section below)
- ☐ Flow-thru treatment control with alternative compliance (provide BMP type/description in discussion section below)
- ☒ Detention pond or vault for hydromodification management
- ☐ Other (describe in discussion section below)

Purpose:

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

Who will certify construction of this BMP? Provide name and contact information for the party responsible to sign BMP verification forms if required by the City Engineer (See Section 1.12 of the manual)	Alisa S. Vialpando , PE # 47945 Hunsaker & Associates SD, Inc. 9707 Waples St, San Diego,CA 92121 (858) 558-4500
Who will be the final owner of this BMP?	Otay Project, L.P.
Who will maintain this BMP into perpetuity?	Otay Project, L.P.
What is the funding mechanism for maintenance?	Rent and fees to the Homeowners Association (HOA)

Project Name: _____

Form I-6 Page 7 of 7 *(Copy and attach as many as needed)*
Structural BMP ID No. HMP-1
Construction Plan Sheet No. N/A/

Discussion (as needed, must include worksheets showing BMP sizing calculations in the SWQMP):

Determine the required HMP volume using the BMP Sizing spread sheet V.3.1. SWMM was then used to properly sized an outflow structure, determine the height and the size of the unit. Please see HMP report on attachment 2.

Project Name/_____

ATTACHMENT 1

Backup for PDP Pollutant Control BMPs

Project Name/ Otay Ranch Village 7, R-3, R-4, & R-8

Indicate which Items are Included:

Attachment Sequence	Contents	Checklist
Attachment 1A	**DMA Exhibit (Required)** See DMA Exhibit Checklist.	☒ Included
Attachment 1B	Tabular Summary of DMAs Showing DMA ID matching DMA Exhibit, DMA Area, and DMA Type (Required)* *Provide table in this Attachment OR on DMA Exhibit in Attachment 1a	☐ Included on DMA Exhibit in Attachment 1A ☒ Included as Attachment 1B, separate from DMA Exhibit
Attachment 1C	Form I-7, Harvest and Use Feasibility Screening Checklist (Required unless the entire project will use infiltration BMPs) Refer to Appendix B.3-1 of the BMP Design Manual to complete Form I-7.	☒ Included ☐ Not included because the entire project will use infiltration BMPs
Attachment 1D	Infiltration Feasibility Information. Contents of Attachment 1D depend on the infiltration condition: ☒ **No Infiltration Condition**: ☒ Infiltration Feasibility Condition ☐ Letter (***Note: must be stamped & signed by licensed geotechnical engineer***) ☒ Form I-8A (optional) ☐ Form I-8B (optional) ☐ **Partial Infiltration Condition**: ☐ Infiltration Feasibility Condition ☐ Letter (***Note: must be stamped & signed by licensed geotechnical engineer***) ☐ Form I-8A ☐ Form I-8B ☐ **Full Infiltration Condition:** ☐ Form I-8A ☐ Form I-8B ☐ Worksheet C.4-3 ☐ Form I-9 Refer to Appendices C and D of the BMP Design Manual for guidance.	☒ Included ☐ Not included because the entire project will use harvest and use BMPs
Attachment 1E	**Pollutant Control BMP Design Worksheets/ Calculations (Required)** Refer to Appendices B and E of the BMP Design Manual for structural pollutant control BMP design guidelines	☒ Included

Project Name/ Otay Ranch Village 7, R-3, R-4, & R-8

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

The DMA Exhibit must identify all the following:

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

ATTACHMENT 1a

DMA EXHIBIT

SEE SHEET 01

FLEISHBEIN STREET

EXISTING DETENTION BASIN PER C.V.V. DWG. NO. 05017-15

SM-1
2.96 ACRES

SM-2
2.85 ACRES

DMA 1
7.97 ACRES
R-8
MULTI FAMILTY

DMA 2
2.85 ACRES
R-4
MULTI FAMILTY

SANTA LUNA STREET

LOT A
OPEN SPACE

BF-3-1 (MWS)

0.04 ACRES

HMP-1
STORAGE FACILITY

BF-3-2 (MWS)

LA MEDIA ROAD

POC-1

POC-2

LEGEND:

	SYMBOL:
PROJECT BOUNDARY	
DMA BOUNDARY	
DAYLIGHT	
PROPOSED STORM DRAIN	
EXISTING STORM DRAIN	
SUBAREA ACREAGE	00.00 ACRES
DMA ICON	DMA 1
R-8 (78% IMPERVIOUSNESS)	
R-4 (78% IMPERVIOUSNESS)	
IMPERVIOUS - ROAD	
PERVIOUS - BIOFILTRATION BASIN	
PERVIOUS AREAS	
SELF MITIGATING	
INLET	
HYDROLOGIC SOIL TYPE	D
POINT OF COMPLIANCE	x
STRUCTURAL BMP\ MWS UNIT	

SITE DESIGN BMPs:

1. SD-1 MAINTAIN NATURAL HYDROLOGIC FEATURES
2. SD-2 CONSERVE NATURAL AREAS, SOILS, VEGETATION
3. SD-3 MINIMIZE IMPERVIOUS AREAS (FOR FUTURE PHASES)
4. SD-4 MINIMIZE SOIL COMPACTION (FOR FUTURE PHASES)
5. SD-5 IMPERVIOUS AREA DISPERSION
6. SD-7 LANDSCAPING WITH NATIVE OR DROUGHT TOLERANT SPECIES (FOR FUTURE PHASES)

SOURCE CONTROL BMPs:

1. SC-1 PREVENTION OF ILLICIT DISCHARGES TO MS4
2. SC-2 STORM DRAIN STENCILING OR SIGNAGE (FOR FUTURE PHASES)
3. SC-6 ADDITIONAL BMPS BASED ON POTENTIAL SOURCES OF RUNOFF POLLUTANTS
   - A. SC-6A ON-SITE STORM DRAIN INLETS (FOR FUTURE PHASES)
   - B. SC-6D NEED FOR FUTURE INDOOR & STRUCTURAL PEST CONTROL (FOR FUTURE PHASES)
   - C. SC-6E LANDSCAPE/OUTDOOR PESTICIDE USE (FOR FUTURE PHASES)
   - D. SC-6F POOLS, SPAS, PONDS, FOUNTAINS, AND OTHER WATER FEATURES (FOR FUTURE PHASES)
   - E. SC-6O FIRE SPRINKLER TEST WATER (FOR FUTURE PHASES)
   - F. SC-6P MISCELLANEOUS DRAIN OR WASH WATER (FOR FUTURE PHASES)
   - G. SC-6Q PLAZAS, SIDEWALKS, AND PARKING LOTS (FOR FUTURE PHASES)

UNDERLYING SOIL GROUP : C & D
APPROXIMATE DEPTH TO GROUNDWATER > 20'
NO CRITICAL COARSE AREAS REQUIRE PRESERVATION

80 0 80 160 240
SCALE 1" = 80'

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DMA MAP
VILLAGE 7, R-3, R-4, & R-8

CITY OF CHULA VISTA, CALIFORNIA

MAP 1 OF 2

W.O. # 9999-5556

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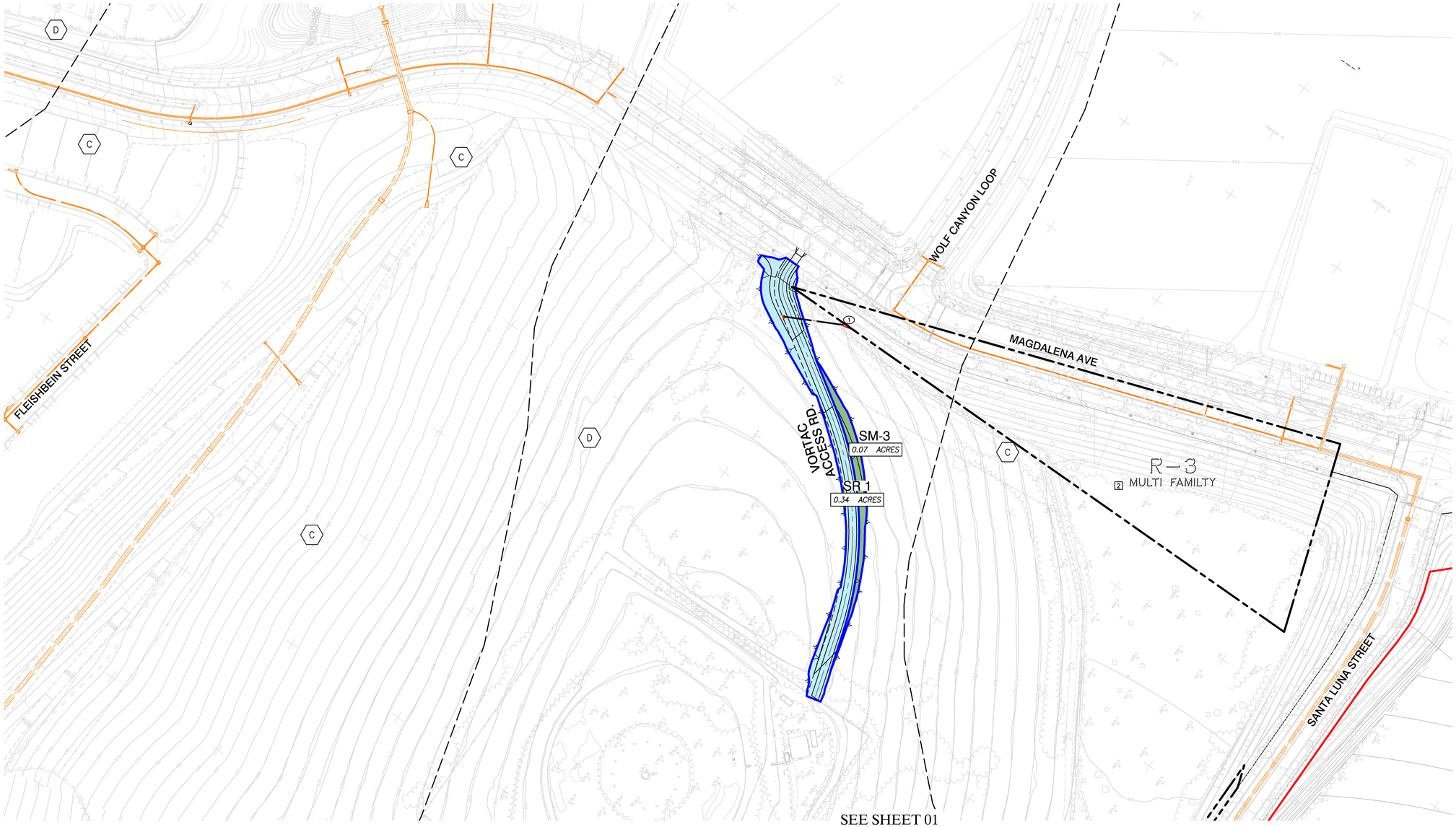

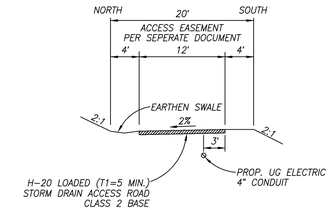

VORTAC ACCESS ROAD

NOT TO SCALE

SELF-RETAINING DMA

LEGEND:

	SYMBOL:
PROJECT BOUNDARY	
DMA BOUNDARY	
DAYLIGHT	
PROPOSED STORM DRAIN	
EXISTING STORM DRAIN	
SUBAREA ACREAGE	00.00 ACRES
DMA ICON	DMA 1
R-8 (78% IMPERVIOUSNESS)	
R-4 (78% IMPERVIOUSNESS)	
SELF-RETAINING AREA	
PERVIOUS - BIOFILTRATION BASIN	
PERVIOUS AREAS	
SELF MITIGATING	
INLET	
HYDROLOGIC SOIL TYPE	D
POINT OF COMPLIANCE	X
STRUCTURAL BMP\ MWS UNIT	

SITE DESIGN BMPs:

1. SD-1 MAINTAIN NATURAL HYDROLOGIC FEATURES
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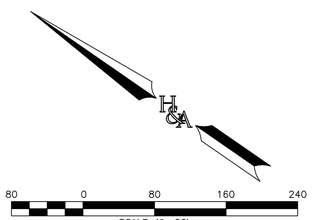
   - A SC-6A ON-SITE STORM DRAIN INLETS (FOR FUTURE PHASES)
   - B SC-6D NEED FOR FUTURE INDOOR & STRUCTURAL PEST CONTROL (FOR FUTURE PHASES)
   - C SC-6E LANDSCAPE/OUTDOOR PESTICIDE USE (FOR FUTURE PHASES)
   - D SC-6F POOLS, SPAS, PONDS, FOUNTAINS, AND OTHER WATER FEATURES (FOR FUTURE PHASES)
   - E SC-6O FIRE SPRINKLER TEST WATER (FOR FUTURE PHASES)
   - F SC-6P MISCELLANEOUS DRAIN OR WASH WATER (FOR FUTURE PHASES)
   - G SC-6Q PLAZAS, SIDEWALKS, AND PARKING LOTS (FOR FUTURE PHASES)

UNDERLYING SOIL GROUP : C & D
APPROXIMATE DEPTH TO GROUNDWATER > 20'
NO CRITICAL COARSE AREAS REQUIRE PRESERVATION



NOTES:

BOTH THE ACCESS ROAD AND R-3 ARE TRIBUTARY TO POC-2
THE ACCESS ROAD IS A SELF-RETAINING AREA PER CITY OF CHULA VISTA BMP MANUAL, CHAPTER 5, SECTION 5.2.1.

SELF-MITIGATING DMAS CONSIST OF NATURAL OR LANDSCAPED AREAS THAT DRAIN DIRECTLY OFFSITE OR TO THE PUBLIC STORM DRAIN SYSTEM. SELF-MITIGATING DMAS MUST MEET ALL THE FOLLOWING CHARACTERISTICS TO BE ELIGIBLE FOR EXCLUSION:

- VEGETATION IN THE NATURAL OR LANDSCAPED AREA IS NATIVE AND/OR NON-NATIVE/NON-INVASIVE DROUGHT TOLERANT SPECIES THAT DO NOT REQUIRE REGULAR APPLICATION OF FERTILIZERS AND PESTICIDES.
- SOILS ARE UNDISTURBED NATIVE TOPSOIL, OR DISTURBED SOILS THAT HAVE BEEN AMENDED AND AERATED TO PROMOTE WATER RETENTION CHARACTERISTICS EQUIVALENT TO UNDISTURBED NATIVE TOPSOIL.
- THE INCIDENTAL IMPERVIOUS AREAS ARE LESS THAN 5 PERCENT OF THE SELF-MITIGATING AREA.
- IMPERVIOUS AREA WITHIN THE SELF-MITIGATED AREA SHOULD NOT BE HYDRAULICALLY CONNECTED TO OTHER IMPERVIOUS AREAS UNLESS IT IS A STORM WATER CONVEYANCE SYSTEM (SUCH AS BROW DITCHES).
- THE SELF-MITIGATING AREA IS HYDRAULICALLY SEPARATE FROM DMAS THAT CONTAIN PERMANENT STORM WATER POLLUTANT CONTROL BMPS.

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DMA MAP
VILLAGE 7, R-3, R-4, & R-8

CITY OF CHULA VISTA, CALIFORNIA

MAP 2 OF 2

9555-6668 P.D.M.

ATTACHMENT 1b

TABULAR SUMMARY OF DMAs

Project Name: Otay Ranch Village 7, R-3, R-4, & R-8

Tabular Summary of DMAs							Worksheet B-1		
DMA Unique Identifier	Area (acres)	Impervious Area (acres)	% Imp	HSG	Area Weighted Runoff Coefficient	DCV (Cubic feet)	Treated by (BMP ID)	Pollutant Control Type	Drains to (POC ID)
DMA 1	7.97	6.22	78	D/C	0.72	16,650	16,650	Biofiltration	1
DMA 2	2.85	2.22	78	D/C	0.72	5,950	5,950	Biofiltration	2
SR-1	0.34	0	0	D/C	0.2	132	N/A	Self-retaining	2

Summary of DMA Information (Must match Project description and SWQMP narrative)									
No. of DMAs	Total DMA Area (acres)	Total Impervious Area (acres)	% Impervious		Area Weighted Runoff Coefficient	DCV (Cubic feet)	Total Area Treated (acres)		No. of POCs
3	11.16	8.44	76		0.71	22,732	11.16		2

Where: DMA = Drainage Management Area; HSG = Hydrologic Soil Group; BMP = Best Management Practice; Imp = Imperviousness; DCV= Design Capture Volume; POC = Point of Compliance; ID = identifier; No. = Number

VILLAGE 7, R-8 R-4
DMA CALCULATIONS

	Imp. RF	Pervious RF	% Imp	DMA1	Fraction of Total	Imp Area	Pervious Area	Summation RF x A	DMA-2	Fraction of Total	Imp Area	Pervious Area	Summation RF x A	SR-1	Fraction of Total	Imp Area	Pervious Area	Summation RF x A
LANDSCAPE	0.90	0.10	0	76369	0.03	0	76369	7637	27291	0.03	0	27291	2729	7568	0.25	0	7568	757
MULTI-FAMILY	0.90	0.10	100	270761	0.97	270761	0	243685	96759	0.97	96759	0	87083	0	0.00	0	0	0
BASIN	0.90	0.10	0	0	0.00	0	0	0	0	0.00	0	0	0	0	0.00	0	0	0
SEMI-PERVIOUS ROAD	0.90	0.30	0	0	0.00	0	0	0	0	0.00	0	0	0	7432	0.75	0	7432	2230
ROAD	0.90	0.10	100	0	0.00	0	0	0	0	0.00	0	0	0	0	0.00	0	0	0
				347130	1.00	270761	76369	251322	124050	1.00	96759	27291	89812	15000	1.00	0	15000	2986
			%Imperv	78.00			Weighted C =	0.72	78.00			Weighted C =	0.72	49.55			Weighted C =	0.20

	Imp. RF	Pervious RF	% Imp	SM-1	Fraction of Total	Imp Area	Pervious Area	Summation RF x A	SM-2	Fraction of Total	Imp Area	Pervious Area	Summation RF x A	SM-3	Fraction of Total	Imp Area	Pervious Area	
				SQFT		SQFT	SQFT		SQFT		SQFT	SQFT		SQFT		SQFT	SQFT	
LANDSCAPE	0.90	0.10	0	129147	1.00	0	129147	12915	124304	1.00	0	124304.44	12430	3180	1.00	0	3180	318
				129147	1.00	0	129147	12915	124304	1.00	0	124304	12430	3180	1.00	0	3180	318
			%Imperv	0.00			Weighted C =	0.10	0.00			Weighted C =	0.10	0.00			Weighted C =	0.10

ATTACHMENT 1c

FORM I-7, HARVEST AND USE FEASIBLITY SCREENING CHECKLIST

Otay Ranch Village 7, R-4, R-4, & R-8

Project Name: _____

Harvest and Use Feasibility Screening	FORM I-7 (Worksksheet B.3-1)

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

   ☒ Toilet and urinal flushing

   ☒ Landscape irrigation

   ☐ Other:_____

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

[Provide a summary of calculations here]

36 hour urinal and flushing demand = 9.3 gal/resident x 4 residents per unit x 243 units x 1.5 days = 13,559 gallons = 1812 cf

Landscape Irrigation: 390 gals/ac x 8.44 ac = 3292 gals = 440 cf
Total Volume = 2252 cf

3. Calculate the DCV using worksheet B-2.1.

[Provide a result here]

DCV = 16,650 + 5,950 = 22,600

0.25 DCV = 5,650

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

Note: 36-hour demand calculations are for feasibility analysis only, once the feasibility analysis is complete the applicant may be allowed to use a different drawdown time provided they meet the 80 percent of average annual (long term) runoff volume performance standard.

ATTACHMENT 1d

FORM I-8, CATEGORIZATION OF INFILTRATION FEASIBILITY CONDITION

Project Name: _____

Categorization of Infiltration Feasibility Condition based on Geotechnical Conditions	Form I-8A[1] (Worksheet C.4-1)
Part 1 - Full Infiltration Feasibility Screening Criteria	
DMA(s) Being Analyzed:	**Project Phase:**
DMA 1 and 2	Planning

Criteria 1: Infiltration Rate Screening	
1A	Is the mapped hydrologic soil group according to the NRCS Web Soil Survey or UC Davis Soil Web Mapper Type A or B and corroborated by available site soil data[2]? ☐ Yes; the DMA may feasibly support full infiltration. Answer "Yes" to Criteria 1 Result or continue to Step 1B if the applicant elects to perform infiltration testing. ☐ No; the mapped soil types are A or B but is not corroborated by available site soil data (continue to Step 1B). ☒ No; the mapped soil types are C, D, or "urban/unclassified" and is corroborated by available site soil data. Answer "No" to Criteria 1 Result. ☐ No; the mapped soil types are C, D, or "urban/unclassified" but is not corroborated by available site soil data (continue to Step 1B).
1B	Is the reliable infiltration rate calculated using planning phase methods from Table D.3-1? ☐ Yes; Continue to Step 1C. ☐ No; Skip to Step 1D.
1C	Is the reliable infiltration rate calculated using planning phase methods from Table D.3-1 greater than 0.5 inches per hour? ☐ Yes; the DMA may feasibly support full infiltration. Answer "Yes" to Criteria 1 Result. ☐ No; full infiltration is not required. Answer "No" to Criteria 1 Result.
1D	**Infiltration Testing Method.** Is the selected infiltration testing method suitable during the design phase (see Appendix D.3)? Note: Alternative testing standards may be allowed with appropriate rationales and documentation. ☐ Yes; continue to Step 1E. ☐ No; select an appropriate infiltration testing method.
1E	**Number of Percolation/Infiltration Tests.** Does the infiltration testing method performed satisfy the minimum number of tests specified in Table D.3-2? ☐ Yes; continue to Step 1F. ☐ No; conduct appropriate number of tests.

[1] This form must be completed each time there is a change to the site layout that would affect the infiltration feasibility condition. Previously completed forms shall be retained to document the evolution of the site storm water design.
[2] Available data includes site-specific sampling or observation of soil types or texture classes, such as obtained from borings or test pits necessary to support other design elements.

Project Name: Otay Ranch Village 7, R-3, R-4 & R-8

Categorization of Infiltration Feasibility Condition based on Geotechnical Conditions	Form I-8A[1] (Worksheet C.4-1)
IF	**Factor of Safety.** Is the suitable Factor of Safety selected for full infiltration design? See guidance in D.5; Tables D.5-1 and D.5-2; and Worksheet D.5-1 (Form I-9). ☐ Yes; continue to Step 1G. ☐ No; select appropriate factor of safety.
1G	**Full Infiltration Feasibility.** Is the average measured infiltration rate divided by the Factor of Safety greater than 0.5 inches per hour? ☐ Yes; answer "Yes" to Criteria 1 Result. ☐ No; answer "No" to Criteria 1 Result.
Criteria 1 Result	Is the estimated reliable infiltration rate greater than 0.5 inches per hour within the DMA where runoff can reasonably be routed to a BMP? ☐ Yes; the DMA may feasibly support full infiltration. Continue to Criteria 2. ☒ No; full infiltration is not required. Skip to Part 1 Result.

Summarize infiltration testing methods, testing locations, replicates, and results and summarize estimates of reliable infiltration rates according to procedures outlined in D.5. Documentation should be included in project geotechnical report.

Geotechnical Reconnaissance report to be performed at a later date.

Criteria 2: Geologic/Geotechnical Screening	
2A	**If all questions in Step 2A are answered "Yes," continue to Step 2B.** For any "No" answer in Step 2A answer "No" to Criteria 2 and submit an "Infiltration Feasibility Condition Letter" that meets the requirements in Appendix C.1.1. The geologic/geotechnical analyses listed in Appendix C.2.1 do not apply to the DMA because one of the following setbacks cannot be avoided and therefore result in the DMA being in a no infiltration condition. The setbacks must be the closest horizontal radial distance from the surface edge (at the overflow elevation) of the BMP.

Project Name: _____

Categorization of Infiltration Feasibility Condition based on Geotechnical Conditions		Form I-8A[1] (Worksheet C.4-1)	
2A-1	Can the proposed full infiltration BMP(s) avoid areas with existing fill materials greater than 5 feet thick below the infiltrating surface?	☐ Yes	☐ No
2A-2	Can the proposed full infiltration BMP(s) avoid placement within 10 feet of existing underground utilities, structures, or retaining walls?	☐ Yes	☐ No
2A-3	Can the proposed full infiltration BMP(s) avoid placement within 50 feet of a natural slope (>25%) or within a distance of 1.5H from fill slopes where H is the height of the fill slope?	☐ Yes	☐ No
2B	When full infiltration is determined to be feasible, a geotechnical investigation report must be prepared that considers the relevant factors identified in Appendix C.2.1. If all questions in Step 2B are answered "Yes," then answer "Yes" to Criteria 2 Result. If there are "No" answers continue to Step 2C.		
2B-1	**Hydroconsolidation.** Analyze hydroconsolidation potential per approved ASTM standard due to a proposed full infiltration BMP. Can full infiltration BMPs be proposed within the DMA without increasing hydroconsolidation risks?	☐ Yes	☐ No
2B-2	**Expansive Soils.** Identify expansive soils (soils with an expansion index greater than 20) and the extent of such soils due to proposed full infiltration BMPs. Can full infiltration BMPs be proposed within the DMA without increasing expansive soil risks?	☐ Yes	☐ No
2B-3	**Liquefaction**. If applicable, identify mapped liquefaction areas. Evaluate liquefaction hazards in accordance with Section 6.4.2 of the City of San Diego's Guidelines for Geotechnical Reports (2011 or most recent edition). Liquefaction hazard assessment shall take into account any increase in groundwater elevation or groundwater mounding that could occur as a result of proposed infiltration or percolation facilities. Can full infiltration BMPs be proposed within the DMA without increasing liquefaction risks?	☐ Yes	☐ No
2B-4	**Slope Stability**. If applicable, perform a slope stability analysis in accordance with the ASCE and Southern California Earthquake Center (2002) Recommended Procedures for Implementation of DMG Special Publication 117, Guidelines for Analyzing and Mitigating Landslide Hazards in California to determine minimum slope setbacks for full infiltration BMPs. See the City of San Diego's Guidelines for Geotechnical Reports (2011) to determine which type of slope stability analysis is required. Can full infiltration BMPs be proposed within the DMA without increasing slope stability risks?	☐ Yes	☐ No
2B-5	**Other Geotechnical Hazards.** Identify site-specific geotechnical hazards not already mentioned (refer to Appendix C.2.1). Can full infiltration BMPs be proposed within the DMA without increasing risk of geologic or geotechnical hazards not already mentioned?	☐ Yes	☐ No

Project Name: _____

Categorization of Infiltration Feasibility Condition based on Geotechnical Conditions		Form I-8A[1] (Worksheet C.4-1)	
2B-6	**Setbacks.** Establish setbacks from underground utilities, structures, and/or retaining walls. Reference applicable ASTM or other recognized standard in the geotechnical report. Can full infiltration BMPs be proposed within the DMA using established setbacks from underground utilities, structures, and/or retaining walls?	☐ Yes	☐ No
2C	**Mitigation Measures.** Propose mitigation measures for each geologic/geotechnical hazard identified in Step 2B. Provide a discussion of geologic/geotechnical hazards that would prevent full infiltration BMPs that cannot be reasonably mitigated in the geotechnical report. See Appendix C.2.1.8 for a list of typically reasonable and typically unreasonable mitigation measures. Can mitigation measures be proposed to allow for full infiltration BMPs? If the question in Step 2 is answered "Yes," then answer "Yes" to Criteria 2 Result. If the question in Step 2C is answered "No," then answer "No" to Criteria 2 Result.	☐ Yes	☐ No
Criteria 2 Result	Can infiltration greater than 0.5 inches per hour be allowed without increasing risk of geologic or geotechnical hazards that cannot be reasonably mitigated to an acceptable level?	☐ Yes	☐ No
Summarize findings and basis; provide references to related reports or exhibits. Geotechnical Reconnaissance report to be performed at a later date.			

Part 1 Result – Full Infiltration Geotechnical Screening [3]	Result
If answers to both Criteria 1 and Criteria 2 are "Yes", a full infiltration design is potentially feasible based on Geotechnical conditions only. If either answer to Criteria 1 or Criteria 2 is "No", a full infiltration design is not required.	☐ **Full infiltration Condition** ☒ **Complete Part 2**

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

Project Name: _____

Categorization of Infiltration Feasibility Condition based on Geotechnical Conditions	Form I-8A[1] (Worksheet C.4-1)
Part 2 – Partial vs. No Infiltration Feasibility Screening Criteria	
DMA(s) Being Analyzed:	**Project Phase:**
DMA 1 and 2	Planning
Criteria 3 : Infiltration Rate Screening	
3A	**NRCS Type C, D, or "urban/unclassified":** Is the mapped hydrologic soil group according to the NRCS Web Soil Survey or UC Davis Soil Web Mapper is Type C, D, or "urban/unclassified" and corroborated by available site soil data? ☐ Yes; the site is mapped as C soils and a reliable infiltration rate of 0.15 in/hr. is used to size partial infiltration BMPS. Answer "Yes" to Criteria 3 Result. ☒ Yes; the site is mapped as D soils or "urban/unclassified" and a reliable infiltration rate of 0.05 in/hr. is used to size partial infiltration BMPS. Answer "Yes" to Criteria 3 Result. ☐ No; infiltration testing is conducted (refer to Table D.3-1), continue to Step 3B.
3B	**Infiltration Testing Result:** Is the reliable infiltration rate (i.e. average measured infiltration rate/2) greater than 0.05 in/hr. and less than or equal to 0.5 in/hr? ☐ Yes; the site may support partial infiltration. Answer "Yes" to Criteria 3 Result. ☐ No; the reliable infiltration rate (i.e. average measured rate/2) is less than 0.05 in/hr., partial infiltration is not required. Answer "No" to Criteria 3 Result.
Criteria 3 Result	Is the estimated reliable infiltration rate (i.e., average measured infiltration rate/2) greater than or equal to 0.05 inches/hour and less than or equal to 0.5 inches/hour at any location within each DMA where runoff can reasonably be routed to a BMP? ☐ Yes; Continue to Criteria 4. ☐ No: Skip to Part 2 Result.
Summarize infiltration testing and/or mapping results (i.e. soil maps and series description used for infiltration rate). Geotechnical Reconnaissance report to be performed at a later date.	

Project Name: Otay Ranch Village 7, R-3, R-4 & R-8

Categorization of Infiltration Feasibility Condition based on Geotechnical Conditions		Form I-8A[1] (Worksheet C.4-1)	
Criteria 4: Geologic/Geotechnical Screening			
4A	If all questions in Step 4A are answered "Yes," continue to Step 2B. For any "No" answer in Step 4A answer "No" to Criteria 4 Result, and submit an "Infiltration Feasibility Condition Letter" that meets the requirements in Appendix C.1.1. The geologic/geotechnical analyses listed in Appendix C.2.1 do not apply to the DMA because one of the following setbacks cannot be avoided and therefore result in the DMA being in a no infiltration condition. The setbacks must be the closest horizontal radial distance from the surface edge (at the overflow elevation) of the BMP.		
4A-1	Can the proposed partial infiltration BMP(s) avoid areas with existing fill materials greater than 5 feet thick?	☐ Yes	☐ No
4A-2	Can the proposed partial infiltration BMP(s) avoid placement within 10 feet of existing underground utilities, structures, or retaining walls?	☐ Yes	☐ No
4A-3	Can the proposed partial infiltration BMP(s) avoid placement within 50 feet of a natural slope (>25%) or within a distance of 1.5H from fill slopes where H is the height of the fill slope?	☐ Yes	☐ No
4B	When full infiltration is determined to be feasible, a geotechnical investigation report must be prepared that considers the relevant factors identified in Appendix C.2.1. If all questions in Step 4B are answered "Yes," then answer "Yes" to Criteria 4 Result. If there are any "No" answers continue to Step 4C.		
4B-1	**Hydroconsolidation.** Analyze hydroconsolidation potential per approved ASTM standard due to a proposed full infiltration BMP. Can partial infiltration BMPs be proposed within the DMA without increasing hydroconsolidation risks?	☐ Yes	☐ No
4B-2	**Expansive Soils.** Identify expansive soils (soils with an expansion index greater than 20) and the extent of such soils due to proposed full infiltration BMPs. Can partial infiltration BMPs be proposed within the DMA without increasing expansive soil risks?	☐ Yes	☐ No
4B-3	**Liquefaction**. If applicable, identify mapped liquefaction areas. Evaluate liquefaction hazards in accordance with Section 6.4.2 of the City of San Diego's Guidelines for Geotechnical Reports (2011). Liquefaction hazard assessment shall take into account any increase in groundwater elevation or groundwater mounding that could occur as a result of proposed infiltration or percolation facilities. Can partial infiltration BMPs be proposed within the DMA without increasing liquefaction risks?	☐ Yes	☐ No

Project Name: _____

Categorization of Infiltration Feasibility Condition based on Geotechnical Conditions		Form I-8A[1] (Worksheet C.4-1)	
4B-4	**Slope Stability**. If applicable, perform a slope stability analysis in accordance with the ASCE and Southern California Earthquake Center (2002) Recommended Procedures for Implementation of DMG Special Publication 117, Guidelines for Analyzing and Mitigating Landslide Hazards in California to determine minimum slope setbacks for full infiltration BMPs. See the City of San Diego's Guidelines for Geotechnical Reports (2011) to determine which type of slope stability analysis is required. Can partial infiltration BMPs be proposed within the DMA without increasing slope stability risks?	☐ Yes	☐ No
4B-5	**Other Geotechnical Hazards.** Identify site-specific geotechnical hazards not already mentioned (refer to Appendix C.2.1). Can partial infiltration BMPs be proposed within the DMA without increasing risk of geologic or geotechnical hazards not already mentioned?	☐ Yes	☐ No
4B-6	**Setbacks.** Establish setbacks from underground utilities, structures, and/or retaining walls. Reference applicable ASTM or other recognized standard in the geotechnical report. Can partial infiltration BMPs be proposed within the DMA using recommended setbacks from underground utilities, structures, and/or retaining walls?	☐ Yes	☐ No
4C	**Mitigation Measures.** Propose mitigation measures for each geologic/geotechnical hazard identified in Step 4B. Provide a discussion on geologic/geotechnical hazards that would prevent partial infiltration BMPs that cannot be reasonably mitigated in the geotechnical report. See Appendix C.2.1.8 for a list of typically reasonable and typically unreasonable mitigation measures. Can mitigation measures be proposed to allow for partial infiltration BMPs? If the question in Step 4C is answered "Yes," then answer "Yes" to Criteria 4 Result. If the question in Step 4C is answered "No," then answer "No" to Criteria 4 Result.	☐ Yes	☐ No
Criteria 4 Result	Can infiltration of greater than or equal to 0.05 inches/hour and less than or equal to 0.5 inches/hour be allowed without increasing the risk of geologic or geotechnical hazards that cannot be reasonably mitigated to an acceptable level?	☐ Yes	☐ No

Otay Ranch Village 7, R-3, R-4 & R-8

Project Name: _____

Categorization of Infiltration Feasibility Condition based on Geotechnical Conditions	Form I-8A[1] (Worksheet C.4-1)
Summarize findings and basis; provide references to related reports or exhibits. Geotechnical Reconnaissance report to be performed at a later date.	

Part 2 – Partial Infiltration Geotechnical Screening Result[4]	Result
If answers to both Criteria 3 and Criteria 4 are "Yes", a partial infiltration design is potentially feasible based on geotechnical conditions only. If answers to either Criteria 3 or Criteria 4 is "No", then infiltration of any volume is considered to be infeasible within the site.	☐ **Partial Infiltration Condition** ☒ **No Infiltration Condition**

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

ATTACHMENT 1e

POLLUTION CONTROL BMP DESIGN WORKSHEETS

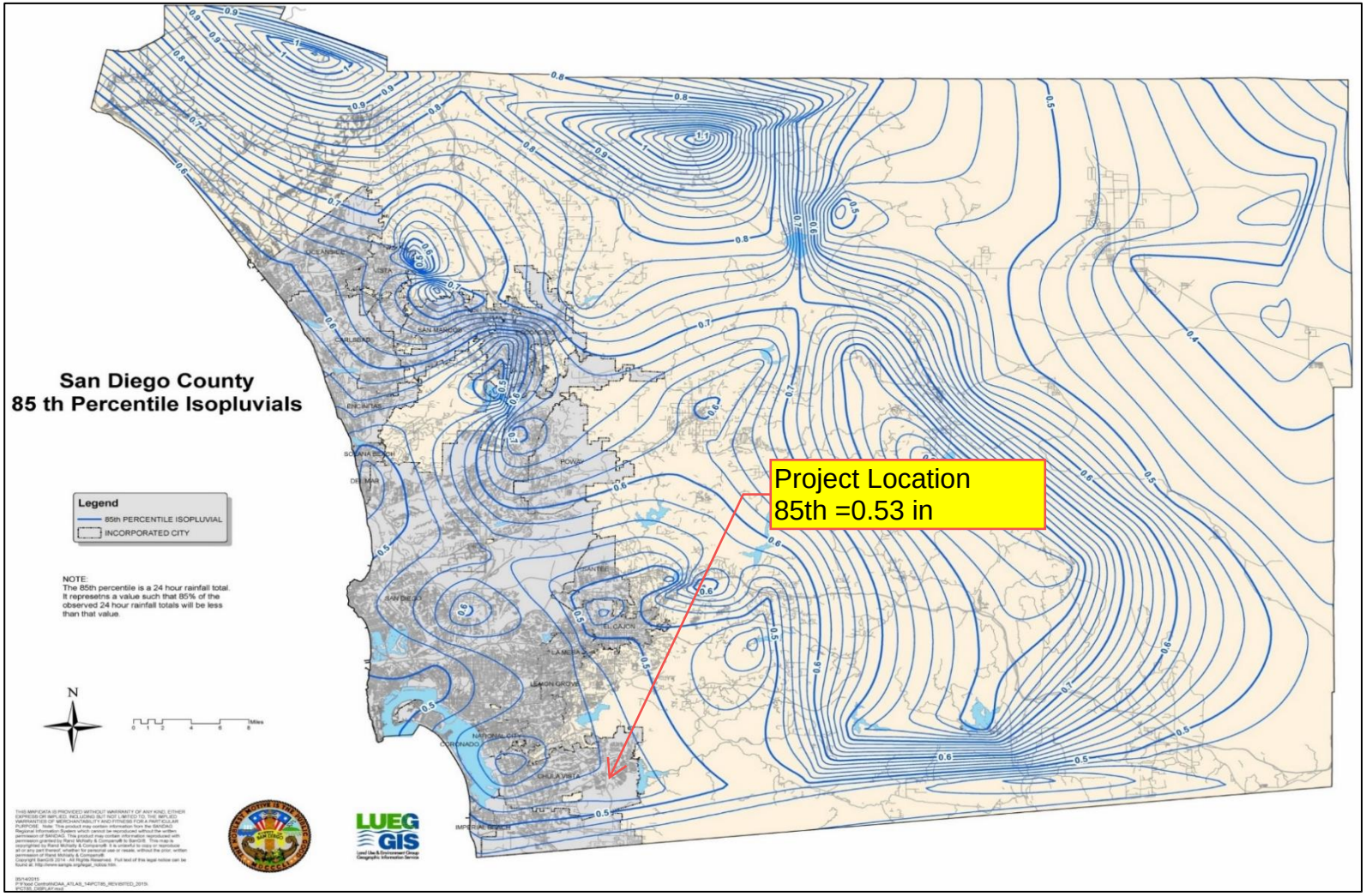


Figure B.1-1: 85th Percentile 24-hour Isopluvial Map

(b) The retention losses from the optimized biofiltration BMP are equal to or greater than the retention losses from the conventional biofiltration BMP. This second criterion is only applicable for partial infiltration condition.

For drawdown times that are outside the range of values presented in Table B.5-5 below, the storage unit should be designed to discharge greater than 92% average annual capture to the downstream Biofiltration BMP.

Table B.5-5: Storage required for different drawdown times

Drawdown Time (hours)	Storage requirement (below the overflow elevation, or below outlet elevation that bypass the biofiltration BMP)
12	0.85 DCV
24	1.25 DCV
36	1.50 DCV
48	1.80 DCV
72	2.20 DCV
96	2.60 DCV
120	2.80 DCV

VILLAGE 7, R-8 R-4
DMA CALCULATIONS

	Imp. RF	Pervious RF	% Imp	DMA1	Fraction of Total	Imp Area	Pervious Area	Summation RF x A	DMA-2	Fraction of Total	Imp Area	Pervious Area	Summation RF x A	SR-1	Fraction of Total	Imp Area	Pervious Area	Summation RF x A
LANDSCAPE	0.90	0.10	0	76369	0.03	0	76369	7637	27291	0.03	0	27291	2729	7568	0.25	0	7568	757
MULTI-FAMILY	0.90	0.10	100	270761	0.97	270761	0	243685	96759	0.97	96759	0	87083	0	0.00	0	0	0
BASIN	0.90	0.10	0	0	0.00	0	0	0	0	0.00	0	0	0	0	0.00	0	0	0
SEMI-PERVIOUS ROAD	0.90	0.30	0	0	0.00	0	0	0	0	0.00	0	0	0	7432	0.75	0	7432	2230
ROAD	0.90	0.10	100	0	0.00	0	0	0	0	0.00	0	0	0	0	0.00	0	0	0
				347130	1.00	270761	76369	251322	124050	1.00	96759	27291	89812	15000	1.00	0	15000	2986
			%Imperv	78.00			Weighted C =	0.72	78.00			Weighted C =	0.72	49.55			Weighted C =	0.20

	Imp. RF	Pervious RF	% Imp	SM-1	Fraction of Total	Imp Area	Pervious Area	Summation RF x A	SM-2	Fraction of Total	Imp Area	Pervious Area	Summation RF x A	SM-3	Fraction of Total	Imp Area	Pervious Area	
				SQFT		SQFT	SQFT		SQFT		SQFT	SQFT		SQFT		SQFT	SQFT	
LANDSCAPE	0.90	0.10	0	129147	1.00	0	129147	12915	124304	1.00	0	124304.44	12430	3180	1.00	0	3180	318
				129147	1.00	0	129147	12915	124304	1.00	0	124304	12430	3180	1.00	0	3180	318
			%Imperv	0.00			Weighted C =	0.10	0.00			Weighted C =	0.10	0.00			Weighted C =	0.10

VILLAGE 7, R-8 R-4
DCV CALCULATIONS

DMA 1: Design Capture Volume		Worksheet B-2.1		
1	85th percentile 24-hr storm depth from Figure B.1-1	d=	0.53	inches
2	Area tributary to BMP (s)	A=	7.97	acres
	Area tributary to BMP (s)	A=	347,130	s.f.
3	Area weighted runoff factor (estimate using Appendix B.1.1 and B.2.1)	C=	0.72	unitless
4	Street trees volume reduction	TCV=	0.00	cubic-feet
5	Rain barrels volume reduction	RCV=	0.00	cubic-feet
6	Calculate DCV= (3630 x C x d x A) - TCV - RCV	DCV=	11,100	cubic-feet
		1.5 DCV=	16,650	cubic-feet

DMA 2: Design Capture Volume		Worksheet B-2.1		
1	85th percentile 24-hr storm depth from Figure B.1-1	d=	0.53	inches
2	Area tributary to BMP (s)	A=	2.85	acres
	Area tributary to BMP (s)	A=	124,050	s.f.
3	Area weighted runoff factor (estimate using Appendix B.1.1 and B.2.1)	C=	0.72	unitless
4	Street trees volume reduction	TCV=	0.00	cubic-feet
5	Rain barrels volume reduction	RCV=	0.00	cubic-feet
6	Calculate DCV= (3630 x C x d x A) - TCV - RCV	DCV=	3,967	cubic-feet
		1.5 DCV=	5,950	cubic-feet

SR-1 Design Capture Volume		Worksheet B-2.1		
1	85th percentile 24-hr storm depth from Figure B.1-1	d=	0.53	inches
2	Area tributary to BMP (s)	A=	0.34	acres
	Area tributary to BMP (s)	A=	15,000	s.f.
3	Area weighted runoff factor (estimate using Appendix B.1.1 and B.2.1)	C=	0.20	unitless
4	Street trees volume reduction	TCV=	0.00	cubic-feet
5	Rain barrels volume reduction	RCV=	0.00	cubic-feet
6	Calculate DCV= (3630 x C x d x A) - TCV - RCV	DCV=	132	cubic-feet

CITY OF CHULA VISTA	Project Name	Otay Ranch Village 7, R-8 & R-4	
	BMP ID	BF-3-1	
Sizing Method for Volume Retention Criteria		**Worksheet B.5-2**	
1	Area draining to the BMP	**347,130**	**sq. ft.**
2	Adjusted runoff factor for drainage area (Refer to Appendix B.1 and B.2)	**0.72**	
3	85th percentile 24-hour rainfall depth	**0.53**	**inches**
4	Design capture volume [Line 1 x Line 2 x (Line 3/12)]	**11100**	**cu. ft.**
Volume Retention Requirement			
5	Measured infiltration rate in the DMA Note: When mapped hydrologic soil groups are used enter 0.10 for NRCS Type D soils and for NRCS Type C soils enter 0.30 When in no infiltration condition and the actual measured infiltration rate is unknown enter 0.0 if there are geotechnical and/or groundwater hazards identified in Appendix G or enter 0.05	**0**	**in/hr.**
6	Factor of safety	**2**	
7	Reliable infiltration rate, for biofiltration BMP sizing [Line 5 / Line 6]	**0**	**in/hr.**
8	Average annual volume reduction target (Figure B.5-2) When Line 7 > 0.01 in/hr. = Minimum (40, 166.9 x Line 7 +6.62) When Line 7 ≤ 0.01 in/hr. = 3.5%	**3.5**	**%**
9	Fraction of DCV to be retained (Figure B.5-3) When Line 8 > 8% = 0.0000013 x Line 8^3 - 0.000057 x Line 8^2 + 0.0086 x Line 8 - 0.014 When Line 8 ≤ 8% = 0.023	**0.023**	
10	Target volume retention [Line 9 x Line 4]	**255**	**cu. ft.**

CITY OF CHULA VISTA	Project Name	Otay Ranch Village 7, R-8 & R-4
	BMP ID	BF-3-1

Volume Retention for No Infiltration Condition — Worksheet B.5-6

1	Area draining to the biofiltration BMP					347,130	sq. ft.
2	Adjusted runoff factor for drainage area (Refer to Appendix B.1 and B.2)					0.72	
3	Effective impervious area draining to the BMP [Line 1 x Line 2]					251322	sq. ft.
4	Required area for Evapotranspiration [Line 3 x 0.03]					7540	sq. ft.
5	Biofiltration BMP Footprint					0	sq. ft.
Landscape Area (must be identified on DS-3247)							
		Identification	**1**	**2**	**3**	**4**	**5**
6	Landscape area that meet the requirements in SD-B and SD-F Fact Sheet (sq. ft.)						
7	Impervious area draining to the landscape area (sq. ft.)						
8	Impervious to Pervious Area ratio [Line 7/Line 6]		0.00	0.00	0.00	0.00	0.00
9	Effective Credit Area If (Line 8 >1.5, Line 6, Line 7/1.5]		0	0	0	0	0
10	Sum of Landscape area [sum of Line 9 Id's 1 to 5]					0	sq. ft.
11	Provided footprint for evapotranspiration [Line 5 + Line 10]					0	sq. ft.
Volume Retention Performance Standard							
12	Is Line 11 ≥ Line 4?				No, Proceed to Line 13		
13	Fraction of the performance standard met through the BMP footprint and/or landscaping [Line 11/Line 4]					0	
14	Target Volume Retention [Line 10 from Worksheet B.5.2]					255	cu. ft.
15	Volume retention required from other site design BMPs [(1-Line 13) x Line 14]					255.3012251	cu. ft.
Site Design BMP							
	Identification	**Site Design Type**				**Credit**	
16	**1**						cu. ft.
	2						cu. ft.
	3						cu. ft.
	4						cu. ft.
	5						cu. ft.
	Sum of volume retention benefits from other site design BMPs (e.g. trees; rain barrels etc.). [sum of Line 16 Credits for Id's 1 to 5] Provide documentation of how the site design credit is calculated in the PDP SWQMP.					0	cu. ft.
17	Is Line 16 ≥ Line 15?				Implement Additional Site Design BMPs		

DMA 1: Compact Biofiltration Design Flows		Worksheet B.6-1		
1	DCV	DCV	11,100	cubic-feet
2	DCV Retained	DCV Retained	0.00	cubic-feet
3	DCV Biofiltered	DCV Biofiltered	0.00	cubic-feet
4	DCV requiring flow-thru (Line 1 - Line 2 - 0.67*Line 3)	DCV flow-thru	11,100	cubic-feet
5	Adjustment Factor (Line 4 / Line1)	AF=	1.00	unitless
6	Design rainfall intensity	i=	0.2	in/hr
7	Area tributary to BMP(s)	A=	7.97	acres
8	Area-weighted runoff factor (estimate using Appendix B.2)	C=	0.72	unitless
9	Calculate Flow Rate = AF x (C x i x A) x1.5	Q=	1.731	cfs
10	Flow Rate per 8x24 unit (High Capacity Model)	Q=	0.870	cfs
11	Number of units required		2	
12	Design Flow Rate (Per Contech)	Q=	1.740	cfs

1) Adjustment factor shall be estimated considering only retention and biofiltration BMPs located upstream of Compact Biofiltration BMPs. That is, if the Compact Biofiltration BMP is upstream of the project's retention and biofiltration BMPs then the Compact Biofiltration BMP shall be sized using an adjustment factor of 1.

2) Volume based (e.g., dry extended detention basin) Compact Biofiltration treatment control BMPs shall be sized to the volume in Line 4 and flow based (e.g., vegetated swales) shall be sized to flow rate in Line 9. Sand filter and media filter can be designed by either volume in :ie 4 or flow rate in Line 9

3) Propietary BMPs, if used, shall provide certified treatment capacity equal to or greater than the calculated flow rate in Line 9; certified treatment capacoty per unit shall be consistent with third party certifications.

4) Compact Biofiltration treatment control BMPs shall be sized to filter or treat the maximum flow rate of runoff produced from a rainfaill intensity of 0.2 inch of rainfall per hour, or each hour of every storm event

CITY OF CHULA VISTA	Project Name	Otay Ranch Village 7, R-8 & R-4	
	BMP ID	BF-3-2	
Sizing Method for Volume Retention Criteria		**Worksheet B.5-2**	
1	Area draining to the BMP	**124,050**	**sq. ft.**
2	Adjusted runoff factor for drainage area (Refer to Appendix B.1 and B.2)	**0.72**	
3	85th percentile 24-hour rainfall depth	**0.53**	**inches**
4	Design capture volume [Line 1 x Line 2 x (Line 3/12)]	**3967**	**cu. ft.**
Volume Retention Requirement			
5	Measured infiltration rate in the DMA Note: When mapped hydrologic soil groups are used enter 0.10 for NRCS Type D soils and for NRCS Type C soils enter 0.30 When in no infiltration condition and the actual measured infiltration rate is unknown enter 0.0 if there are geotechnical and/or groundwater hazards identified in Appendix G or enter 0.05	**0**	**in/hr.**
6	Factor of safety	**2**	
7	Reliable infiltration rate, for biofiltration BMP sizing [Line 5 / Line 6]	**0**	**in/hr.**
8	Average annual volume reduction target (Figure B.5-2) When Line 7 > 0.01 in/hr. = Minimum (40, 166.9 x Line 7 +6.62) When Line 7 ≤ 0.01 in/hr. = 3.5%	**3.5**	**%**
9	Fraction of DCV to be retained (Figure B.5-3) When Line 8 > 8% = 0.0000013 x Line 8^3 - 0.000057 x Line 8^2 + 0.0086 x Line 8 - 0.014 When Line 8 ≤ 8% = 0.023	**0.023**	
10	Target volume retention [Line 9 x Line 4]	**91**	**cu. ft.**

CITY OF CHULA VISTA	Project Name	Otay Ranch Village 7, R-8 & R-4
	BMP ID	BF-3-2

Volume Retention for No Infiltration Condition — Worksheet B.5-6

1	Area draining to the biofiltration BMP					124,050	sq. ft.
2	Adjusted runoff factor for drainage area (Refer to Appendix B.1 and B.2)					0.72	
3	Effective impervious area draining to the BMP [Line 1 x Line 2]					89812	sq. ft.
4	Required area for Evapotranspiration [Line 3 x 0.03]					2694	sq. ft.
5	Biofiltration BMP Footprint					0	sq. ft.
Landscape Area (must be identified on DS-3247)							
		Identification	**1**	**2**	**3**	**4**	**5**
6	Landscape area that meet the requirements in SD-B and SD-F Fact Sheet (sq. ft.)						
7	Impervious area draining to the landscape area (sq. ft.)						
8	Impervious to Pervious Area ratio [Line 7/Line 6]		0.00	0.00	0.00	0.00	0.00
9	Effective Credit Area If (Line 8 >1.5, Line 6, Line 7/1.5]		0	0	0	0	0
10	Sum of Landscape area [sum of Line 9 Id's 1 to 5]					0	sq. ft.
11	Provided footprint for evapotranspiration [Line 5 + Line 10]					0	sq. ft.
Volume Retention Performance Standard							
12	Is Line 11 ≥ Line 4?			No, Proceed to Line 13			
13	Fraction of the performance standard met through the BMP footprint and/or landscaping [Line 11/Line 4]					0	
14	Target Volume Retention [Line 10 from Worksheet B.5.2]					91	cu. ft.
15	Volume retention required from other site design BMPs [(1-Line 13) x Line 14]					91.23391761	cu. ft.
Site Design BMP							
	Identification	**Site Design Type**				**Credit**	
16	**1**						cu. ft.
	2						cu. ft.
	3						cu. ft.
	4						cu. ft.
	5						cu. ft.
	Sum of volume retention benefits from other site design BMPs (e.g. trees; rain barrels etc.). [sum of Line 16 Credits for Id's 1 to 5] Provide documentation of how the site design credit is calculated in the PDP SWQMP.					0	cu. ft.
17	Is Line 16 ≥ Line 15?			Implement Additional Site Design BMPs			

DMA 2: Compact Biofiltration Design Flows		Worksheet B.6-1		
1	DCV	DCV	5,950	cubic-feet
2	DCV Retained	DCV Retained	0.00	cubic-feet
3	DCV Biofiltered	DCV Biofiltered	0.00	cubic-feet
4	DCV requiring flow-thru (Line 1 - Line 2 - 0.67*Line 3)	DCV flow-thru	5,950	cubic-feet
5	Adjustment Factor (Line 4 / Line1)	AF=	1.00	unitless
6	Design rainfall intensity	i=	0.2	in/hr
7	Area tributary to BMP(s)	A=	2.85	acres
8	Area-weighted runoff factor (estimate using Appendix B.2)	C=	0.72	unitless
9	Calculate Flow Rate = AF x (C x i x A) x1.5	Q=	0.619	cfs
10	Flow Rate per 8x24 unit	Q=	0.693	cfs
11	Number of units required		1	
12	Design Flow Rate (Per Contech)	Q=	0.693	cfs

1) Adjustment factor shall be estimated considering only retention and biofiltration BMPs located upstream of Compact Biofiltration BMPs. That is, if the Compact Biofiltration BMP is upstream of the project's retention and biofiltration BMPs then the Compact Biofiltration BMP shall be sized using an adjustment factor of 1.

2) Volume based (e.g., dry extended detention basin) Compact Biofiltration treatment control BMPs shall be sized to the volume in Line 4 and flow based (e.g., vegetated swales) shall be sized to flow rate in Line 9. Sand filter and media filter can be designed by either volume in :ie 4 or flow rate in Line 9

3) Propietary BMPs, if used, shall provide certified treatment capacity equal to or greater than the calculated flow rate in Line 9; certified treatment capacoty per unit shall be consistent with third party certifications.

4) Compact Biofiltration treatment control BMPs shall be sized to filter or treat the maximum flow rate of runoff produced from a rainfaill intensity of 0.2 inch of rainfall per hour, or each hour of every storm event

R-4 unit

R-8 unit will be deeper

MWS Linear 2.0 HGL Sizing Calculations

MWS MODEL SIZE	WETLAND PERMITER LENGTH	LOADING RATE GPM/SF	HGL HEIGHT																				STANDARD HEIGHT MODEL	HIGH CAPACITY MODELS								
			SHALLOW MODELS																												
			1.4	1.5	1.6	1.7	1.8	1.9	2.0	2.1	2.2	2.3	2.4	2.5	2.6	2.7	2.8	2.9	3.0	3.1	3.2	3.3	3.4	3.5	3.6	3.65	3.70	3.75	3.80	3.85	3.90	3.95
MWS-L-4-4	6.70	1.0	0.022	0.023	0.025	0.026	0.028	0.029	0.031	0.032	0.034	0.035	0.037	0.038	0.040	0.042	0.043	0.045	0.046	0.048	0.049	0.051	0.052	0.054	0.055	0.056	0.057	0.058	0.058	0.059	0.060	0.061
MWS-L-3-6	10.06	1.0	0.032	0.035	0.037	0.039	0.042	0.044	0.046	0.048	0.051	0.053	0.055	0.058	0.060	0.062	0.065	0.067	0.069	0.072	0.074	0.076	0.078	0.081	0.083	0.084	0.085	0.087	0.088	0.089	0.090	0.091
MWS-L-4-6	9.30	1.0	0.030	0.032	0.034	0.036	0.038	0.041	0.043	0.045	0.047	0.049	0.051	0.053	0.055	0.058	0.060	0.062	0.064	0.066	0.068	0.070	0.073	0.075	0.077	0.078	0.079	0.080	0.081	0.082	0.083	0.084
MWS-L-4-8	14.80	1.0	0.048	0.051	0.054	0.058	0.061	0.065	0.068	0.071	0.075	0.078	0.082	0.085	0.088	0.092	0.095	0.099	0.102	0.105	0.109	0.112	0.115	0.119	0.122	0.124	0.126	0.127	0.129	0.131	0.132	0.134
MWS-L-4-13	18.40	1.0	0.059	0.063	0.068	0.072	0.076	0.080	0.084	0.089	0.093	0.097	0.101	0.106	0.110	0.114	0.118	0.122	0.127	0.131	0.135	0.139	0.144	0.148	0.152	0.154	0.156	0.158	0.160	0.163	0.165	0.167
MWS-L-4-15	22.40	1.0	0.072	0.077	0.082	0.087	0.093	0.098	0.103	0.108	0.113	0.118	0.123	0.129	0.134	0.139	0.144	0.149	0.154	0.159	0.165	0.170	0.175	0.180	0.185	0.188	0.190	0.193	0.195	0.198	0.200	0.203
MWS-L-4-17	26.40	1.0	0.085	0.091	0.097	0.103	0.109	0.115	0.121	0.127	0.133	0.139	0.145	0.151	0.158	0.164	0.170	0.176	0.182	0.188	0.194	0.200	0.206	0.212	0.218	0.221	0.224	0.227	0.230	0.233	0.236	0.239
MWS-L-4-19	30.40	1.0	0.098	0.105	0.112	0.119	0.126	0.133	0.140	0.147	0.153	0.160	0.167	0.174	0.181	0.188	0.195	0.202	0.209	0.216	0.223	0.230	0.237	0.244	0.251	0.255	0.258	0.262	0.265	0.269	0.272	0.276
MWS-L-4-21	34.40	1.0	0.111	0.118	0.126	0.134	0.142	0.150	0.158	0.166	0.174	0.182	0.189	0.197	0.205	0.213	0.221	0.229	0.237	0.245	0.253	0.261	0.268	0.276	0.284	0.288	0.292	0.296	0.300	0.304	0.308	0.312
MWS-L-6-8	18.80	1.0	0.060	0.065	0.069	0.073	0.078	0.082	0.086	0.091	0.095	0.099	0.104	0.108	0.112	0.116	0.121	0.125	0.129	0.134	0.138	0.142	0.147	0.151	0.155	0.157	0.160	0.162	0.164	0.166	0.168	0.170
MWS-L-8-8	29.60	1.0	0.095	0.102	0.109	0.115	0.122	0.129	0.136	0.143	0.149	0.156	0.163	0.170	0.177	0.183	0.190	0.197	0.204	0.211	0.217	0.224	0.231	0.238	0.245	0.248	0.251	0.255	0.258	0.262	0.265	0.268
MWS-L-8-12	44.40	1.0	0.143	0.153	0.163	0.173	0.183	0.194	0.204	0.214	0.224	0.234	0.245	0.255	0.265	0.275	0.285	0.296	0.306	0.316	0.326	0.336	0.346	0.357	0.367	0.372	0.377	0.382	0.387	0.392	0.397	0.402
MWS-L-8-16	59.20	1.0	0.190	0.204	0.217	0.231	0.245	0.258	0.272	0.285	0.299	0.312	0.326	0.340	0.353	0.367	0.380	0.394	0.408	0.421	0.435	0.448	0.462	0.476	0.489	0.496	0.503	0.509	0.516	0.523	0.530	0.537
MWS-L-8-20	74.00	1.0	0.238	0.255	0.272	0.289	0.306	0.323	0.340	0.357	0.374	0.391	0.408	0.425	0.442	0.459	0.476	0.493	0.509	0.526	0.543	0.560	0.577	0.594	0.611	0.620	0.628	0.637	0.645	0.654	0.662	0.671
MWS-L-10-20 or MWS-L-8-24	88.80	1.0	0.285	0.306	0.326	0.346	0.367	0.387	0.408	0.428	0.448	0.469	0.489	0.509	0.530	0.550	0.571	0.591	0.611	0.632	0.652	0.673	0.693	0.713	0.734	0.744	0.754	0.764	0.774	0.785	0.795	0.805
4'x'4 media cage	14.80	1.0	0.048	0.051	0.054	0.058	0.061	0.065	0.068	0.071	0.075	0.078	0.082	0.085	0.088	0.092	0.095	0.099	0.102	0.105	0.109	0.112	0.115	0.119	0.122	0.124						

FOR MWS FLOW-BASED PROPRIETARY
BIOFILTRATION UNITS for Future R-4 and R-8

Compact (high rate) Biofiltration BMP Checklist	Form I-10

Compact (high rate) biofiltration BMPs have a media filtration rate greater than 5 in/hr. and a media surface area smaller than 3% of contributing area times adjusted runoff factor. Compact biofiltration BMPs are typically proprietary BMPs that may qualify as biofiltration.

A compact biofiltration BMP may satisfy the pollutant control requirements for a DMA onsite in some cases. This depends on the characteristics of the DMA **and** the performance certification/data of the BMP. If the pollutant control requirements for a DMA are met onsite, then the DMA is not required to participate in an offsite storm water alternative compliance program to meet its

An applicant using a compact biofiltration BMP to meet the pollutant control requirements onsite must complete Section 1 of this form and include it in the PDP SWQMP. A separate form must be completed for each DMA. In instances where the City Engineer does not agree with the applicant's determination, Section 2 of this form will be completed by the City and returned to the applicant.

Section 1: Biofiltration Criteria Checklist (Appendix F)

Refer to Part 1 of the Storm Water Standards to complete this section. When separate forms/worksheets are referenced below, the applicant must also complete these separate forms/worksheets (as applicable) and include in the PDP SWQMP. The criteria numbers below correspond to the criteria numbers in Appendix F.

Criteria	Answer	Progression
Criteria 1 and 3: What is the infiltration condition of the DMA? Refer to Section 5.4.2 and Appendix C of the BMP Design Manual (Part 1 of Storm Water Standards) for guidance. Applicant must complete and include the following in the PDP SWQMP submittal to support the feasibility determination: • Infiltration Feasibility Condition Letter; or • Worksheet C.4-1: Form I-8A and Worksheet C.4-2: Form I-8B. Applicant must complete and include all applicable sizing worksheets in the SWQMP submittal	○ Full Infiltration Condition	**Stop**. Compact biofiltration BMP is not allowed.
	○ Partial Infiltration Condition	Compact biofiltration BMP is only allowed, if the target volume retention is met onsite (Refer to Table B.5-1 in Appendix B.5). Use Worksheet B.5-2 in Appendix B.5 to estimate the target volume retention (Note: retention in this context means reduction). If the required volume reduction is achieved **proceed to Criteria 2**. If the required volume reduction is not achieved, compact biofiltration BMP is not allowed. **Stop**.
	◉ No Infiltration Condition	Compact biofiltration BMP is allowed if volume retention criteria in Table B.5-1 in Appendix B.5 for the no infiltration condition is met. Compliance with this criterion must be documented in the PDP SWQMP. If the criteria in Table B.5-1 is met **proceed to Criteria 2**. If the criteria in Table B.5-1 is not met, compact biofiltration BMP is not allowed. **Stop**.

Compact (high rate) Biofiltration BMP Checklist	Form I-10

Provide basis for Criteria 1 and 3:

Feasibility Analysis:

Summarize findings and include either infiltration feasibility condition letter or Worksheet C.4-1: Form I-8A and Worksheet C.4-2: Form I-8B in the PDP SWQMP submittal.

If Partial Infiltration Condition:

Provide documentation that target volume retention is met (include Worksheet B.5-2 in the PDP SWQMP submittal). Worksheet B.5-7 in Appendix B.5 can be used to estimate volume retention benefits from landscape areas.

If No Infiltration Condition:

Provide documentation that the volume retention performance standard is met (include Worksheet B.5-2 in the PDP SWQMP submittal) in the PDP SWQMP submittal. Worksheet B.5-6 in Appendix B.5 can be used to document that the performance standard is met.

Criteria	Answer	Progression
Criteria 2: Is the compact biofiltration BMP sized to meet the performance standard from the MS4 Permit? Refer to Appendix B.5 and Appendix F.2 of the BMP Design Manual (Part 1 of Storm Water Standards) for guidance.	◉ Meets Flow based Criteria	Use guidance from **Appendix F.2.2** to size the compact biofiltration BMP to meet the flow based criteria. Include the calculations in the PDP SWQMP. Use parameters for sizing consistent with manufacturer guidelines and conditions of its third party certifications (i.e. a BMP certified at a loading rate of 1 gpm/sq. ft. cannot be designed using a loading rate of 1.5 gpm/sq. ft.) **Proceed to Criteria 4.**
	○ Meets Volume based Criteria	Provide documentation that the compact biofiltration BMP has a total static (i.e. non-routed) storage volume, including pore-spaces and pre-filter detention volume (Refer to Appendix B.5 for a schematic) of at least 0.75 times the portion of the DCV not reliably retained onsite. **Proceed to Criteria 4.**
	○ Does not Meet either criteria	**Stop**. Compact biofiltration BMP is not allowed.

Provide basis for Criteria 2:

Provide documentation that the BMP meets the numeric criteria and is designed consistent with the manufacturer guidelines and conditions of its third-party certification (i.e., loading rate, etc., as applicable).

Criteria	Answer	Progression
Criteria 4: Does the compact biofiltration BMP meet the pollutant treatment performance standard for the projects most significant pollutants of concern? Refer to Appendix B.6 and Appendix F.1 of the BMP Design Manual (Part 1 of Storm Water Standards) for guidance.	◉ Yes, meets the TAPE certification.	Provide documentation that the compact BMP has an appropriate TAPE certification for the projects most significant pollutants of concern. **Proceed to Criteria 5.**
	○ Yes, through other third-party documentation	Acceptance of third-party documentation is at the discretion of the City Engineer. The City engineer will consider, (a) the data submitted; (b) representativeness of the data submitted; and (c) consistency of the BMP performance claims with pollutant control objectives in Table F.1-2 and Table F.1-1 while making this determination. If a compact biofiltration BMP is not accepted, a written explanation/ reason will be provided in Section 2. **Proceed to Criteria 5.**
	○ No	**Stop**. Compact biofiltration BMP is not allowed.

Provide basis for Criteria 4:

Provide documentation that identifies the projects most significant pollutants of concern and TAPE certification or other third party documentation that shows that the compact biofiltration BMP meets the pollutant treatment performance standard for the projects most significant pollutants of concern.

Compact (high rate) Biofiltration BMP Checklist		Form I-10
Criteria	**Answer**	**Progression**
<u>Criteria 5</u>: Is the compact biofiltration BMP designed to promote appropriate biological activity to support and maintain treatment process? Refer to Appendix F of the BMP Design Manual (Part 1 of Storm Water Standards) for guidance.	◉ Yes	Provide documentation that the compact biofiltration BMP support appropriate biological activity. Refer to Appendix F for guidance. **Proceed to Criteria 6.**
	○ No	**Stop**. Compact biofiltration BMP is not allowed.
Provide basis for Criteria 5: Provide documentation that appropriate biological activity is supported by the compact biofiltration BMP to maintain treatment process.		
Criteria	**Answer**	**Progression**
<u>Criteria 6</u>: Is the compact biofiltration BMP designed with a hydraulic loading rate to prevent erosion, scour and channeling within the BMP?	◉ Yes	Provide documentation that the compact biofiltration BMP is used in a manner consistent with manufacturer guidelines and conditions of its third-party certification. **Proceed to Criteria 7.**
	○ No	**Stop**. Compact biofiltration BMP is not allowed.
Provide basis for Criteria 6: Provide documentation that the BMP meets the numeric criteria and is designed consistent with the manufacturer guidelines and conditions of its third-party certification (i.e., maximum tributary area, maximum inflow velocities, etc., as applicable).		

Compact (high rate) Biofiltration BMP Checklist		Form I-10
Criteria	**Answer**	**Progression**
Criteria 7: Is the compact biofiltration BMP maintenance plan consistent with manufacturer guidelines and conditions of its third-party certification (i.e., maintenance activities, frequencies)?	◉ Yes, and the compact BMP is privately owned, operated and not in the public right of way.	Submit a maintenance agreement that will also include a statement that the BMP will be maintained in accordance with manufacturer guidelines and conditions of third-party certification. **Stop**. The compact biofiltration BMP meets the required criteria.
	○ Yes, and the BMP is either owned or operated by the City or in the public right of way.	Approval is at the discretion of the City Engineer. The city engineer will consider maintenance requirements, cost of maintenance activities, relevant previous local experience with operation and maintenance of the BMP type, ability to continue to operate the system in event that the vending company is no longer operating as a business or other relevant factors while making the determination. **Stop**. Consult the City Engineer for a determination.
	○ No	**Stop**. Compact biofiltration BMP is not allowed.

Provide basis for Criteria 7:

Include copy of manufacturer guidelines and conditions of third-party certification in the maintenance agreement. PDP SWQMP must include a statement that the compact BMP will be maintained in accordance with manufacturer guidelines and conditions of third-party certification.

Compact (high rate) Biofiltration BMP Checklist	Form I-10
Section 2: Verification (For City Use Only)	
Is the proposed compact BMP accepted by the City Engineer for onsite pollutant control compliance for the DMA?	○ Yes ○ No, See explanation below
Explanation/reason if the compact BMP is not accepted by the City for onsite pollutant control compliance:	

WASHINGTON STATE DEPARTMENT OF ECOLOGY

August 2021

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

For

MWS-Linear Modular Wetland

Ecology's Decision

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

1. General Use Level Designation (GULD) for the MWS-Linear Modular Wetland Stormwater Treatment System for Basic, Phosphorus, and Enhanced treatment
    - Sized at a hydraulic loading rate of:
        - 1 gallon per minute (gpm) per square foot (sq ft) of Wetland Cell Surface Area
        - Prefilter box (approved at either 22 inches or 33 inches tall)
            - 3.0 gpm/sq ft of prefilter box surface area for moderate pollutant loading rates (low to medium density residential basins).
            - 2.1 gpm/sq ft of prefilter box surface area for high pollutant loading rates (commercial and industrial basins).
2. Ecology approves the MWS – Linear Modular Wetland Stormwater Treatment System units for Basic, Phosphorus, and Enhanced treatment at the hydraulic loading rate listed above. Designers shall calculate the water quality design flow rates using the following procedures:
    - Western Washington: For treatment installed upstream of detention or retention, the water quality design flow rate is the peak 15-minute water quality treatment design flow rate as calculated using the latest version of the Western Washington Hydrology Model or other Ecology- approved continuous runoff model.

- Eastern Washington: For treatment installed upstream of detention or retention, the water quality design flow rate is the peak 15-minute water quality treatment design flow rate as calculated using one of the three methods described in Chapter 2.2.5 of the Stormwater Management Manual for Eastern Washington (SWMMEW) or local manual.
- Entire State: For treatment installed downstream of detention, the water quality treatment design flow rate is the full 2-year release rate of the detention facility.

3. These use level designations have no expiration date but may be amended or revoked by Ecology, and are subject to the conditions specified below.

Ecology's Conditions of Use

Applicants shall comply with the following conditions:

1) Design, assemble, install, operate, and maintain the MWS – Linear Modular Wetland Stormwater Treatment System units, in accordance with Modular Wetland Systems, Inc. applicable manuals and documents and the Ecology Decision.
2) Each site plan must undergo Modular Wetland Systems, Inc. review and approval before site installation. This ensures that site grading and slope are appropriate for use of a MWS – Linear Modular Wetland Stormwater Treatment System unit.
3) MSW – Linear Modular Wetland Stormwater Treatment System media shall conform to the specifications submitted to and approved by Ecology.
4) The applicant tested the MWS – Linear Modular Wetland Stormwater Treatment System with an external bypass weir. This weir limited the depth of water flowing through the media, and therefore the active treatment area, to below the root zone of the plants. This GULD applies to MWS – Linear Modular Wetland Stormwater Treatment Systems whether plants are included in the final product or not.
5) Maintenance: The required maintenance interval for stormwater treatment devices is often dependent upon the degree of pollutant loading from a particular drainage basin. Therefore, Ecology does not endorse or recommend a "one size fits all" maintenance cycle for a particular model/size of stormwater treatment technology.
    - Typically, Modular Wetland Systems, Inc. designs MWS – Linear Modular Wetland systems for a target prefilter media life of 6 to 12 months.
    - Indications of the need for maintenance include effluent flow decreasing to below the design flow rate or decrease in treatment below required levels.
    - Owners/operators must inspect MWS – Linear Modular Wetland systems for a minimum of twelve months from the start of post-construction operation to determine site-specific maintenance schedules and requirements. You must conduct inspections monthly during the wet season, and every other month during the dry season (According to the SWMMWW, the wet season in western Washington is October 1 to April

30. According to the SWMMEW, the wet season in eastern Washington is October 1 to June 30). After the first year of operation, owners/operators must conduct inspections based on the findings during the first year of inspections.

- Conduct inspections by qualified personnel, follow manufacturer's guidelines, and use methods capable fo determining either a decrease in treated effluent flowrate and/or a decrease in pollutant removal ability.
- When inspections are performed, the following findings typically serve as maintenance triggers:
    - Standing water remains in the vault between rain events, or
    - Bypass occurs during storms smaller than the design storm.
    - If excessive floatables (trash and debris) are present (but no standing water or excessive sedimentation), perform a minor maintenance consisting of gross solids removal, not prefilter media replacement.
    - Additional data collection will be used to create a correlation between pretreatment chamber sediment depth and pre-filter clogging (see *Issues to be Addressed by the Company* section below)

6) Discharges from the MWS – Linear Modular Wetland Stormwater Treatment System units shall not cause or contribute to water quality standards violations in receiving waters.

Applicant:	Modular Wetland Systems, Inc.
Applicant's Address:	5796 Armada Drive, Suite 250 Carlsbad, CA 92008

Application Documents:

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

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

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

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

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

Applicant's Use Level Request:

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

Applicant's Performance Claims:

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

Ecology's Recommendations:

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

Findings of Fact:

<u>Laboratory Testing</u>

The MWS-Linear Modular wetland has the:

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

- Capability to remove 80.5-percent of dissolved Zinc in a quarter-scale model with influent concentrations of 0.95 mg/L at a flow rate of 3.0 gpm per square foot of media.
- Capability to remove 78-percent of dissolved Zinc in laboratory conditions with influent concentrations of 0.75 mg/L at a flow rate of 3.0 gpm per square foot of media.

Field Testing

- Modular Wetland Systems, Inc. conducted monitoring of an MWS-Linear (Model # MWS-L-4-13) from April 2012 through May 2013, at a transportation maintenance facility in Portland, Oregon. The manufacturer collected flow-weighted composite samples of the system's influent and effluent during 28 separate storm events. The system treated approximately 75 percent of the runoff from 53.5 inches of rainfall during the monitoring period. The applicant sized the system at 1 gpm/sq ft. (wetland media) and 3gpm/sq ft. (prefilter).
- Influent TSS concentrations for qualifying sampled storm events ranged from 20 to 339 mg/L. Average TSS removal for influent concentrations greater than 100 mg/L (n=7) averaged 85 percent. For influent concentrations in the range of 20-100 mg/L (n=18), the upper 95 percent confidence interval about the mean effluent concentration was 12.8 mg/L.
- Total phosphorus removal for 17 events with influent TP concentrations in the range of 0.1 to 0.5 mg/L averaged 65 percent. A bootstrap estimate of the lower 95 percent confidence limit (LCL95) of the mean total phosphorus reduction was 58 percent.
- The lower 95 percent confidence limit of the mean percent removal was 60.5 percent for dissolved zinc for influent concentrations in the range of 0.02 to 0.3 mg/L (n=11). The lower 95 percent confidence limit of the mean percent removal was 32.5 percent for dissolved copper for influent concentrations in the range of 0.005 to 0.02 mg/L (n=14) at flow rates up to 28 gpm (design flow rate 41 gpm). Laboratory test data augmented the data set, showing dissolved copper removal at the design flow rate of 41 gpm (93 percent reduction in influent dissolved copper of 0.757 mg/L).

Issues to be addressed by the Company:

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

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

Contact Information:

Applicant: Zach Kent
BioClean A Forterra Company
5796 Armada Drive, Suite 250
Carlsbad, CA 92008
zach.kent@forterrabp.com

Applicant website: http://www.modularwetlands.com/

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

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

Revision History

Date	Revision
June 2011	Original use-level-designation document
September 2012	Revised dates for TER and expiration
January 2013	Modified Design Storm Description, added Revision Table, added maintenance discussion, modified format in accordance with Ecology standard
December 2013	Updated name of Applicant
April 2014	Approved GULD designation for Basic, Phosphorus, and Enhanced treatment
December 2015	Updated GULD to document the acceptance of MWS – Linear Modular Wetland installations with or without the inclusion of plants
July 2017	Revised Manufacturer Contact Information (name, address, and email)
December 2019	Revised Manufacturer Contact Address
July 2021	Added additional prefilter sized at 33 inches
August 2021	Changed “Prefilter” to “Prefilter box”

ATTACHMENT 2

Backup for PDP Hydromodification Control Measures

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

Indicate which Items are Included

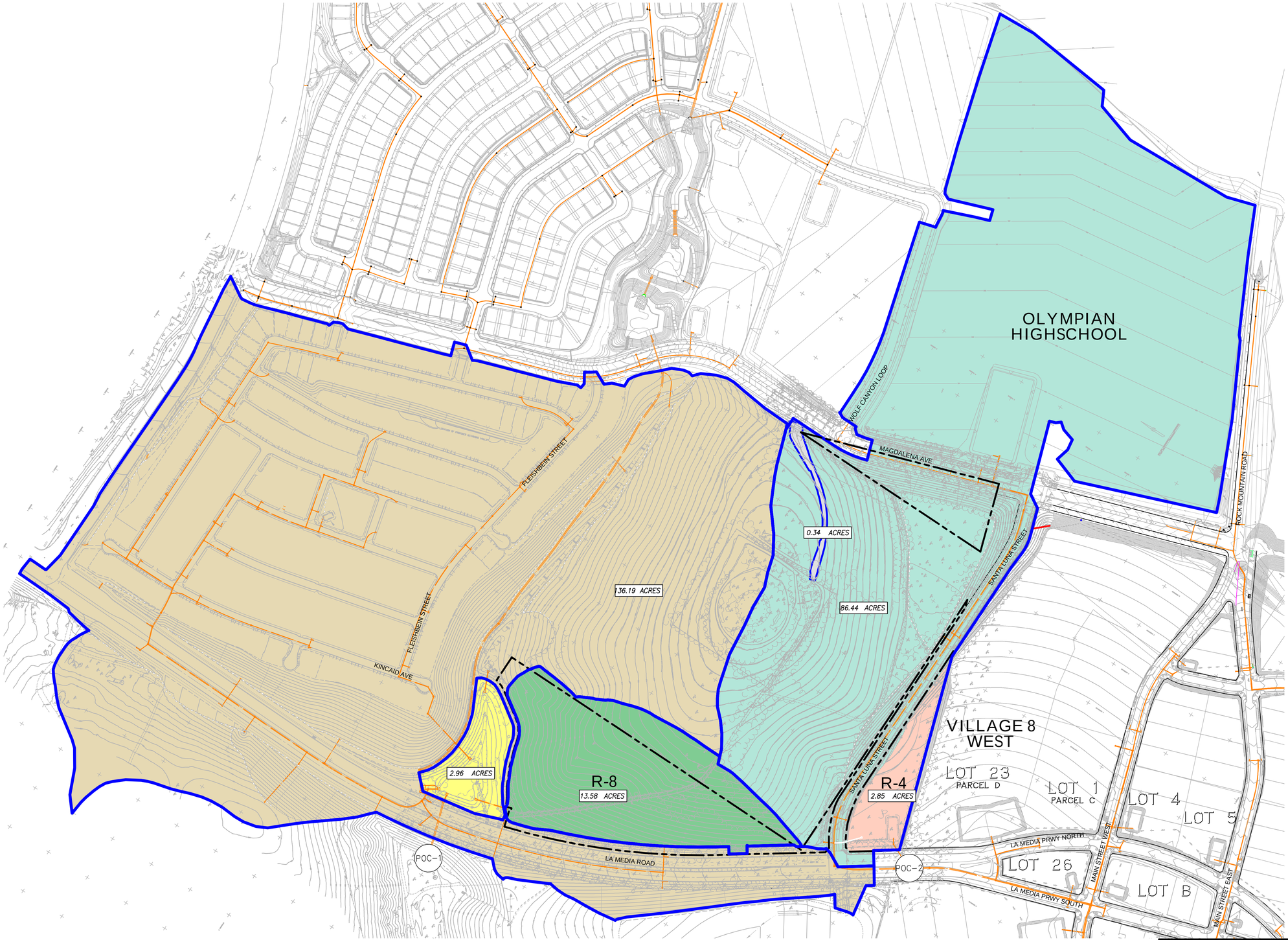
Attachment Sequence	Contents	Checklist
Attachment 2A	Hydromodification Management Exhibit (Required)	☒ Included See Hydromodification Management Exhibit Checklist.
Attachment 2B	Management of Critical Coarse Sediment Yield Areas (WMAA Exhibit is required, additional analyses are optional) See Section 6.2 of the BMP Design Manual.	☒ Exhibit showing project drainage boundaries marked on WMAA Critical Coarse Sediment Yield Area Map **(Required)** Optional analyses for Critical Coarse Sediment Yield Area Determination ☐ 6.2.1 Verification of Geomorphic Landscape Units Onsite ☐ 6.2.2 Downstream Systems Sensitivity to Coarse Sediment ☐ 6.2.3 Optional Additional Analysis of Potential Critical Coarse Sediment Yield Areas Onsite
Attachment 2C	Geomorphic Assessment of Receiving Channels (Optional) See Section 6.3.4 of the BMP Design Manual.	☒ Not performed ☐ Included ☐ Submitted as separate stand-alone document
Attachment 2D	Flow Control Facility Design and Structural BMP Drawdown Calculations (Required) Overflow Design Summary for each Structural BMP See Chapter 6 and Appendix G of the BMP Design Manual	☒ Included ☐ Submitted as separate stand-alone document

Project Name/ Otay Ranch Village 7, R-3, R-4, & R-8

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

The Hydromodification Management Exhibit must identify:

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



LEGEND: SYMBOL:

- PROJECT BOUNDARY
- DMA BOUNDARY
- PROPOSED STORM DRAIN
- EXISTING STORM DRAIN
- SUBAREA ACREAGE — 00.00 ACRES
- DMA ICON — DMA 1
- AREA TRIBUTARY TO POC 1
- OTAY RANCH VILLAGE 7 R-8
- AREA TRIBUTARY TO POC 2
- VORTAC SITE ACCESS ROAD
- OTAY RANCH VILLAGE 7 R-4
- EXISTING DETENTION BASIN
- HYDROLOGIC SOIL TYPE — D
- POINT OF COMPLIANCE — X

200 0 200 400 600
SCALE 1"= 200'

PREPARED BY:

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EXISTING CONDIION HYDROMODIFICATION MAP VILLAGE 7, R-3, R-4, & R-8

CITY OF CHULA VISTA, CALIFORNIA

MAP 1 OF 2

W.O.# 9999-3336

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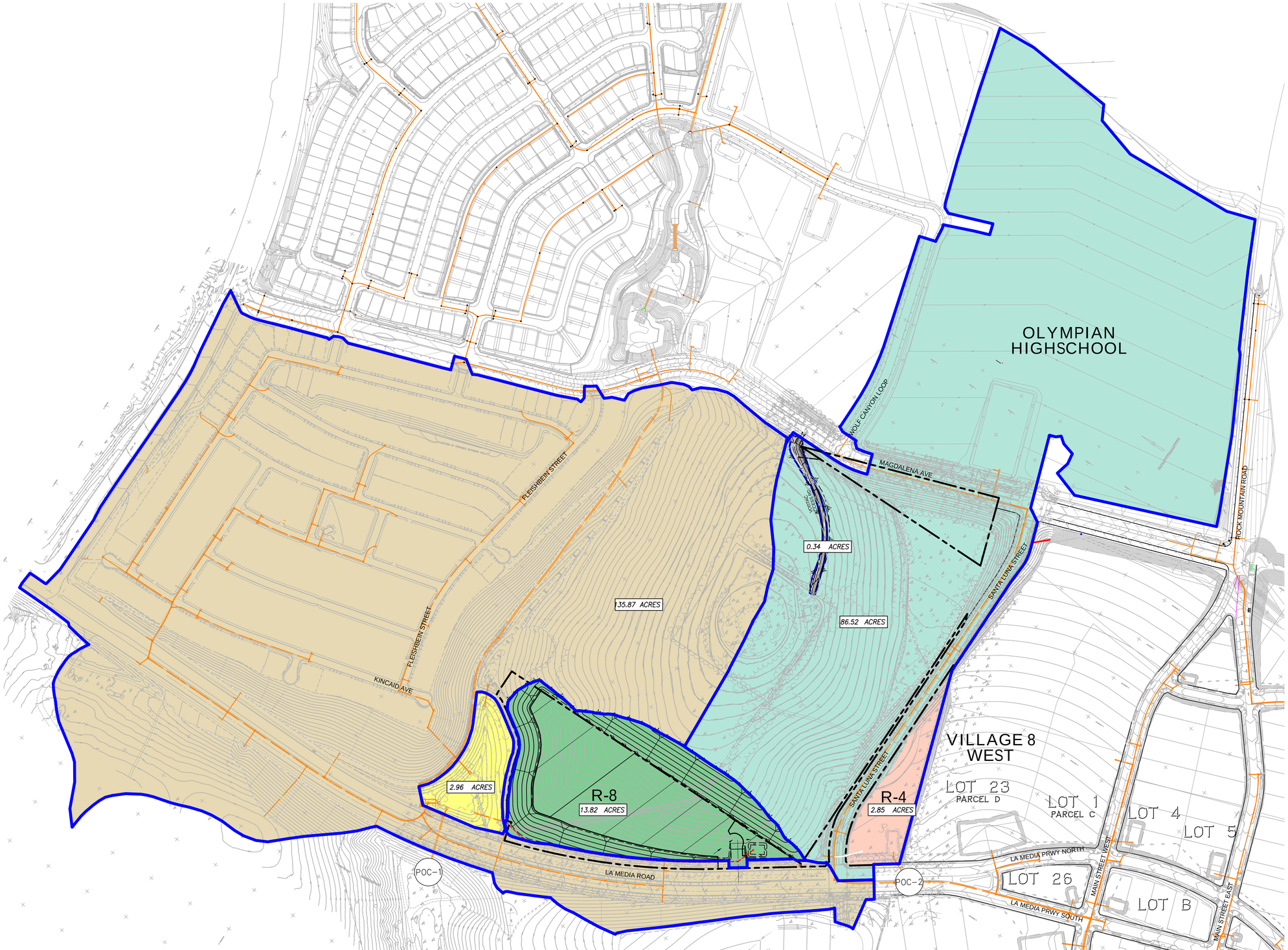

LEGEND: SYMBOL:

- PROJECT BOUNDARY
- DMA BOUNDARY
- PROPOSED STORM DRAIN
- EXISTING STORM DRAIN
- SUBAREA ACREAGE — 00.00 ACRES
- DMA ICON — DMA 1
- AREA TRIBUTARY TO POC 1
- OTAY RANCH VILLAGE 7 R-8
- AREA TRIBUTARY TO POC 2
- VORTAC SITE ACCESS ROAD
- OTAY RANCH VILLAGE 7 R-4
- EXISTING DETENTION BASIN
- HYDROLOGIC SOIL TYPE — D
- POINT OF COMPLIANCE — X

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DEVELOPED CONDIION HYDROMODIFICATION MAP VILLAGE 7, R-3, R-4, & R-8

CITY OF CHULA VISTA, CALIFORNIA

MAP 2 OF 2

W.O.# 9999-3336

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ATTACHMENT 2a

HYDROMODIFICATION MANAGEMENT EXHIBITS

ATTACHMENT 2b

MANAGEMENT OF CRITICAL COARSE SEDIMENT YIELD AREAS

Otay Ranch Village 7 TM Conceptual Grading

Potential Critical Course Sidement Yield Areas Exhibit

ATTACHMENT 2c

GEOMORPHIC ASSESSMENT OF RECEIVING CHANNELS

NOT PERFORMED FOR THIS PROJECT

ATTACHMENT 2d
FLOW CONTROL FACILITY DESIGN

Hydromodification Management Plan (HMP)
-Flow Control Facility Design

This HMP report has been prepared in place of Attachment 2a of the *Priority Development Project (PDP) SWQMP for Otay Village 7, R-8 & R-4 (April 2023)* and has been prepared to be submitted concurrently with the SWQMP.

SECTIONS

1. Introduction/Summary
2. Flow Duration Curve Analysis
3. Elevation vs. Discharge, Elevation vs Area Curves, Drawdown, SWMM Input Calculations
4. Basin Details
5. SWMM Input Data (Existing and Proposed Models)
6. Hydromodification Watershed Maps

I. INTRODUCTION/SUMMARY

This HMP report summarizes the approach used to model the proposed Otay Ranch Village 7 R-8 & R-4 sites within City of Chula Vista, California using the Environmental Protection Agency (EPA) Storm Water Management Model 5.1 (SWMM).
SWMM models were prepared for pre- and post- developed conditions at the project designated Point of Compliance (POC) in order to demonstrate that for flow rates ranging from pre-development (0.1Q2) to Q10 runoff event, the post-development discharge rates and durations, don't exceed the pre-development (not pre-project) rates and durations by more than 10% at the discharge point of the existing detention basin located immediately north of the project site. As a result, the stormwater discharge from the site will not cause any altered flow regimes or excessive downstream erosion in the receiving waters.
Therefore, no additional BMPs need to be provided for flow control to meet the current HMP requirements from the Regional Water Quality Control Board (RWQCB).

The runoff from the proposed project will be collected in inlets and will be conveyed through the onsite storm drain system. This system will be tie into existing drainage facilities which have anticipated these onsite flows and will ultimately reach the existing BMP basin located immediately north of the project site. Once runoff routes through the respective basin outlet structure, it exits the basin via one 36-in RCP outlet pipe. See Section 6 of this Report for HMP-related maps.

Following are brief description of the POCs:

POC 1:

POC 1 is located at the discharge location from the riser that manages detention in the existing detention basin north of lot R-8 and adjacent to La Media Road.
This POC encompasses the area of R-8, the exiting detention basin, the existing Otay Ranch Village 7 development, a portion of La Media Road and surrounding non-developed areas (Portion of the Vortac site), for a total of 152.73 acres in existing and 152.65 in proposed conditions. The difference in area is due to the R-8 development that cause minor changes to the drainage patterns.

POC 2:

POC 2 is located at near the Village 8 West development boundary. A clean out where the flows from R-4 commingle with the offsite flows before entering Village 8 West.
This POC encompasses the area of the proposed Vortac site access road, a portion of the Vortac site, Santa Luna Street, a portion of Magdalena Avenue, the Olympian High school, and lot R-4. POC 2 has a total area of 89.63 acres in the existing condition and 89.71 in the proposed conditions. The difference reason is stated above as the area lost on POC 1 is gained on POC 2.

SWMM MODEL DEVELOPMENT

POC 1:

The following will outline the typical model development. Two (2) SWMM models are prepared for the POC; one represents existing conditions and another represents proposed condition.

The existing condition analysis was prepared by defining the area to the respective POC. Similarly, the proposed condition analysis was prepared by defining the areas to the respective POC.
The Otay Ranch Village 7 R-8 site was modeled with 0% imperviousness in the pre-development condition, and 48% imperviousness in the post-development condition.
The existing detention basin was modeled with 1.5% imperviousness for both, post and pre-development condition.

The rest of the northern and eastern portions corresponding to existing development of Otay Ranch Village 7 that also discharge to the existing detention basin was modeled with 47% imperviousness in pre and post-development conditions. This was calculated as weighted percentage of imperviousness between the existing development of Otay Ranch Village 7 and the additional surrounding non-developed areas. For the existing developed area of Otay Ranch Village 7 (108.43 ac), a 60% of imperviousness was considered per the "Preliminary Water Quality Technical Report for Otay Ranch Village 7 Neighborhoods R-2" dated May, 2004. For the rest of the existing non-developed surrounding areas, a 0% of imperviousness was considered.

For all SWMM models, flow duration curves were prepared to demonstrate that the existing basin footprint/volume and outlet structure will be sufficient to meet the current HMP requirements.
The inputs required to develop SWMM models include rainfall, watershed characteristics, and BMP configurations. The Lower Otay Reservoir Rain Gage from the Project Clean Water website was used for this study since it is the most representative of the project site precipitation.

Evaporation for the site was modeled using average monthly values from the San Diego County hourly dataset. The site was modeled with hydrologic group D soil. Other SWMM inputs for the subareas are discussed in the following sections of this document where the selection of parameters is further explained in detail.

Existing Basin Discussion: Flow control at the basin is not achieved with the existing outlet and structure configuration (one orifice at the bottom of an 8' x 8' x 10.9' concrete riser structure), therefore, a new orifice and height configuration is proposed for the existing outlet riser structure to achieve flow control at the existing basin. The size, number and location of the orifices along the height of the outlet structure for existing and proposed conditions are presented in the Tables below.

Table 1 Existing Outlet Structure & Orifice Characteristics

Bottom orifice diameter:	30	in
Number:	1	
Cg-low:	0.61	
invert elev:	0.00	ft
Emergency weir:		
Invert:	10.90	ft
Weir Length (ft)	32.00	ft
Riser Box LxW	8'X8'	

Table 2 Proposed Modified Outlet Structure & Orifice Characteristics

1 Orifice Stag diameter:	10	in
Number:	1	
Cg-low:	0.61	
invert elev:	0.00	ft
2 Orifice Stag diameter:	12	in
number of orif:	1	
Cg-middle:	0.61	
invert elev:	1.50	ft
3 Orifice Stag diameter:	18	in
Number:	2	
Cg-low:	0.61	
invert elev:	3.00	ft
4 Orifice Stag diameter:	24	in
Number:	2	
Cg-low:	0.61	
invert elev:	8.00	ft
Emergency weir:		
Invert:	11.90	ft
Area	64	sq ft
Weir Length	32	
Riser Box LxW	8'x8'	

POC 2:

The following will outline the typical model development. Two (3) SWMM models are prepared for the POC; one represents existing conditions, another one represents the mass graded condition with the access road developed, and the last one represents developed condition for both the access road and lot R-4.

The existing condition analysis was prepared by defining the area to the respective POC. Similarly, the proposed condition analysis was prepared by defining the areas to the respective POC.

The Otay Ranch Village 7 R-4 site was modeled with 0% imperviousness in the pre-development condition, 0% imperviousness in the mass graded condition, and 78% in the post-development condition.

The Vortac access road off Magdalena Avenue was modeled with 0% imperviousness in the pre-development condition, and 49.5% in the mass graded and post-development condition.

For all SWMM models, flow duration curves were prepared to demonstrate that the mass graded condition does not need any flood control structures to meet HMP requirements, while the post-development condition will need an underground storage unit.

The inputs required to develop SWMM models include rainfall, watershed characteristics, and BMP configurations. The Lower Otay Reservoir Rain Gage from the Project Clean Water website was used for this study since it is the most representative of the project site precipitation.

Evaporation for the site was modeled using average monthly values from the San Diego County hourly dataset. The site was modeled with hydrologic group D soil. Other SWMM inputs for the subareas are discussed in the following sections of this document where the selection of parameters is further explained in detail.

Table 3 Proposed Outlet structure & Orifice Characteristics

Bottom orifice diameter:	1.922	in	Emergency weir:		
Number:	1		Invert:	4.65	
Cg-low:	0.61		Weir Length (ft)	5.75	ft
invert elev:	0.00	ft	Riser Box LxW	3'x1.92'	ft
Middle orifice diameter:	2.5	in			
Number:	2				
Cg-low:	0.61				
invert elev:	2.70	ft			
Top orifice diameter:	3	in			
Number:	4				
Cg-low:	0.61				
invert elev:	4.0	ft			

FLOW DURATION CURVE COMPARISON

The Flow Duration Curves (FDC) for the site was calculated at the POC by exporting the hourly runoff time series results from SWMM to a spreadsheet. The FDC for the POC was compared between 10% of the existing condition Q2 ((based on accepting an assumption of high susceptibility for downstream channel erosion as required if no soils tests are completed)
Up to the existing condition Q10. The Q2 and Q10 were determined using a partial duration statistical analysis of the runoff time series in an Excel spreadsheet. As the SWMM Model is a statistical analysis based on the Weibull Plotting Position Method, the Weibull Method was also used within the spreadsheet to ensure that the results were similar to those obtained by the SWMM Model.

The range between 10% of Q_2 and Q_{10} was divided into 100 equal time intervals; the number of hours that each flow rate was exceeded was counted from the hourly series. Additionally, the intermediate peaks with a return period "i" were obtained (Q_i with i=3 to 9). For the purpose of the plot, the values were presented as a percentage of time that exceeded for each flow rate.

Section 6 of this HMP Study provides detailed drainage exhibit for the post-developed conditions. As shown in Figures 1 and 2 in the succeeding section, the FDC for the proposed condition for the basin is within 110% of the curve for the existing condition. The additional runoff volume generated from developing the site will be released to the downstream storm drain at a flow rate below the 10% Q_2 lower threshold. Additionally, the Proposed Project will not increase peak flow rates between the Q_2 and the Q_{10}, as shown in the graphics in Figure 3 and also in the Tables included in Section 1. Similar FDC comparison curves also were generated for the POC and included in the following Section 1 of this report.

SUMMARY & CONCLUSION

A summary of pre and post development conditions draining to the POC is shown in the table 2 below. The Existing Basin was recognized in the pre and post conditions.

Table 4 POC Area Summary

	Existing (AC)	Proposed (AC)
POC 1	152.73	152.65
POC 2	89.63	89.71
Total	242.36	242.36

For both SWMM models, flow duration curves were prepared to demonstrate that the existing basin storage and footprints and the proposed modified outlet structure will be sufficient to meet the current HMP requirements for POC 1. Similarly the three SWMM models, for POC 2 had flow duration curves performed to demonstrate that there is no need for flood control structures in the mass graded conditions, and that an underground storage unit with an outlet structure will help meet HMP requirements in the post-developed condition.

II. FLOW DURACTION CURVE ANALYSIS

SECTION 1 - Flow Duration Curve Analysis, Plot & Table

The FDCs shall not exceed the existing conditions by more than 10%, neither in peak flow nor duration.

Figure 1 on the following page illustrates that the FDCs in post-development conditions, is not exceeding the existing FDC with more than 10%. The FDC table following the curve shows that if the interval 0.10Q2 – Q 10 is divided in 100 sub-intervals, then: a) the post development divided by pre-development durations are never larger than 110% (the permit allows up to 110%); and, b) there are no more than 3 intervals in the range 101%-110%, which would imply an excess over 10% of the length of the curve (the permit allows less than 10% of excesses measured as 101-110%). Consequently, the design passes the hydromodification test.

It is important to note that the FDCs can be expressed in the "x" axis as a percentage of time, hours per year, total number of hours, or any other similar time variable. As those variables only differ by multiplying a constant, their plot in logarithmic scale will appear exactly the same and compliance can be observed regardless of the variable selected. The selection of a logarithmic scale in lieu of the normal scale is preferred, as differences between the pre-development and post-development curves can be depicted more clearly in the entire range of analysis. Both graphics are presented for reference in Table 4 and Figure 1 below.

For the "y" axis, the peak flow value is the variable of choice. As an additional analysis performed by H&A, not only the range of analysis is clearly depicted (10% of Q 2 to Q 10) but also all intermediate flows are shown (30% of Q 2, 50% of Q 2, Q 2, Q 3, Q 4, Q 5, Q 6, Q 7, Q 8 and Q 9) in order to demonstrate compliance at any range Q x – Q x+1. It must be pointed out that one of the limitations of both the SWMM and SDHM models is that the intermediate analysis is not performed (to obtain Q i from i = 2 to 10). H&A performed the analysis using the Cunnane Plotting Position Method (the preferred method in the HMP permit) from the "n" largest independent peak flows obtained from the continuous time series.

Otay Village 7, R-8, DMA Calculations
Pre-Developed Condition

POC	Location (POC ID)	% Imperviousness	Total Area	Pervious Area	Impervious Area
1	Otay Ranch Village 7 R-8	0.0%	13.58	13.58	0.00
1	Otay Ranch Village Ranch 7	47.0%	136.19	72.18	64.01
1	Detention Bain	1.5%	2.96	2.91	0.04
1	Total Ex Basin	41.9%	152.73	88.68	64.05

Otay Village 7, R-8 - DMA Calculations
Post-Developed Condition

POC	Location (POC ID)	% Imperviousness	Total Area	Pervious Area	Impervious Area
1-Direct	Otay Ranch Village 7 R-8	48.0%	13.82	7.19	6.63
1-Direct	Otay Ranch Village Ranch 7	47.0%	135.87	72.01	63.86
1-Direct	Detention Bain	1.5%	2.96	2.91	0.04
1-Total	Total Ex Basin	46.2%	152.65	82.11	70.54

Watershed Parameters

POC 2 -EX		
L=	3385	ft
A=	89.63	ac
% Impervious	64.9%	
W=	1190	ft
US Elev=	578	ft
DS Elev=	463	ft
S=	3.40%	

POC 2 -PR-UNMITIGATED (Access road developed)		
L=	3385	ft
A=	89.63	ac
% Impervious	65.1%	
W=	1190	ft
US Elev=	578	ft
DS Elev=	463	ft
S=	3.40%	

POC 2 -PR-MITIGATED (R-4, R-8 & Access road developed)					
Village 7			DMA 3		
L=	3385	ft	L=	725	ft
A=	86.52	ac	A=	0.34	ac
% Impervious	67.3%		% Impervious	49.5%	
W=	1190	ft	W=	675	ft
US Elev=	578	ft	US Elev=	561	ft
DS Elev=	463	ft	DS Elev=	540	ft
S=	3.40%		S=	2.90%	

DMA 2		
L=	800	ft
A=	2.85	ac
% Impervious	78.0%	
W=	155	ft
US Elev=	470	ft
DS Elev=	460	ft
S=	1.25%	

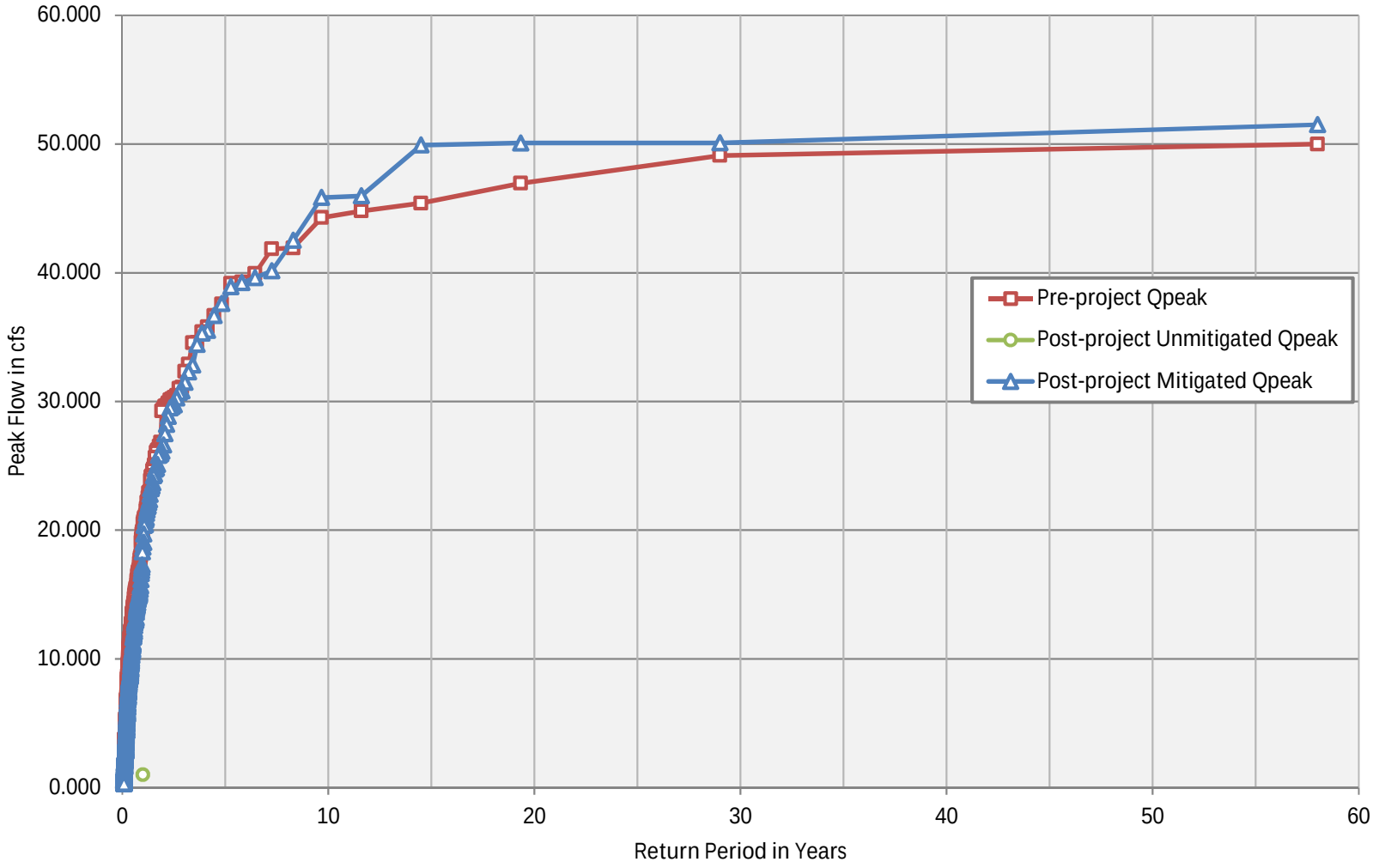
Flow Duration Curve Analysis, Plot & Table

Figure 1 Peak Flow Frequency Curves - POC1

Peak Flow Frequency Summary

Return Period	Pre-project Qpeak (cfs)	Post-project - Mitigated Q (cfs)	Post-project - Mitigated Reduction Q (cfs)
LF = 0.1xQ2	2.907	2.641	0.266
2-year	29.068	26.411	2.657
5-year	37.878	37.640	0.238
10-year	43.871	45.209	-1.338

Peak Flow Frequency Curves



Metropolitan Airpark
J-15818-B
6/5/15

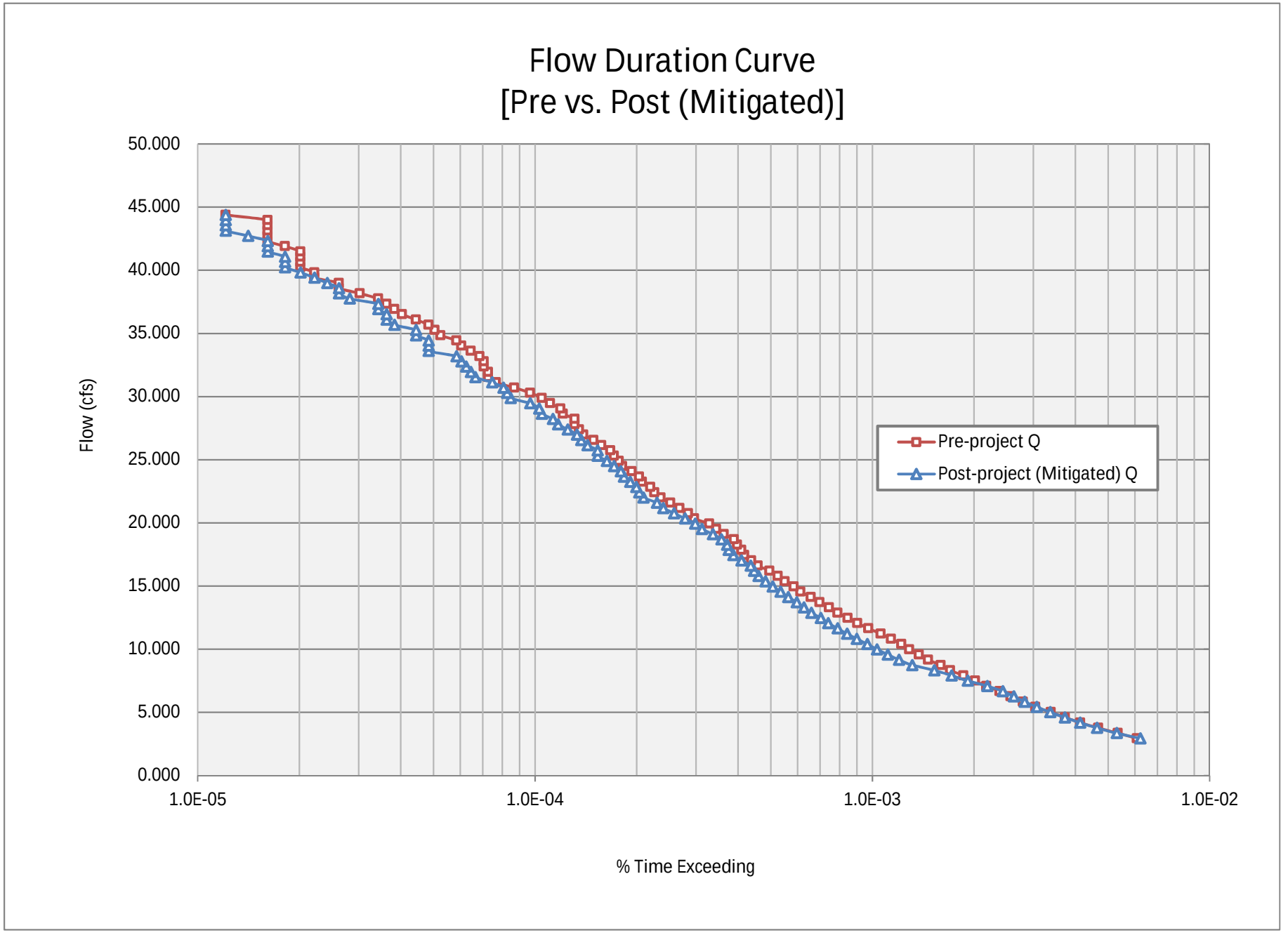
Basin600

Low-flow Threshold: 10%
0.1xQ2 (Pre): 2.941 cfs
Q10 (Pre): 44.379 cfs
Ordinate #: 100
Incremental Q (Pre): 0.41439 cfs
Total Hourly Data: 495743 hours

The proposed BMP: PASSED

Interval	Pre-project Flow (cfs)	Pre-project Hours	Pre-project % Time Exceeding	Post-project Hours	Post-project % Time Exceeding	Percentage	Pass/Fail
0	2.941	3017	6.09E-03	3088	6.23E-03	102%	Pass
1	3.355	2649	5.34E-03	2629	5.30E-03	99%	Pass
2	3.769	2319	4.68E-03	2299	4.64E-03	99%	Pass
3	4.184	2052	4.14E-03	2048	4.13E-03	100%	Pass
4	4.598	1847	3.73E-03	1844	3.72E-03	100%	Pass
5	5.012	1678	3.38E-03	1669	3.37E-03	99%	Pass
6	5.427	1510	3.05E-03	1523	3.07E-03	101%	Pass
7	5.841	1387	2.80E-03	1403	2.83E-03	101%	Pass
8	6.256	1274	2.57E-03	1302	2.63E-03	102%	Pass
9	6.670	1183	2.39E-03	1209	2.44E-03	102%	Pass
10	7.084	1080	2.18E-03	1087	2.19E-03	101%	Pass
11	7.499	1001	2.02E-03	951	1.92E-03	95%	Pass
12	7.913	924	1.86E-03	852	1.72E-03	92%	Pass
13	8.328	844	1.70E-03	757	1.53E-03	90%	Pass
14	8.742	791	1.60E-03	651	1.31E-03	82%	Pass
15	9.156	726	1.46E-03	595	1.20E-03	82%	Pass
16	9.571	682	1.38E-03	551	1.11E-03	81%	Pass
17	9.985	638	1.29E-03	512	1.03E-03	80%	Pass
18	10.399	605	1.22E-03	479	9.66E-04	79%	Pass
19	10.814	564	1.14E-03	446	9.00E-04	79%	Pass
20	11.228	525	1.06E-03	417	8.41E-04	79%	Pass
21	11.643	483	9.74E-04	391	7.89E-04	81%	Pass
22	12.057	448	9.04E-04	367	7.40E-04	82%	Pass
23	12.471	419	8.45E-04	349	7.04E-04	83%	Pass
24	12.886	391	7.89E-04	327	6.60E-04	84%	Pass
25	13.300	369	7.44E-04	311	6.27E-04	84%	Pass
26	13.715	346	6.98E-04	296	5.97E-04	86%	Pass
27	14.129	326	6.58E-04	279	5.63E-04	86%	Pass
28	14.543	304	6.13E-04	265	5.35E-04	87%	Pass
29	14.958	290	5.85E-04	251	5.06E-04	87%	Pass
30	15.372	273	5.51E-04	239	4.82E-04	88%	Pass
31	15.786	260	5.24E-04	228	4.60E-04	88%	Pass
32	16.201	246	4.96E-04	221	4.46E-04	90%	Pass
33	16.615	227	4.58E-04	216	4.36E-04	95%	Pass
34	17.030	217	4.38E-04	203	4.09E-04	94%	Pass
35	17.444	207	4.18E-04	192	3.87E-04	93%	Pass
36	17.858	203	4.09E-04	186	3.75E-04	92%	Pass
37	18.273	197	3.97E-04	184	3.71E-04	93%	Pass
38	18.687	193	3.89E-04	177	3.57E-04	92%	Pass
39	19.102	180	3.63E-04	167	3.37E-04	93%	Pass
40	19.516	171	3.45E-04	155	3.13E-04	91%	Pass
41	19.930	163	3.29E-04	148	2.99E-04	91%	Pass
42	20.345	147	2.97E-04	138	2.78E-04	94%	Pass
43	20.759	141	2.84E-04	128	2.58E-04	91%	Pass
44	21.174	133	2.68E-04	119	2.40E-04	89%	Pass
45	21.588	125	2.52E-04	114	2.30E-04	91%	Pass
46	22.002	117	2.36E-04	104	2.10E-04	89%	Pass
47	22.417	112	2.26E-04	101	2.04E-04	90%	Pass
48	22.831	109	2.20E-04	99	2.00E-04	91%	Pass
49	23.245	103	2.08E-04	95	1.92E-04	92%	Pass
50	23.660	101	2.04E-04	91	1.84E-04	90%	Pass

Interval	Pre-project Flow (cfs)	Pre-project Hours	Pre-project % Time Exceeding	Post-project Hours	Post-project % Time Exceeding	Percentage	Pass/Fail
51	24.074	96	1.94E-04	89	1.80E-04	93%	Pass
52	24.489	90	1.82E-04	85	1.71E-04	94%	Pass
53	24.903	88	1.78E-04	81	1.63E-04	92%	Pass
54	25.317	85	1.71E-04	76	1.53E-04	89%	Pass
55	25.732	83	1.67E-04	76	1.53E-04	92%	Pass
56	26.146	78	1.57E-04	71	1.43E-04	91%	Pass
57	26.561	74	1.49E-04	68	1.37E-04	92%	Pass
58	26.975	69	1.39E-04	66	1.33E-04	96%	Pass
59	27.389	67	1.35E-04	62	1.25E-04	93%	Pass
60	27.804	65	1.31E-04	58	1.17E-04	89%	Pass
61	28.218	65	1.31E-04	56	1.13E-04	86%	Pass
62	28.632	60	1.21E-04	52	1.05E-04	87%	Pass
63	29.047	59	1.19E-04	51	1.03E-04	86%	Pass
64	29.461	55	1.11E-04	48	9.68E-05	87%	Pass
65	29.876	52	1.05E-04	42	8.47E-05	81%	Pass
66	30.290	48	9.68E-05	41	8.27E-05	85%	Pass
67	30.704	43	8.67E-05	40	8.07E-05	93%	Pass
68	31.119	38	7.67E-05	37	7.46E-05	97%	Pass
69	31.533	36	7.26E-05	33	6.66E-05	92%	Pass
70	31.948	36	7.26E-05	32	6.45E-05	89%	Pass
71	32.362	35	7.06E-05	31	6.25E-05	89%	Pass
72	32.776	35	7.06E-05	30	6.05E-05	86%	Pass
73	33.191	34	6.86E-05	29	5.85E-05	85%	Pass
74	33.605	32	6.45E-05	24	4.84E-05	75%	Pass
75	34.020	30	6.05E-05	24	4.84E-05	80%	Pass
76	34.434	29	5.85E-05	24	4.84E-05	83%	Pass
77	34.848	26	5.24E-05	22	4.44E-05	85%	Pass
78	35.263	25	5.04E-05	22	4.44E-05	88%	Pass
79	35.677	24	4.84E-05	19	3.83E-05	79%	Pass
80	36.091	22	4.44E-05	18	3.63E-05	82%	Pass
81	36.506	20	4.03E-05	18	3.63E-05	90%	Pass
82	36.920	19	3.83E-05	17	3.43E-05	89%	Pass
83	37.335	18	3.63E-05	17	3.43E-05	94%	Pass
84	37.749	17	3.43E-05	14	2.82E-05	82%	Pass
85	38.163	15	3.03E-05	13	2.62E-05	87%	Pass
86	38.578	13	2.62E-05	13	2.62E-05	100%	Pass
87	38.992	13	2.62E-05	12	2.42E-05	92%	Pass
88	39.407	11	2.22E-05	11	2.22E-05	100%	Pass
89	39.821	11	2.22E-05	10	2.02E-05	91%	Pass
90	40.235	10	2.02E-05	9	1.82E-05	90%	Pass
91	40.650	10	2.02E-05	9	1.82E-05	90%	Pass
92	41.064	10	2.02E-05	9	1.82E-05	90%	Pass
93	41.478	10	2.02E-05	8	1.61E-05	80%	Pass
94	41.893	9	1.82E-05	8	1.61E-05	89%	Pass
95	42.307	8	1.61E-05	8	1.61E-05	100%	Pass
96	42.722	8	1.61E-05	7	1.41E-05	88%	Pass
97	43.136	8	1.61E-05	6	1.21E-05	75%	Pass
98	43.550	8	1.61E-05	6	1.21E-05	75%	Pass
99	43.965	8	1.61E-05	6	1.21E-05	75%	Pass
100	44.379	6	1.21E-05	6	1.21E-05	100%	Pass


Flow Duration Curve
[Pre vs. Post (Mitigated)]
50.000
45.000
40.000
35.000
30.000
25.000
20.000
15.000
10.000
5.000
0.000
Flow (cfs)
1.0E-05
1.0E-04
1.0E-03
1.0E-02
% Time Exceeding
Pre-project Q
Post-project (Mitigated) Q

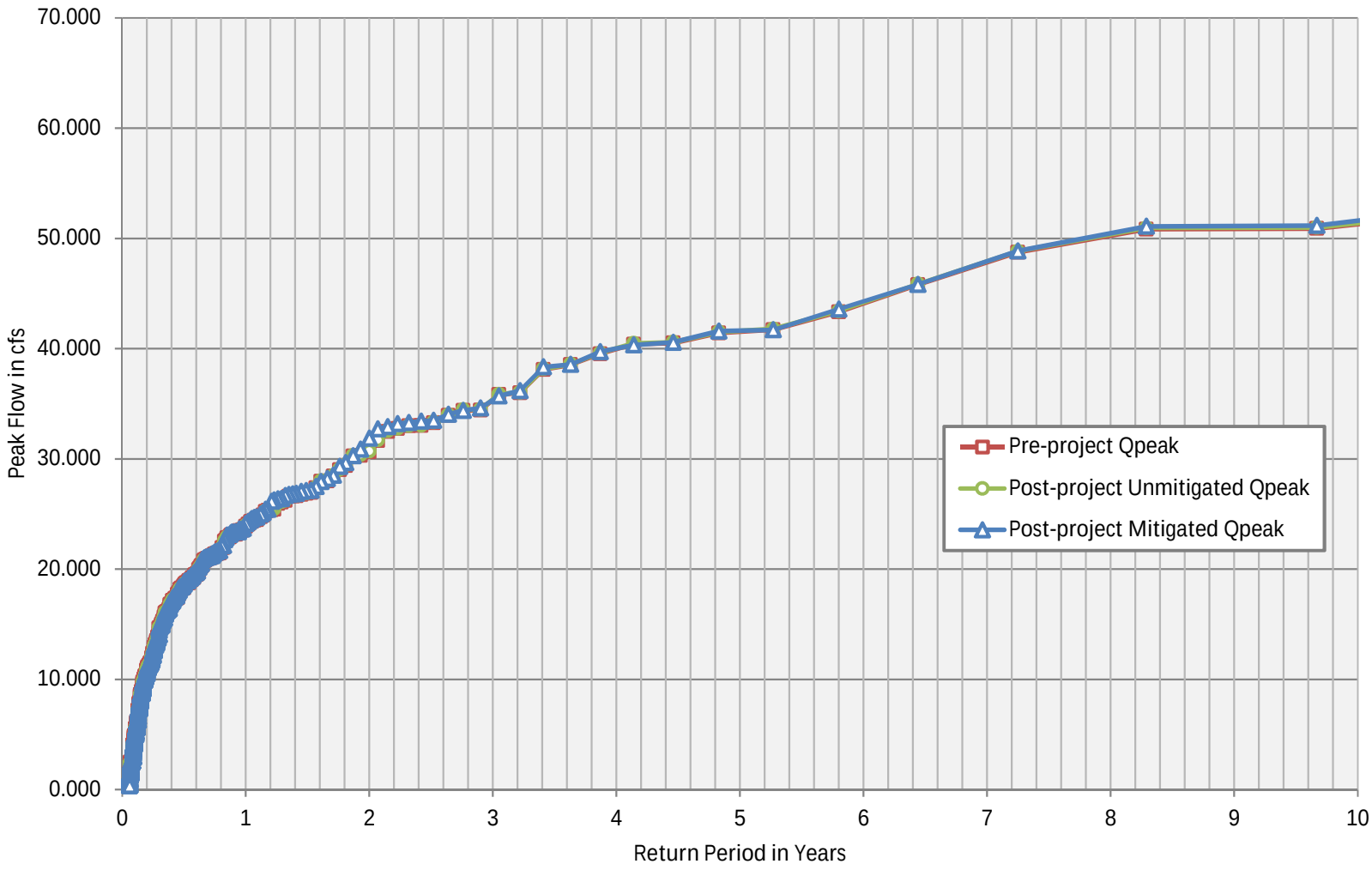
Flow Duration Curve Analysis, Plot & Table

Figure 2 Peak Flow Frequency Curves – POC2

Peak Flow Frequency Summary (POC 2)

Return Period	Pre-project Qpeak (cfs)	Post-project - Unmitigated Q (R-4 mass graded) (cfs)	Post-project - Mitigated Q (R-4 developed) (cfs)	Reduction Q (cfs)
LF = 0.5xQ2	3.063	3.071	3.187	-0.124
2-year	30.632	30.706	31.867	-1.235
5-year	41.536	41.616	41.637	-0.101
10-year	51.299	51.385	51.617	-0.317

Peak Flow Frequency Curves

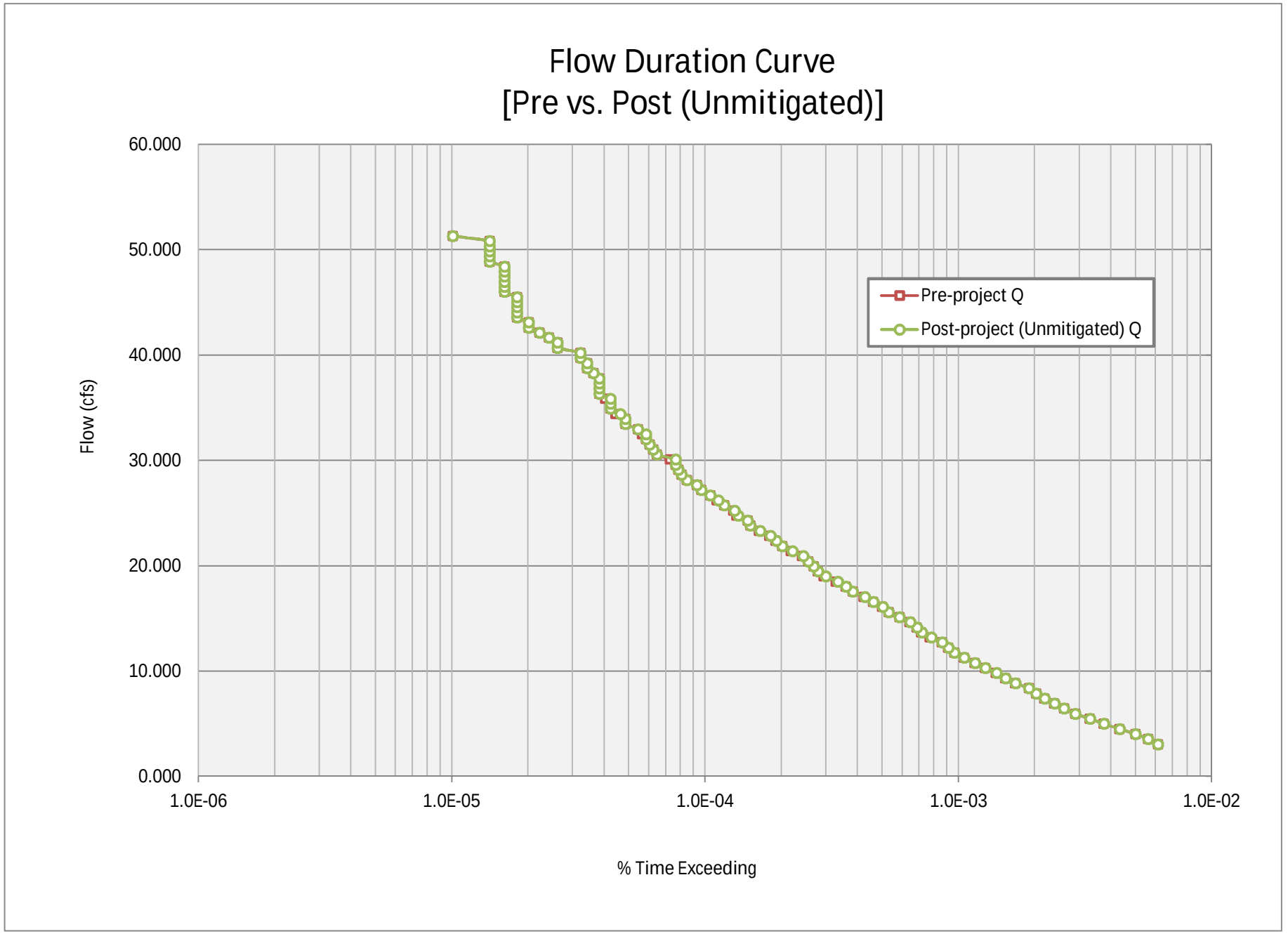


Lower Flow Threshold:	10%	
0.1xQ2 (Pre):	3.063	cfs
Q10 (Pre):	51.299	cfs
# of Ordinates:	100	
Incremental Q (Pre):	0.48236	cfs
Total Hourly Data:	495743	hours

POC 2: PASSED

Interval	Pre-project Flow (cfs)	Pre-project Hours	Pre-project % Time Exceeding	Post-project Hours	Post-project % Time Exceeding	Percentage	Pass/Fail
0	3.063	3045	6.14E-03	3047	6.15E-03	100%	Pass
1	3.546	2779	5.61E-03	2783	5.61E-03	100%	Pass
2	4.028	2480	5.00E-03	2483	5.01E-03	100%	Pass
3	4.510	2144	4.32E-03	2152	4.34E-03	100%	Pass
4	4.993	1860	3.75E-03	1865	3.76E-03	100%	Pass
5	5.475	1637	3.30E-03	1645	3.32E-03	100%	Pass
6	5.957	1436	2.90E-03	1438	2.90E-03	100%	Pass
7	6.440	1297	2.62E-03	1299	2.62E-03	100%	Pass
8	6.922	1187	2.39E-03	1191	2.40E-03	100%	Pass
9	7.404	1084	2.19E-03	1088	2.19E-03	100%	Pass
10	7.887	1005	2.03E-03	1006	2.03E-03	100%	Pass
11	8.369	941	1.90E-03	942	1.90E-03	100%	Pass
12	8.852	831	1.68E-03	833	1.68E-03	100%	Pass
13	9.334	758	1.53E-03	762	1.54E-03	101%	Pass
14	9.816	698	1.41E-03	702	1.42E-03	101%	Pass
15	10.299	631	1.27E-03	633	1.28E-03	100%	Pass
16	10.781	576	1.16E-03	578	1.17E-03	100%	Pass
17	11.263	522	1.05E-03	524	1.06E-03	100%	Pass
18	11.746	478	9.64E-04	479	9.66E-04	100%	Pass
19	12.228	452	9.12E-04	454	9.16E-04	100%	Pass
20	12.710	426	8.59E-04	428	8.63E-04	100%	Pass
21	13.193	382	7.71E-04	388	7.83E-04	102%	Pass
22	13.675	354	7.14E-04	356	7.18E-04	101%	Pass
23	14.157	340	6.86E-04	341	6.88E-04	100%	Pass
24	14.640	318	6.41E-04	320	6.45E-04	101%	Pass
25	15.122	291	5.87E-04	291	5.87E-04	100%	Pass
26	15.605	264	5.33E-04	264	5.33E-04	100%	Pass
27	16.087	248	5.00E-04	250	5.04E-04	101%	Pass
28	16.569	228	4.60E-04	229	4.62E-04	100%	Pass
29	17.052	210	4.24E-04	212	4.28E-04	101%	Pass
30	17.534	190	3.83E-04	190	3.83E-04	100%	Pass
31	18.016	178	3.59E-04	179	3.61E-04	101%	Pass
32	18.499	163	3.29E-04	166	3.35E-04	102%	Pass
33	18.981	146	2.95E-04	149	3.01E-04	102%	Pass
34	19.463	138	2.78E-04	139	2.80E-04	101%	Pass
35	19.946	133	2.68E-04	133	2.68E-04	100%	Pass
36	20.428	127	2.56E-04	127	2.56E-04	100%	Pass
37	20.911	120	2.42E-04	121	2.44E-04	101%	Pass
38	21.393	108	2.18E-04	110	2.22E-04	102%	Pass
39	21.875	100	2.02E-04	100	2.02E-04	100%	Pass
40	22.358	94	1.90E-04	95	1.92E-04	101%	Pass
41	22.840	89	1.80E-04	90	1.82E-04	101%	Pass
42	23.322	81	1.63E-04	82	1.65E-04	101%	Pass
43	23.805	75	1.51E-04	75	1.51E-04	100%	Pass
44	24.287	73	1.47E-04	73	1.47E-04	100%	Pass
45	24.769	66	1.33E-04	67	1.35E-04	102%	Pass
46	25.252	64	1.29E-04	65	1.31E-04	102%	Pass
47	25.734	59	1.19E-04	59	1.19E-04	100%	Pass
48	26.216	55	1.11E-04	56	1.13E-04	102%	Pass
49	26.699	52	1.05E-04	52	1.05E-04	100%	Pass

50	27.181	48	9.68E-05	48	9.68E-05	100%	Pass
51	27.664	46	9.28E-05	46	9.28E-05	100%	Pass
52	28.146	42	8.47E-05	42	8.47E-05	100%	Pass
53	28.628	40	8.07E-05	40	8.07E-05	100%	Pass
54	29.111	39	7.87E-05	39	7.87E-05	100%	Pass
55	29.593	38	7.67E-05	38	7.67E-05	100%	Pass
56	30.075	36	7.26E-05	38	7.67E-05	106%	Pass
57	30.558	32	6.45E-05	32	6.45E-05	100%	Pass
58	31.040	31	6.25E-05	31	6.25E-05	100%	Pass
59	31.522	30	6.05E-05	30	6.05E-05	100%	Pass
60	32.005	29	5.85E-05	29	5.85E-05	100%	Pass
61	32.487	28	5.65E-05	29	5.85E-05	104%	Pass
62	32.970	27	5.45E-05	27	5.45E-05	100%	Pass
63	33.452	24	4.84E-05	24	4.84E-05	100%	Pass
64	33.934	24	4.84E-05	24	4.84E-05	100%	Pass
65	34.417	22	4.44E-05	23	4.64E-05	105%	Pass
66	34.899	21	4.24E-05	21	4.24E-05	100%	Pass
67	35.381	21	4.24E-05	21	4.24E-05	100%	Pass
68	35.864	20	4.03E-05	21	4.24E-05	105%	Pass
69	36.346	19	3.83E-05	19	3.83E-05	100%	Pass
70	36.828	19	3.83E-05	19	3.83E-05	100%	Pass
71	37.311	19	3.83E-05	19	3.83E-05	100%	Pass
72	37.793	19	3.83E-05	19	3.83E-05	100%	Pass
73	38.275	18	3.63E-05	18	3.63E-05	100%	Pass
74	38.758	17	3.43E-05	17	3.43E-05	100%	Pass
75	39.240	17	3.43E-05	17	3.43E-05	100%	Pass
76	39.723	16	3.23E-05	16	3.23E-05	100%	Pass
77	40.205	16	3.23E-05	16	3.23E-05	100%	Pass
78	40.687	13	2.62E-05	13	2.62E-05	100%	Pass
79	41.170	13	2.62E-05	13	2.62E-05	100%	Pass
80	41.652	12	2.42E-05	12	2.42E-05	100%	Pass
81	42.134	11	2.22E-05	11	2.22E-05	100%	Pass
82	42.617	10	2.02E-05	10	2.02E-05	100%	Pass
83	43.099	10	2.02E-05	10	2.02E-05	100%	Pass
84	43.581	9	1.82E-05	9	1.82E-05	100%	Pass
85	44.064	9	1.82E-05	9	1.82E-05	100%	Pass
86	44.546	9	1.82E-05	9	1.82E-05	100%	Pass
87	45.029	9	1.82E-05	9	1.82E-05	100%	Pass
88	45.511	9	1.82E-05	9	1.82E-05	100%	Pass
89	45.993	8	1.61E-05	8	1.61E-05	100%	Pass
90	46.476	8	1.61E-05	8	1.61E-05	100%	Pass
91	46.958	8	1.61E-05	8	1.61E-05	100%	Pass
92	47.440	8	1.61E-05	8	1.61E-05	100%	Pass
93	47.923	8	1.61E-05	8	1.61E-05	100%	Pass
94	48.405	8	1.61E-05	8	1.61E-05	100%	Pass
95	48.887	7	1.41E-05	7	1.41E-05	100%	Pass
96	49.370	7	1.41E-05	7	1.41E-05	100%	Pass
97	49.852	7	1.41E-05	7	1.41E-05	100%	Pass
98	50.334	7	1.41E-05	7	1.41E-05	100%	Pass
99	50.817	7	1.41E-05	7	1.41E-05	100%	Pass
100	51.299	5	1.01E-05	5	1.01E-05	100%	Pass


Flow Duration Curve
[Pre vs. Post (Unmitigated)]
60.000
50.000
40.000
30.000
20.000
10.000
0.000
Flow (cfs)
1.0E-06
1.0E-05
1.0E-04
1.0E-03
1.0E-02
% Time Exceeding
Pre-project Q
Post-project (Unmitigated) Q

Metropolitan Airpark
J-15818-B
6/5/15

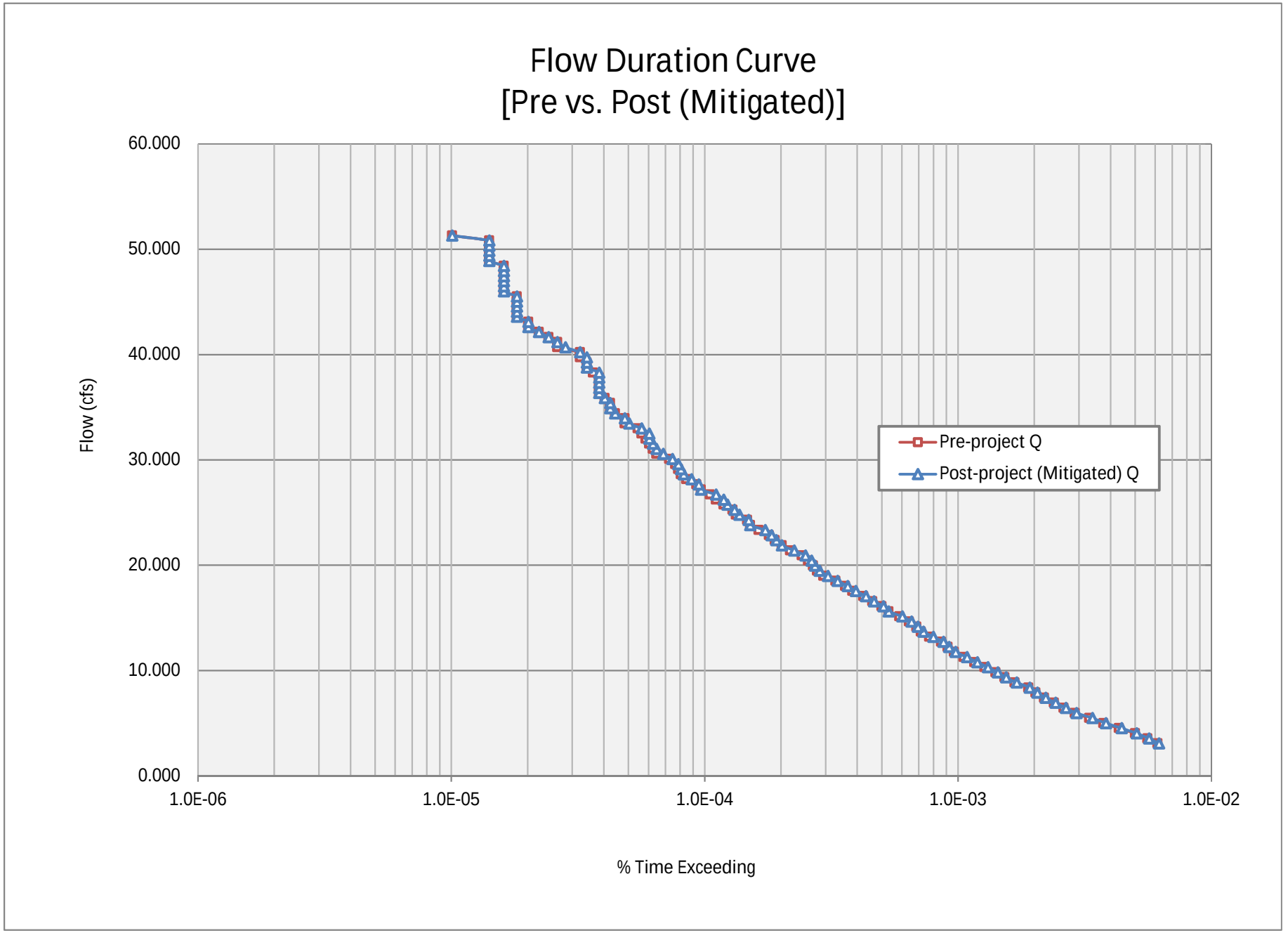
Basin600

Low-flow Threshold:	10%	
0.1xQ2 (Pre):	3.063	cfs
Q10 (Pre):	51.299	cfs
Ordinate #:	100	
Incremental Q (Pre):	0.48236	cfs
Total Hourly Data:	495743	hours

The proposed BMP: PASSED

Interval	Pre-project Flow (cfs)	Pre-project Hours	Pre-project % Time Exceeding	Post-project Hours	Post-project % Time Exceeding	Percentage	Pass/Fail
0	3.063	3045	6.14E-03	3082	6.22E-03	101%	Pass
1	3.546	2779	5.61E-03	2814	5.68E-03	101%	Pass
2	4.028	2480	5.00E-03	2518	5.08E-03	102%	Pass
3	4.510	2144	4.32E-03	2194	4.43E-03	102%	Pass
4	4.993	1860	3.75E-03	1901	3.83E-03	102%	Pass
5	5.475	1637	3.30E-03	1682	3.39E-03	103%	Pass
6	5.957	1436	2.90E-03	1456	2.94E-03	101%	Pass
7	6.440	1297	2.62E-03	1324	2.67E-03	102%	Pass
8	6.922	1187	2.39E-03	1204	2.43E-03	101%	Pass
9	7.404	1084	2.19E-03	1101	2.22E-03	102%	Pass
10	7.887	1005	2.03E-03	1021	2.06E-03	102%	Pass
11	8.369	941	1.90E-03	953	1.92E-03	101%	Pass
12	8.852	831	1.68E-03	845	1.70E-03	102%	Pass
13	9.334	758	1.53E-03	768	1.55E-03	101%	Pass
14	9.816	698	1.41E-03	712	1.44E-03	102%	Pass
15	10.299	631	1.27E-03	651	1.31E-03	103%	Pass
16	10.781	576	1.16E-03	591	1.19E-03	103%	Pass
17	11.263	522	1.05E-03	539	1.09E-03	103%	Pass
18	11.746	478	9.64E-04	485	9.78E-04	101%	Pass
19	12.228	452	9.12E-04	457	9.22E-04	101%	Pass
20	12.710	426	8.59E-04	435	8.77E-04	102%	Pass
21	13.193	382	7.71E-04	396	7.99E-04	104%	Pass
22	13.675	354	7.14E-04	362	7.30E-04	102%	Pass
23	14.157	340	6.86E-04	344	6.94E-04	101%	Pass
24	14.640	318	6.41E-04	325	6.56E-04	102%	Pass
25	15.122	291	5.87E-04	299	6.03E-04	103%	Pass
26	15.605	264	5.33E-04	264	5.33E-04	100%	Pass
27	16.087	248	5.00E-04	252	5.08E-04	102%	Pass
28	16.569	228	4.60E-04	231	4.66E-04	101%	Pass
29	17.052	210	4.24E-04	215	4.34E-04	102%	Pass
30	17.534	190	3.83E-04	196	3.95E-04	103%	Pass
31	18.016	178	3.59E-04	182	3.67E-04	102%	Pass
32	18.499	163	3.29E-04	166	3.35E-04	102%	Pass
33	18.981	146	2.95E-04	152	3.07E-04	104%	Pass
34	19.463	138	2.78E-04	141	2.84E-04	102%	Pass
35	19.946	133	2.68E-04	135	2.72E-04	102%	Pass
36	20.428	127	2.56E-04	131	2.64E-04	103%	Pass
37	20.911	120	2.42E-04	124	2.50E-04	103%	Pass
38	21.393	108	2.18E-04	112	2.26E-04	104%	Pass
39	21.875	100	2.02E-04	100	2.02E-04	100%	Pass
40	22.358	94	1.90E-04	95	1.92E-04	101%	Pass
41	22.840	89	1.80E-04	91	1.84E-04	102%	Pass
42	23.322	81	1.63E-04	86	1.73E-04	106%	Pass
43	23.805	75	1.51E-04	75	1.51E-04	100%	Pass
44	24.287	73	1.47E-04	74	1.49E-04	101%	Pass
45	24.769	66	1.33E-04	68	1.37E-04	103%	Pass
46	25.252	64	1.29E-04	65	1.31E-04	102%	Pass
47	25.734	59	1.19E-04	61	1.23E-04	103%	Pass
48	26.216	55	1.11E-04	59	1.19E-04	107%	Pass
49	26.699	52	1.05E-04	55	1.11E-04	106%	Pass
50	27.181	48	9.68E-05	48	9.68E-05	100%	Pass

Interval	Pre-project Flow (cfs)	Pre-project Hours	Pre-project % Time Exceeding	Post-project Hours	Post-project % Time Exceeding	Percentage	Pass/Fail
51	27.664	46	9.28E-05	47	9.48E-05	102%	Pass
52	28.146	42	8.47E-05	44	8.88E-05	105%	Pass
53	28.628	40	8.07E-05	41	8.27E-05	103%	Pass
54	29.111	39	7.87E-05	40	8.07E-05	103%	Pass
55	29.593	38	7.67E-05	39	7.87E-05	103%	Pass
56	30.075	36	7.26E-05	37	7.46E-05	103%	Pass
57	30.558	32	6.45E-05	34	6.86E-05	106%	Pass
58	31.040	31	6.25E-05	32	6.45E-05	103%	Pass
59	31.522	30	6.05E-05	31	6.25E-05	103%	Pass
60	32.005	29	5.85E-05	30	6.05E-05	103%	Pass
61	32.487	28	5.65E-05	30	6.05E-05	107%	Pass
62	32.970	27	5.45E-05	28	5.65E-05	104%	Pass
63	33.452	24	4.84E-05	25	5.04E-05	104%	Pass
64	33.934	24	4.84E-05	24	4.84E-05	100%	Pass
65	34.417	22	4.44E-05	22	4.44E-05	100%	Pass
66	34.899	21	4.24E-05	21	4.24E-05	100%	Pass
67	35.381	21	4.24E-05	21	4.24E-05	100%	Pass
68	35.864	20	4.03E-05	20	4.03E-05	100%	Pass
69	36.346	19	3.83E-05	19	3.83E-05	100%	Pass
70	36.828	19	3.83E-05	19	3.83E-05	100%	Pass
71	37.311	19	3.83E-05	19	3.83E-05	100%	Pass
72	37.793	19	3.83E-05	19	3.83E-05	100%	Pass
73	38.275	18	3.63E-05	19	3.83E-05	106%	Pass
74	38.758	17	3.43E-05	17	3.43E-05	100%	Pass
75	39.240	17	3.43E-05	17	3.43E-05	100%	Pass
76	39.723	16	3.23E-05	17	3.43E-05	106%	Pass
77	40.205	16	3.23E-05	16	3.23E-05	100%	Pass
78	40.687	13	2.62E-05	14	2.82E-05	108%	Pass
79	41.170	13	2.62E-05	13	2.62E-05	100%	Pass
80	41.652	12	2.42E-05	12	2.42E-05	100%	Pass
81	42.134	11	2.22E-05	11	2.22E-05	100%	Pass
82	42.617	10	2.02E-05	10	2.02E-05	100%	Pass
83	43.099	10	2.02E-05	10	2.02E-05	100%	Pass
84	43.581	9	1.82E-05	9	1.82E-05	100%	Pass
85	44.064	9	1.82E-05	9	1.82E-05	100%	Pass
86	44.546	9	1.82E-05	9	1.82E-05	100%	Pass
87	45.029	9	1.82E-05	9	1.82E-05	100%	Pass
88	45.511	9	1.82E-05	9	1.82E-05	100%	Pass
89	45.993	8	1.61E-05	8	1.61E-05	100%	Pass
90	46.476	8	1.61E-05	8	1.61E-05	100%	Pass
91	46.958	8	1.61E-05	8	1.61E-05	100%	Pass
92	47.440	8	1.61E-05	8	1.61E-05	100%	Pass
93	47.923	8	1.61E-05	8	1.61E-05	100%	Pass
94	48.405	8	1.61E-05	8	1.61E-05	100%	Pass
95	48.887	7	1.41E-05	7	1.41E-05	100%	Pass
96	49.370	7	1.41E-05	7	1.41E-05	100%	Pass
97	49.852	7	1.41E-05	7	1.41E-05	100%	Pass
98	50.334	7	1.41E-05	7	1.41E-05	100%	Pass
99	50.817	7	1.41E-05	7	1.41E-05	100%	Pass
100	51.299	5	1.01E-05	5	1.01E-05	100%	Pass


Flow Duration Curve
[Pre vs. Post (Mitigated)]
60.000
50.000
40.000
30.000
20.000
10.000
0.000
Flow (cfs)
1.0E-06
1.0E-05
1.0E-04
1.0E-03
1.0E-02
% Time Exceeding
Pre-project Q
Post-project (Mitigated) Q

III. ELEVATION VS DISCHARGE, ELEVATION VS AREA, DRAWDOWN, SWMM INPUT PARAMETER CALCULATIONS

Elevation vs. Area

For the flow diverted each respective receiving detention basin, a pond is used to route the hydrographs. The elevation vs area curve in the model is calculated in Excel and imported into the model.

Elevation vs Discharge

The total discharge peak flow data is imported from an Excel spreadsheet that calculated the elevation vs discharge of the outlet system for the basin.

A detail of the orifice and riser structure is provided in Section 3 of this attachment. The stage-storage and stage-discharge calculations have been provided on the following pages.

POC 1

Otay Village 7 R-8, Ex Basin

Discharge vs Elevation Table

1 Orifice Stag diameter:	30 "	2 Orifice Stag diameter:	12 "	3 Orifice Stag diameter:	18 "	4 Orifice Stag diameter:	24 "	Emergency w	8X8	
Number:	1	number of orif:	0	Number:	0	Number:	0	Invert:	10.90 ft	
Cg-low:	0.61	Cg-middle:	0.61	Cg-low:	0.61	Cg-low:	0.61	Area	64.00 sq ft	8' x 8'
invert elev:	0.00 ft	invert elev:	1.50 ft	invert elev:	3.00 ft	invert elev:	8.00 ft	Circumferenc	32 ft	

h	H/D-1	H/D-2	H/D-3	H/D-4	H/D-peak	Qlow-orif	Qlow-weir	Qtot-1	Qmid-orif	Qmid-weir	Qtot-2	Qtop-orif	Qtop-weir	Qtot-3	Qtop-orif	Qtop-weir	Qtot-4	Q emergency	Qtot	Qtot w UD
(ft)	-	-	-	-	-	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000
0.05	0.02	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.015	0.015
0.10	0.04	0.00	0.00	0.00	0.00	0.00	0.06	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.057	0.057
0.15	0.06	0.00	0.00	0.00	0.00	0.00	0.13	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.125	0.125
0.20	0.08	0.00	0.00	0.00	0.00	0.00	0.22	0.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.219	0.219
0.25	0.10	0.00	0.00	0.00	0.00	0.00	0.34	0.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.339	0.339
0.30	0.12	0.00	0.00	0.00	0.00	0.00	0.48	0.48	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.484	0.484
0.35	0.14	0.00	0.00	0.00	0.00	0.00	0.65	0.65	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.654	0.654
0.40	0.16	0.00	0.00	0.00	0.00	0.00	0.85	0.85	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.849	0.849
0.45	0.18	0.00	0.00	0.00	0.00	0.00	1.07	1.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.069	1.069
0.50	0.20	0.00	0.00	0.00	0.00	0.00	1.31	1.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.312	1.312
0.55	0.22	0.00	0.00	0.00	0.00	0.00	1.58	1.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.579	1.579
0.60	0.24	0.00	0.00	0.00	0.00	0.00	1.87	1.87	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.869	1.869
0.65	0.26	0.00	0.00	0.00	0.00	0.00	2.18	2.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.182	2.182
0.70	0.28	0.00	0.00	0.00	0.00	0.00	2.52	2.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.518	2.518
0.75	0.30	0.00	0.00	0.00	0.00	0.00	2.88	2.88	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.876	2.876
0.80	0.32	0.00	0.00	0.00	0.00	1.86	3.26	3.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.255	3.255
0.85	0.34	0.00	0.00	0.00	0.00	0.00	3.66	3.66	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.656	3.656
0.90	0.36	0.00	0.00	0.00	0.00	0.00	4.08	4.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.078	4.078
0.95	0.38	0.00	0.00	0.00	0.00	0.00	4.52	4.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.520	4.520
1.00	0.40	0.00	0.00	0.00	0.00	0.00	4.98	4.98	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.982	4.982
1.05	0.42	0.00	0.00	0.00	0.00	0.00	5.46	5.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.463	5.463
1.10	0.44	0.00	0.00	0.00	0.00	0.00	5.96	5.96	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.964	5.964
1.15	0.46	0.00	0.00	0.00	0.00	0.00	6.48	6.48	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.483	6.483
1.20	0.48	0.00	0.00	0.00	0.00	0.00	7.02	7.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.020	7.020
1.25	0.50	0.00	0.00	0.00	0.00	0.00	7.57	7.57	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.575	7.575
1.30	0.52	0.00	0.00	0.00	0.00	5.37	8.15	8.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.147	8.147
1.35	0.54	0.00	0.00	0.00	0.00	7.60	8.74	8.74	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.735	8.735
1.40	0.56	0.00	0.00	0.00	0.00	9.31	9.34	9.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.340	9.340
1.45	0.58	0.00	0.00	0.00	0.00	10.75	9.96	9.96	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.960	9.960
1.50	0.60	0.00	0.00	0.00	0.00	12.01	10.60	10.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.596	10.596
1.55	0.62	0.05	0.00	0.00	0.00	13.16	11.25	11.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.246	11.246
1.60	0.64	0.10	0.00	0.00	0.00	14.22	11.91	11.91	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.910	11.910
1.65	0.66	0.15	0.00	0.00	0.00	15.20	12.59	12.59	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	12.588	12.588
1.70	0.68	0.20	0.00	0.00	0.00	16.12	13.28	13.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13.279	13.279
1.75	0.70	0.25	0.00	0.00	0.00	16.99	13.98	13.98	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13.982	13.982
1.80	0.72	0.30	0.00	0.00	0.00	17.82	14.70	14.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.698	14.698
1.85	0.74	0.35	0.00	0.00	0.00	18.61	15.42	15.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	15.424	15.424
1.90	0.76	0.40	0.00	0.00	0.00	19.37	16.16	16.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	16.162	16.162
1.95	0.78	0.45	0.00	0.00	0.00	20.10	16.91	16.91	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	16.910	16.910
2.00	0.80	0.50	0.00	0.00	0.00	20.81	17.67	17.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	17.668	17.668
2.05	0.82	0.55	0.00	0.00	0.00	21.49	18.44	18.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	18.435	18.435
2.10	0.84	0.60	0.00	0.00	0.00	22.15	19.21	19.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	19.211	19.211
2.15	0.86	0.65	0.00	0.00	0.00	22.80	20.00	20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	19.995	19.995
2.20	0.88	0.70	0.00	0.00	0.00	23.42	20.79	20.79	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	20.787	20.787
2.25	0.90	0.75	0.00	0.00	0.00	24.03	21.59	21.59	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	21.586	21.586
2.30	0.92	0.80	0.00	0.00	0.00	24.62	22.39	22.39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	22.391	22.391
2.35	0.94	0.85	0.00	0.00	0.00	25.20	23.20	23.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	23.203	23.203
2.40	0.96	0.90	0.00	0.00	0.00	25.77	24.02	24.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24.020	24.020
2.45	0.98	0.95	0.00	0.00	0.00	26.32	24.84	24.84	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24.842	24.842
2.50	1.00	1.00	0.00	0.00	0.00	26.87	25.67	25.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.668	25.668
2.55	1.02	1.05	0.00	0.00	0.00	27.40	26.50	26.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	26.498	26.498
2.60	1.04	1.10	0.00	0.00	0.00	27.92	27.33	27.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	27.331	27.331
2.65	1.06	1.15	0.00	0.00	0.00	28.43	28.17	28.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	28.167	28.167
2.70	1.08	1.20	0.00	0.00	0.00	28.94	29.01	29.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	29.005	29.005
2.75	1.10	1.25	0.00	0.00	0.00	29.43	29.85	29.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	29.430	29.430
2.80	1.12	1.30	0.00	0.00	0.00	29.92	30.69	29.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	29.916	29.916
2.85	1.14	1.35	0.00	0.00	0.00	30.40	31.53	30.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	30.395	30.395
2.90	1.16	1.40	0.00	0.00	0.00	30.87	32.37	30.87	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	30.866	30.866
2.95	1.18	1.45	0.00	0.00	0.00	31.33	33.21	31.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	31.330	31.330
3.00	1.20	1.50	0.00	0.00	0.00	31.79	34.05	31.79	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	31.788	31.788
3.05	1.22	1.55	0.03	0.00	0.00	32.24	34.89	32.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	32.239	32.239
3.10	1.24	1.60	0.07	0.00	0.00	32.68	35.73	32.68	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	32.683	32.683
3.15	1.26	1.65	0.10	0.00	0.00	33.12	36.56	33.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	33.122	33.122
3.20	1.28	1.70	0.13	0.00	0.00	33.56	37.39	33.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	33.555	33.555
3.25	1.30	1.75	0.17	0.00	0.00	33.98	38.22	33.98	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	33.983	33.983
3.30	1.32	1.80	0.20	0.00	0.00	34.40	39.05	34.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	34.405	34.405
3.35	1.34	1.85	0.23	0.00	0.00	34.82	39.86	34.82	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	34.822	34.822
3.40	1.36	1.90	0.27	0.00	0.00	35.23	40.68	35.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	35.234	35.234
3.45	1.38	1.95	0.30	0.00	0.00	35.64	41.49	35.64	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	35.641	35.641
3.50	1.40	2.00	0.33	0.00	0.00	36.04	42.29	36.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	36.044	36.044
3.55	1.42	2.05	0.37	0.00	0.00	36.44	43.09	36.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	36.442	36.442
3.60	1.44	2.10	0.40	0.00	0.00	36.84	43.88	36.84	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	36.836	36.836
3.65	1.46	2.15	0.43	0.00	0.00	37.23	44.66	37.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	37.226	37.226
3.70	1.48	2.20	0.47	0.00	0.00	37.61	45.44	37.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	37.612	37.612
3.75	1.50	2.25	0.50	0.00	0.00	37.99	46.21	37.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	37.994	37.994
3.80	1.52	2.30	0.53	0.00	0.00	38.37	46.97	38.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	38.372	38.372
3.85	1.54	2.35	0.57	0.00	0.00	38.75	47.72	38.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	38.746	38.746
3.90	1.56	2.40	0.60	0.00	0.00	39.12	48.46	39.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	39.117	39.117
3.95	1.58	2.45	0.63	0.00	0.00	39.48	49.19	39.48	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	39.484	39.484
4.00	1.60	2.50	0.67	0.00	0.00	39.85	49.91	39.85	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	39.848	39.848
4.05	1.62	2.55	0.70	0.00	0.00	40.21	50.62	40.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	40.209	40.209
4.10	1.64	2.60	0.73	0.00	0.00	40.57	51.33	40.57	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	40.566	40.566
4.15	1.66	2.65	0.77	0.00	0.00	40.92	52.02	40.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	40.921	40.921
4.20	1.68	2.70	0.80	0.00	0.00	41.27	52.69	41.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	41.272	41.272
4.25	1.70	2.75	0.83	0.00	0.00	41.62	53.36	41.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	41.620	41.620
4.30	1.72	2.80	0.87	0.00	0.00	41.97	54.02	41.97	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	41.966	41.966
4.35	1.74	2.85	0.90	0.00	0.00	42.31	54.66	42.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	42.308	42.308
4.40	1.76	2.90	0.93	0.00	0.00	42.65	55.29	42.65	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	42.648	42.648
4.45	1.78	2.95	0.97	0.00	0.00	42.99	55.91	42.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	42.985	42.985
4.50	1.80	3.00	1.00	0.00	0.00	43.32	56.51	43.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	43.320	43.320
4.55	1.82	3.05	1.03	0.00	0.00	43.65	57.10	43.65	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	43.652	43.652
4.60	1.84	3.10	1.07	0.00	0.00	43.98	57.68	43.98	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	43.981	43.981
4.65	1.86	3.15	1.10	0.00	0.00	44.31	58.25	44.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	44.308	44.308
4.70	1.88	3.20	1.13	0.00	0.00	44.63	58.80	44.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	44.633	44.633
4.75	1.90	3.25	1.17	0.00	0.00	44.95	59.33	44.95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	44.955	44.955
4.80	1.92	3.30	1.20	0.00	0.00	45.27	59.86	45.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	45.275	45.275
4.85	1.94	3.35	1.23	0.00	0.00	45.59	60.36	45.59	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	45.593	45.593
4.90	1.96	3.40	1.27	0.00	0.00	45.91	60.86	45.91	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	45.908	45.908
4.95	1.98	3.45	1.30	0.00	0.00	46.22	61.34	46.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	46.221	46.221
5.00	2.00	3.50	1.33	0.00	0.00	46.53	61.80	46.53	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	46.533	46.533
5.05	2.02	3.55	1.37	0.00	0.00	46.84	62.25	46.84	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	46.842	46.842
5.10	2.04	3.60	1.40	0.00	0.00	47.15	62.68	47.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	47.149	47.149
5.15	2.06	3.65	1.43	0.00	0.00	47.45	63.10	47.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	47.454	47.454
5.20	2.08	3.70	1.47	0.00	0.00	47.76	63.51	47.76	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	47.757	47.757
5.25	2.10	3.75	1.50	0.00	0.00	48.06	63.90	48.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	48.059	48.059
5.30	2.12	3.80	1.53	0.00	0.00	48.36	64.27	48.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	48.358	48.358
5.35	2.14	3.85	1.57	0.00	0.00	48.66	64.63	48.66	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	48.656	48.656
5.40	2.16	3.90	1.60	0.00	0.00	48.95	64.98	48.95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	48.952	48.952
5.45	2.18	3.95	1.63	0.00	0.00	49.25	65.31	49.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.246	49.246
5.50	2.20	4.00	1.67	0.00	0.00	49.54	65.62	49.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.538	49.538
5.55	2.22	4.05	1.70	0.00	0.00	49.83	65.92	49.83	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.828	49.828
5.60	2.24	4.10	1.73	0.00	0.00	50.12	66.21	50.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	50.117	50.117
5.65	2.26	4.15	1.77	0.00	0.00	50.40	66.48	50.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	50.404	50.404
5.70	2.28	4.20	1.80	0.00	0.00	50.69	66.74	50.69	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	50.690	50.690
5.75	2.30	4.25	1.83	0.00	0.00	50.97	66.98	50.97	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	50.974	50.974

0.20	0.08	0.00	0.00	0.00	0.00	0.00	0.22	0.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.219	0.219
0.25	0.10	0.00	0.00	0.00	0.00	0.00	0.34	0.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.339	0.339
5.80	2.32	4.30	1.87	0.00	0.00	51.26	67.21	51.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	51.256	51.256
5.85	2.34	4.35	1.90	0.00	0.00	51.54	67.43	51.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	51.537	51.537
5.90	2.36	4.40	1.93	0.00	0.00	51.82	67.63	51.82	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	51.817	51.817
5.95	2.38	4.45	1.97	0.00	0.00	52.09	67.82	52.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	52.094	52.094
6.00	2.40	4.50	2.00	0.00	0.00	52.37	67.99	52.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	52.371	52.371
6.05	2.42	4.55	2.03	0.00	0.00	52.65	68.16	52.65	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	52.646	52.646
6.10	2.44	4.60	2.07	0.00	0.00	52.92	68.31	52.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	52.919	52.919
6.15	2.46	4.65	2.10	0.00	0.00	53.19	68.45	53.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	53.191	53.191
6.20	2.48	4.70	2.13	0.00	0.00	53.46	68.58	53.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	53.462	53.462
6.25	2.50	4.75	2.17	0.00	0.00	53.73	68.70	53.73	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	53.731	53.731
6.30	2.52	4.80	2.20	0.00	0.00	54.00	68.80	54.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	53.999	53.999
6.35	2.54	4.85	2.23	0.00	0.00	54.27	68.90	54.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	54.266	54.266
6.40	2.56	4.90	2.27	0.00	0.00	54.53	68.99	54.53	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	54.531	54.531
6.45	2.58	4.95	2.30	0.00	0.00	54.80	69.06	54.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	54.795	54.795
6.50	2.60	5.00	2.33	0.00	0.00	55.06	69.13	55.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	55.058	55.058
6.55	2.62	5.05	2.37	0.00	0.00	55.32	69.19	55.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	55.320	55.320
6.60	2.64	5.10	2.40	0.00	0.00	55.58	69.25	55.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	55.580	55.580
6.65	2.66	5.15	2.43	0.00	0.00	55.84	69.29	55.84	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	55.839	55.839
6.70	2.68	5.20	2.47	0.00	0.00	56.10	69.34	56.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	56.097	56.097
6.75	2.70	5.25	2.50	0.00	0.00	56.35	69.37	56.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	56.354	56.354
6.80	2.72	5.30	2.53	0.00	0.00	56.61	69.40	56.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	56.609	56.609
6.85	2.74	5.35	2.57	0.00	0.00	56.86	69.43	56.86	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	56.864	56.864
6.90	2.76	5.40	2.60	0.00	0.00	57.12	69.45	57.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	57.117	57.117
6.95	2.78	5.45	2.63	0.00	0.00	57.37	69.47	57.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	57.369	57.369
7.00	2.80	5.50	2.67	0.00	0.00	57.62	69.49	57.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	57.620	57.620
7.05	2.82	5.55	2.70	0.00	0.00	57.87	69.50	57.87	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	57.870	57.870
7.10	2.84	5.60	2.73	0.00	0.00	58.12	69.52	58.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	58.119	58.119
7.15	2.86	5.65	2.77	0.00	0.00	58.37	69.54	58.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	58.367	58.367
7.20	2.88	5.70	2.80	0.00	0.00	58.61	69.55	58.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	58.614	58.614
7.25	2.90	5.75	2.83	0.00	0.00	58.86	69.58	58.86	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	58.860	58.860
7.30	2.92	5.80	2.87	0.00	0.00	59.10	69.60	59.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	59.104	59.104
7.35	2.94	5.85	2.90	0.00	0.00	59.35	69.63	59.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	59.348	59.348
7.40	2.96	5.90	2.93	0.00	0.00	59.59	69.66	59.59	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	59.591	59.591
7.45	2.98	5.95	2.97	0.00	0.00	59.83	69.71	59.83	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	59.833	59.833
7.50	3.00	6.00	3.00	0.00	0.00	60.07	69.76	60.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	60.073	60.073
7.55	3.02	6.05	3.03	0.00	0.00	60.31	69.81	60.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	60.313	60.313
7.60	3.04	6.10	3.07	0.00	0.00	60.55	69.88	60.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	60.552	60.552
7.65	3.06	6.15	3.10	0.00	0.00	60.79	69.96	60.79	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	60.790	60.790
7.70	3.08	6.20	3.13	0.00	0.00	61.03	70.05	61.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	61.027	61.027
7.75	3.10	6.25	3.17	0.00	0.00	61.26	70.16	61.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	61.263	61.263
7.80	3.12	6.30	3.20	0.00	0.00	61.50	70.28	61.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	61.498	61.498
7.85	3.14	6.35	3.23	0.00	0.00	61.73	70.42	61.73	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	61.733	61.733
7.90	3.16	6.40	3.27	0.00	0.00	61.97	70.57	61.97	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	61.966	61.966
7.95	3.18	6.45	3.30	0.00	0.00	62.20	70.75	62.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	62.199	62.199
8.00	3.20	6.50	3.33	0.00	0.00	62.43	70.94	62.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	62.430	62.430
8.05	3.22	6.55	3.37	0.02	0.00	62.66	71.16	62.66	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	62.661	62.661
8.10	3.24	6.60	3.40	0.05	0.00	62.89	71.40	62.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	62.891	62.891
8.15	3.26	6.65	3.43	0.07	0.00	63.12	71.67	63.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	63.120	63.120
8.20	3.28	6.70	3.47	0.10	0.00	63.35	71.96	63.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	63.348	63.348
8.25	3.30	6.75	3.50	0.12	0.00	63.58	72.28	63.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	63.576	63.576
8.30	3.32	6.80	3.53	0.15	0.00	63.80	72.63	63.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	63.802	63.802
8.35	3.34	6.85	3.57	0.17	0.00	64.03	73.01	64.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	64.028	64.028
8.40	3.36	6.90	3.60	0.20	0.00	64.25	73.43	64.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	64.253	64.253
8.45	3.38	6.95	3.63	0.22	0.00	64.48	73.88	64.48	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	64.478	64.478
8.50	3.40	7.00	3.67	0.25	0.00	64.70	74.36	64.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	64.701	64.701
8.55	3.42	7.05	3.70	0.27	0.00	64.92	74.89	64.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	64.924	64.924
8.60	3.44	7.10	3.73	0.30	0.00	65.15	75.46	65.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	65.146	65.146
8.65	3.46	7.15	3.77	0.32	0.00	65.37	76.07	65.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	65.367	65.367
8.70	3.48	7.20	3.80	0.35	0.00	65.59	76.72	65.59	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	65.587	65.587
8.75	3.50	7.25	3.83	0.37	0.00	65.81	77.42	65.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	65.807	65.807
8.80	3.52	7.30	3.87	0.40	0.00	66.03	78.17	66.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	66.026	66.026
8.85	3.54	7.35	3.90	0.42	0.00	66.24	78.97	66.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	66.244	66.244
8.90	3.56	7.40	3.93	0.45	0.00	66.46	79.82	66.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	66.462	66.462
8.95	3.58	7.45	3.97	0.47	0.00	66.68	80.73	66.68	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	66.679	66.679
9.00	3.60	7.50	4.00	0.50	0.00	66.89	81.69	66.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	66.895	66.895
9.05	3.62	7.55	4.03	0.52	0.00	67.11	82.71	67.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	67.110	67.110
9.10	3.64	7.60	4.07	0.55	0.00	67.33	83.80	67.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	67.325	67.325
9.15	3.66	7.65	4.10	0.57	0.00	67.54	84.95	67.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	67.539	67.539
9.20	3.68	7.70	4.13	0.60	0.00	67.75	86.16	67.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	67.753	67.753
9.25	3.70	7.75	4.17	0.62	0.00	67.97	87.44	67.97	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	67.965	67.965
9.30	3.72	7.80	4.20	0.65	0.00	68.18	88.80	68.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	68.177	68.177
9.35	3.74	7.85	4.23	0.67	0.00	68.39	90.22	68.39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	68.389	68.389
9.40	3.76	7.90	4.27	0.70	0.00	68.60	91.73	68.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	68.600	68.600
9.45	3.78	7.95	4.30	0.73	0.00	68.81	93.31	68.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	68.810	68.810
9.50	3.80	8.00	4.33	0.75	0.00	69.02	94.97	69.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	69.019	69.019
9.55	3.82	8.05	4.37	0.78	0.00	69.23	96.72	69.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	69.228	69.228
9.60	3.84	8.10	4.40	0.80	0.00	69.44	98.55	69.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	69.436	69.436
9.65	3.86	8.15	4.43	0.83	0.00	69.64	100.48	69.64	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	69.644	69.644
9.70	3.88	8.20	4.47	0.85	0.00	69.85	102.49	69.85	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	69.851	69.851
9.75	3.90	8.25	4.50	0.88	0.00	70.06	104.60	70.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	70.057	70.057
9.80	3.92	8.30	4.53	0.90	0.00	70.26	106.81	70.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	70.263	70.263
9.85	3.94	8.35	4.57	0.93	0.00	70.47	109.12	70.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	70.468	70.468
9.90	3.96	8.40	4.60	0.95	0.00	70.67	111.53	70.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	70.673	70.673
9.95	3.98	8.45	4.63	0.98	0.00	70.88	114.05	70.88	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	70.877	70.877
10.00	4.00	8.50	4.67	1.00	0.00	71.08	116.67	71.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	71.080	71.080
10.05	4.02	8.55	4.70	1.03	0.00	71.28	119.42	71.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	71.283	71.283
10.10	4.04	8.60	4.73	1.05	0.00	71.48	122.27	71.48	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	71.485	71.485
10.15	4.06	8.65	4.77	1.08	0.00	71.69	125.25	71.69	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	71.687	71.687
10.20	4.08	8.70	4.80	1.10	0.00	71.89	128.35	71.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	71.888	71.888
10.25	4.10	8.75	4.83	1.13	0.00	72.09	131.57	72.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	72.088	72.088
10.30	4.12	8.80	4.87	1.15	0.00	72.29	134.93	72.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	72.288	72.288
10.35	4.14	8.85	4.90	1.18	0.00	72.49	138.41	72.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	72.488	72.488
10.40	4.16	8.90	4.93	1.20	0.00	72.69	142.04	72.69	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	72.686	72.686
10.45	4.18	8.95	4.97	1.23	0.00	72.88	145.80	72.88	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	72.885	72.885
10.50	4.20	9.00	5.00	1.25	0.00	73.08	149.70	73.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	73.083	73.083
10.55	4.22	9.05	5.03	1.28	0.00	73.28	153.76	73.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	73.280	73.280
10.60	4.24	9.10	5.07	1.30	0.00	73.48	157.96	73.48	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	73.477	73.477
10.65	4.26	9.15	5.10	1.33	0.00	73.67	162.31	73.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	73.673	73.673
10.70	4.28	9.20	5.13	1.35	0.00	73.87	166.83	73.87	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	73.868	73.868
10.75	4.30	9.25	5.17	1.38	0.00	74.06	171.50	74.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	74.064	74.064
10.80	4.32	9.30	5.20	1.40	0.00	74.26	176.34	74.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	74.258	74.258
10.85	4.34	9.35	5.23	1.43	0.00	74.45	181.35	74.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	74.452	74.452
10.90	4.36	9.40	5.27	1.45	0.00	74.65	186.54	74.65	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	74.646	74.646
10.95	4.38	9.45	5.30	1.48	0.01	74.84	191.90	74.84	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.38	77.222	77.222
11.00	4.40	9.50	5.33	1.50	0.02	75.03	197.44	75.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.74	81.771	81.771
11.05	4.42	9.55	5.37	1.53	0.03	75.22	203.17	75.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	12.38	87.605	87.605
11.10	4.44	9.60	5.40	1.55	0.04	75.42	209.08	75.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	19.06	94.478	94.478
11.15	4.46	9.65	5.43	1.58	0.05	75.61	215.20	75.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	26.64	102.247	102.247
11.20	4.48	9.70	5.47	1.60	0.06	75.80	221.50	75.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	35.02	110.817	110.817
11.25	4.50	9.75	5.50	1.63	0.07	75.99	228.02	75.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	44.13	120.117	120.117
11.30	4.52	9.80	5.53	1.65	0.08	76.18	234.74	76.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	53.92	130.093	130.093
11.35	4.54	9.85	5.57	1.68	0.08	76.37	241.66	76.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	64.33	140.701	140.701
11.40	4.56	9.90	5.60	1.70	0.09	76.56	248.81	76.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	75.35	151.905	151.905
11.45	4.58	9.95	5.63	1.73	0.10	76.74	256.18	76.74	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	86.93	163.673	163.673
11.50	4.60	10.00	5.67	1.75	0.11	76.93	263.77	76.93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.05	175.981	175.981
11.55	4.62	10.05	5.70	1.78	0.12	77.12	271.59	77.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	111.68	188.804	188.804
11.60	4.64	10.10	5.73	1.80	0.13	77.31	279.64	77.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	124.82	202.122	202.122
11.65	4.66	10.15	5.77	1.83	0.14	77.49	287.94	77.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	138.43	215.918	215.918
11.70	4.68	10.20	5.80	1.85	0.15	77.68	296.47	77.68	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	152.50	230.175	230.175
11.75	4.70	10.25	5.83	1.88	0.16	77.86	305.26	77.86	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	167.01	244.878	244.878
11.80	4.72	10.30	5.87	1.90	0.17	78.05	314.30	78.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	181.97	260.014	260.014
11.85	4.74	10.35	5.90	1.93	0.18	78.23	323.60	78.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	197.34	275.572	275.572
11.90	4.76	10.40	5.93	1.95	0.19	78.42	333.16	78.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	213.12	291.538	291.538

0.20	0.08	0.00	0.00	0.00	0.00	0.00	0.22	0.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.219	0.219
0.25	0.10	0.00	0.00	0.00	0.00	0.00	0.34	0.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.339	0.339
11.95	4.78	10.45	5.97	1.98	0.20	78.60	343.00	78.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	229.30	307.904	307.904
12.00	4.80	10.50	6.00	2.00	0.21	78.79	353.10	78.79	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	245.87	324.660	324.660
12.05	4.82	10.55	6.03	2.03	0.22	78.97	363.49	78.97	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	262.83	341.796	341.796
12.10	4.84	10.60	6.07	2.05	0.23	79.15	374.16	79.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	280.15	359.305	359.305
12.15	4.86	10.65	6.10	2.08	0.23	79.33	385.12	79.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	297.84	377.178	377.178
12.20	4.88	10.70	6.13	2.10	0.24	79.52	396.37	79.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	315.89	395.408	395.408
12.25	4.90	10.75	6.17	2.13	0.25	79.70	407.93	79.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	334.29	413.988	413.988
12.30	4.92	10.80	6.20	2.15	0.26	79.88	419.79	79.88	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	353.03	432.911	432.911
12.35	4.94	10.85	6.23	2.18	0.27	80.06	431.97	80.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	372.11	452.172	452.172
12.40	4.96	10.90	6.27	2.20	0.28	80.24	444.46	80.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	383.71	463.944	463.944
12.45	4.98	10.95	6.30	2.23	0.29	80.42	457.28	80.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	390.05	470.466	470.466
12.50	5.00	11.00	6.33	2.25	0.30	80.60	470.43	80.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	396.29	476.887	476.887
12.55	5.02	11.05	6.37	2.28	0.31	80.78	483.91	80.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	402.43	483.210	483.210
12.60	5.04	11.10	6.40	2.30	0.32	80.95	497.73	80.95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	408.49	489.440	489.440
12.65	5.06	11.15	6.43	2.33	0.33	81.13	511.90	81.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	414.45	495.582	495.582
12.70	5.08	11.20	6.47	2.35	0.34	81.31	526.42	81.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	420.33	501.639	501.639
12.75	5.10	11.25	6.50	2.38	0.35	81.49	541.30	81.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	426.13	507.614	507.614
12.80	5.12	11.30	6.53	2.40	0.36	81.66	556.55	81.66	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	431.85	513.511	513.511
12.85	5.14	11.35	6.57	2.43	0.37	81.84	572.17	81.84	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	437.49	519.333	519.333
12.90	5.16	11.40	6.60	2.45	0.38	82.02	588.16	82.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	443.07	525.083	525.083
12.95	5.18	11.45	6.63	2.48	0.38	82.19	604.54	82.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	448.57	530.763	530.763
13.00	5.20	11.50	6.67	2.50	0.39	82.37	621.31	82.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	454.01	536.375	536.375
13.05	5.22	11.55	6.70	2.53	0.40	82.54	638.48	82.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	459.38	541.924	541.924
13.10	5.24	11.60	6.73	2.55	0.41	82.72	656.05	82.72	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	464.69	547.409	547.409
13.15	5.26	11.65	6.77	2.58	0.42	82.89	674.04	82.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	469.94	552.834	552.834
13.20	5.28	11.70	6.80	2.60	0.43	83.07	692.44	83.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	475.13	558.201	558.201
13.25	5.30	11.75	6.83	2.63	0.44	83.24	711.26	83.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	480.27	563.512	563.512
13.30	5.32	11.80	6.87	2.65	0.45	83.41	730.51	83.41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	485.35	568.767	568.767
13.35	5.34	11.85	6.90	2.68	0.46	83.59	750.20	83.59	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	490.38	573.970	573.970
13.40	5.36	11.90	6.93	2.70	0.47	83.76	770.34	83.76	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	495.36	579.121	579.121
13.45	5.38	11.95	6.97	2.73	0.48	83.93	790.92	83.93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	500.29	584.222	584.222
13.50	5.40	12.00	7.00	2.75	0.49	84.10	811.97	84.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	505.17	589.275	589.275
13.55	5.42	12.05	7.03	2.78	0.50	84.27	833.48	84.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	510.01	594.281	594.281
13.60	5.44	12.10	7.07	2.80	0.51	84.45	855.46	84.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	514.80	599.241	599.241
13.65	5.46	12.15	7.10	2.83	0.52	84.62	877.93	84.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	519.54	604.156	604.156
13.70	5.48	12.20	7.13	2.85	0.53	84.79	900.88	84.79	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	524.24	609.029	609.029
13.75	5.50	12.25	7.17	2.88	0.53	84.96	924.33	84.96	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	528.90	613.859	613.859
13.80	5.52	12.30	7.20	2.90	0.54	85.13	948.27	85.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	533.52	618.648	618.648
13.85	5.54	12.35	7.23	2.93	0.55	85.30	972.73	85.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	538.10	623.397	623.397
13.90	5.56	12.40	7.27	2.95	0.56	85.46	997.71	85.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	542.64	628.107	628.107

Otay Ranch Village 7 R-8 / Stage Storage	
Ex Detention Bain	
Depth (ft)	Area (sqft)
0.00	17535
0.05	17647
0.10	17758
0.15	17870
0.20	17982
0.25	18093
0.30	18205
0.35	18317
0.40	18428
0.45	18540
0.50	18651
0.55	18763
0.60	18875
0.65	18986
0.70	19098
0.75	19210
0.80	19321
0.85	19433
0.90	19545
0.95	19656
1.00	19768
1.05	19873
1.10	19979
1.15	20085
1.20	20190
1.25	20296
1.30	20401
1.35	20507
1.40	20613
1.45	20718
1.50	20824
1.55	20929
1.60	21035
1.65	21140
1.70	21246
1.75	21352
1.80	21457
1.85	21563
1.90	21668
1.95	21774
2.00	21880
2.05	21991

Depth (ft)	Area (sqft)
2.10	22102
2.15	22213
2.20	22325
2.25	22436
2.30	22547
2.35	22659
2.40	22770
2.45	22881
2.50	22993
2.55	23104
2.60	23215
2.65	23326
2.70	23438
2.75	23549
2.80	23660
2.85	23772
2.90	23883
2.95	23994
3.00	24106
3.05	24215
3.10	24325
3.15	24435
3.20	24545
3.25	24655
3.30	24765
3.35	24875
3.40	24985
3.45	25095
3.50	25205
3.55	25315
3.60	25425
3.65	25535
3.70	25645
3.75	25755
3.80	25865
3.85	25975
3.90	26085
3.95	26195
4.00	26305
4.05	26420
4.10	26536
4.15	26652
4.20	26768
4.25	26883
4.30	26999

Depth (ft)	Area (sqft)
4.35	27115
4.40	27230
4.45	27346
4.50	27462
4.55	27578
4.60	27693
4.65	27809
4.70	27925
4.75	28040
4.80	28156
4.85	28272
4.90	28388
4.95	28503
5.00	28619
5.05	28739
5.10	28860
5.15	28980
5.20	29101
5.25	29221
5.30	29342
5.35	29462
5.40	29582
5.45	29703
5.50	29823
5.55	29944
5.60	30064
5.65	30184
5.70	30305
5.75	30425
5.80	30546
5.85	30666
5.90	30787
5.95	30907
6.00	31027
6.05	31160
6.10	31292
6.15	31424
6.20	31557
6.25	31689
6.30	31821
6.35	31954
6.40	32086
6.45	32219
6.50	32351
6.55	32483

Depth (ft)	Area (sqft)
6.60	32616
6.65	32748
6.70	32880
6.75	33013
6.80	33145
6.85	33277
6.90	33410
6.95	33542
7.00	33674
7.05	33810
7.10	33945
7.15	34081
7.20	34216
7.25	34352
7.30	34487
7.35	34623
7.40	34758
7.45	34894
7.50	35029
7.55	35165
7.60	35300
7.65	35436
7.70	35571
7.75	35707
7.80	35842
7.85	35977
7.90	36113
7.95	36248
8.00	36384
8.05	36523
8.10	36662
8.15	36801
8.20	36941
8.25	37080
8.30	37219
8.35	37358
8.40	37497
8.45	37636
8.50	37776
8.55	37915
8.60	38054
8.65	38193
8.70	38332
8.75	38471
8.80	38611

Depth (ft)	Area (sqft)
8.85	38750
8.90	38889
8.95	39028
9.00	39167
9.05	39311
9.10	39455
9.15	39599
9.20	39743
9.25	39887
9.30	40031
9.35	40175
9.40	40319
9.45	40463
9.50	40607
9.55	40751
9.60	40895
9.65	41039
9.70	41183
9.75	41327
9.80	41471
9.85	41615
9.90	41759
9.95	41903
10.00	42047
10.05	42200
10.10	42353
10.15	42506
10.20	42659
10.25	42812
10.30	42965
10.35	43118
10.40	43271
10.45	43424
10.50	43577
10.55	43730
10.60	43883
10.65	44036
10.70	44189
10.75	44342
10.80	44495
10.85	44648
10.90	44801
10.95	44954
11.00	45107
11.05	45270

Depth (ft)	Area (sqft)
11.10	45432
11.15	45595
11.20	45758
11.25	45920
11.30	46083
11.35	46246
11.40	46408
11.45	46571
11.50	46734
11.55	46896
11.60	47059
11.65	47222
11.70	47384
11.75	47547
11.80	47710
11.85	47872
11.90	48035
11.95	48198
12.00	48360
12.05	48537
12.10	48713
12.15	48889
12.20	49066
12.25	49242
12.30	49419
12.35	49595
12.40	49772
12.45	49948
12.50	50124
12.55	50301
12.60	50477
12.65	50654
12.70	50830
12.75	51007
12.80	51183
12.85	51359
12.90	51536
12.95	51712
13.00	51889
13.05	52065
13.10	52242
13.15	52418
13.20	52594
13.25	52771
13.30	52947

Depth (ft)	Area (sqft)
13.35	53124
13.40	53300
13.45	53477
13.50	53653
13.55	53829
13.60	54006
13.65	54182
13.70	54359
13.75	54535
13.80	54712
13.85	54888
13.90	55064

Ex Basin		$Q_{Sub\ Drain}$=	0.000	cfs
Elevation	Q_{AVG} (CFS)	DV (CF)	DT (HR)	Total T
0.00	0.000	879.5	31.891	48.99
0.05	0.015	885.1	6.784	17.10
0.10	0.057	890.7	2.712	10.31
0.15	0.125	896.3	1.445	7.60
0.20	0.219	901.9	0.897	6.16
0.25	0.339	907.5	0.612	5.26
0.30	0.484	913.0	0.446	4.65
0.35	0.654	918.6	0.339	4.20
0.40	0.849	924.2	0.268	3.86
0.45	1.069	929.8	0.217	3.59
0.50	1.312	935.4	0.180	3.38
0.55	1.579	940.9	0.152	3.20
0.60	1.869	946.5	0.130	3.05
0.65	2.182	952.1	0.113	2.92
0.70	2.518	957.7	0.099	2.80
0.75	2.876	963.3	0.087	2.71
0.80	3.255	968.9	0.078	2.62
0.85	3.656	974.4	0.070	2.54
0.90	4.078	980.0	0.063	2.47
0.95	4.520	985.6	0.058	2.41
1.00	4.982	991.0	0.053	2.35
1.05	5.463	996.3	0.048	2.30
1.10	5.964	1001.6	0.045	2.25
1.15	6.483	1006.9	0.041	2.20
1.20	7.020	1012.1	0.039	2.16
1.25	7.575	1017.4	0.036	2.12
1.30	8.147	1022.7	0.034	2.09
1.35	8.735	1028.0	0.032	2.05
1.40	9.340	1033.3	0.030	2.02
1.45	9.960	1038.5	0.028	1.99
1.50	10.596	1043.8	0.027	1.96
1.55	11.246	1049.1	0.025	1.94
1.60	11.910	1054.4	0.024	1.91
1.65	12.588	1059.7	0.023	1.89
1.70	13.279	1064.9	0.022	1.87
1.75	13.982	1070.2	0.021	1.84
1.80	14.698	1075.5	0.020	1.82
1.85	15.424	1080.8	0.019	1.80
1.90	16.162	1086.1	0.018	1.78
1.95	16.910	1091.3	0.018	1.77
2.00	17.668	1096.8	0.017	1.75
2.05	18.435	1102.3	0.016	1.73
2.10	19.211	1107.9	0.016	1.72
2.15	19.995	1113.5	0.015	1.70
2.20	20.787	1119.0	0.015	1.68
2.25	21.586	1124.6	0.014	1.67
2.30	22.391	1130.1	0.014	1.66
2.35	23.203	1135.7	0.013	1.64
2.40	24.020	1141.3	0.013	1.63
2.45	24.842	1146.8	0.013	1.62
2.50	25.668	1152.4	0.012	1.60

Ex Basin		$Q_{Sub\ Drain}$=	0.000	cfs
Elevation	Q_{AVG} (CFS)	DV (CF)	DT (HR)	Total T
2.55	26.498	1158.0	0.012	1.59
2.60	27.331	1163.5	0.012	1.58
2.65	28.167	1169.1	0.011	1.57
2.70	29.005	1174.7	0.011	1.56
2.75	29.430	1180.2	0.011	1.54
2.80	29.916	1185.8	0.011	1.53
2.85	30.395	1191.4	0.011	1.52
2.90	30.866	1196.9	0.011	1.51
2.95	31.330	1202.5	0.011	1.50
3.00	31.788	1208.0	0.010	1.49
3.05	32.239	1213.5	0.010	1.48
3.10	32.683	1219.0	0.010	1.47
3.15	33.122	1224.5	0.010	1.46
3.20	33.555	1230.0	0.010	1.45
3.25	33.983	1235.5	0.010	1.44
3.30	34.405	1241.0	0.010	1.43
3.35	34.822	1246.5	0.010	1.42
3.40	35.234	1252.0	0.010	1.41
3.45	35.641	1257.5	0.010	1.40
3.50	36.044	1263.0	0.010	1.39
3.55	36.442	1268.5	0.010	1.38
3.60	36.836	1274.0	0.010	1.37
3.65	37.226	1279.5	0.009	1.36
3.70	37.612	1285.0	0.009	1.35
3.75	37.994	1290.5	0.009	1.34
3.80	38.372	1296.0	0.009	1.33
3.85	38.746	1301.5	0.009	1.32
3.90	39.117	1307.0	0.009	1.31
3.95	39.484	1312.5	0.009	1.30
4.00	39.848	1318.1	0.009	1.30
4.05	40.209	1323.9	0.009	1.29
4.10	40.566	1329.7	0.009	1.28
4.15	40.921	1335.5	0.009	1.27
4.20	41.272	1341.3	0.009	1.26
4.25	41.620	1347.1	0.009	1.25
4.30	41.966	1352.8	0.009	1.24
4.35	42.308	1358.6	0.009	1.23
4.40	42.648	1364.4	0.009	1.22
4.45	42.985	1370.2	0.009	1.21
4.50	43.320	1376.0	0.009	1.21
4.55	43.652	1381.8	0.009	1.20
4.60	43.981	1387.6	0.009	1.19
4.65	44.308	1393.3	0.009	1.18
4.70	44.633	1399.1	0.009	1.17
4.75	44.955	1404.9	0.009	1.16
4.80	45.275	1410.7	0.009	1.15
4.85	45.593	1416.5	0.009	1.14
4.90	45.908	1422.3	0.009	1.14
4.95	46.221	1428.1	0.009	1.13
5.00	46.533	1434.0	0.009	1.12
5.05	46.842	1440.0	0.009	1.11

Ex Basin		$Q_{Sub\ Drain}$=	0.000	cfs
Elevation	Q_{AVG} (CFS)	DV (CF)	DT (HR)	Total T
5.10	47.149	1446.0	0.008	1.10
5.15	47.454	1452.0	0.008	1.09
5.20	47.757	1458.0	0.008	1.09
5.25	48.059	1464.1	0.008	1.08
5.30	48.358	1470.1	0.008	1.07
5.35	48.656	1476.1	0.008	1.06
5.40	48.952	1482.1	0.008	1.05
5.45	49.246	1488.2	0.008	1.04
5.50	49.538	1494.2	0.008	1.03
5.55	49.828	1500.2	0.008	1.03
5.60	50.117	1506.2	0.008	1.02
5.65	50.404	1512.2	0.008	1.01
5.70	50.690	1518.3	0.008	1.00
5.75	50.974	1524.3	0.008	0.99
5.80	51.256	1530.3	0.008	0.98
5.85	51.537	1536.3	0.008	0.98
5.90	51.817	1542.3	0.008	0.97
5.95	52.094	1548.4	0.008	0.96
6.00	52.371	1554.7	0.008	0.95
6.05	52.646	1561.3	0.008	0.94
6.10	52.919	1567.9	0.008	0.94
6.15	53.191	1574.5	0.008	0.93
6.20	53.462	1581.1	0.008	0.92
6.25	53.731	1587.8	0.008	0.91
6.30	53.999	1594.4	0.008	0.90
6.35	54.266	1601.0	0.008	0.89
6.40	54.531	1607.6	0.008	0.89
6.45	54.795	1614.2	0.008	0.88
6.50	55.058	1620.9	0.008	0.87
6.55	55.320	1627.5	0.008	0.86
6.60	55.580	1634.1	0.008	0.85
6.65	55.839	1640.7	0.008	0.85
6.70	56.097	1647.3	0.008	0.84
6.75	56.354	1653.9	0.008	0.83
6.80	56.609	1660.6	0.008	0.82
6.85	56.864	1667.2	0.008	0.81
6.90	57.117	1673.8	0.008	0.80
6.95	57.369	1680.4	0.008	0.80
7.00	57.620	1687.1	0.008	0.79
7.05	57.870	1693.9	0.008	0.78
7.10	58.119	1700.7	0.008	0.77
7.15	58.367	1707.4	0.008	0.76
7.20	58.614	1714.2	0.008	0.76
7.25	58.860	1721.0	0.008	0.75
7.30	59.104	1727.7	0.008	0.74
7.35	59.348	1734.5	0.008	0.73
7.40	59.591	1741.3	0.008	0.72
7.45	59.833	1748.1	0.008	0.72
7.50	60.073	1754.8	0.008	0.71
7.55	60.313	1761.6	0.008	0.70
7.60	60.552	1768.4	0.008	0.69

Ex Basin		$Q_{Sub\ Drain}$=	0.000	cfs
Elevation	Q_{AVG} (CFS)	DV (CF)	DT (HR)	Total T
7.65	60.790	1775.2	0.008	0.68
7.70	61.027	1781.9	0.008	0.67
7.75	61.263	1788.7	0.008	0.67
7.80	61.498	1795.5	0.008	0.66
7.85	61.733	1802.3	0.008	0.65
7.90	61.966	1809.0	0.008	0.64
7.95	62.199	1815.8	0.008	0.63
8.00	62.430	1822.7	0.008	0.63
8.05	62.661	1829.6	0.008	0.62
8.10	62.891	1836.6	0.008	0.61
8.15	63.120	1843.6	0.008	0.60
8.20	63.348	1850.5	0.008	0.59
8.25	63.576	1857.5	0.008	0.59
8.30	63.802	1864.4	0.008	0.58
8.35	64.028	1871.4	0.008	0.57
8.40	64.253	1878.3	0.008	0.56
8.45	64.478	1885.3	0.008	0.55
8.50	64.701	1892.3	0.008	0.55
8.55	64.924	1899.2	0.008	0.54
8.60	65.146	1906.2	0.008	0.53
8.65	65.367	1913.1	0.008	0.52
8.70	65.587	1920.1	0.008	0.51
8.75	65.807	1927.1	0.008	0.50
8.80	66.026	1934.0	0.008	0.50
8.85	66.244	1941.0	0.008	0.49
8.90	66.462	1947.9	0.008	0.48
8.95	66.679	1954.9	0.008	0.47
9.00	66.895	1962.0	0.008	0.46
9.05	67.110	1969.2	0.008	0.46
9.10	67.325	1976.4	0.008	0.45
9.15	67.539	1983.6	0.008	0.44
9.20	67.753	1990.8	0.008	0.43
9.25	67.965	1998.0	0.008	0.42
9.30	68.177	2005.2	0.008	0.42
9.35	68.389	2012.4	0.008	0.41
9.40	68.600	2019.6	0.008	0.40
9.45	68.810	2026.8	0.008	0.39
9.50	69.019	2034.0	0.008	0.38
9.55	69.228	2041.2	0.008	0.37
9.60	69.436	2048.4	0.008	0.37
9.65	69.644	2055.6	0.008	0.36
9.70	69.851	2062.8	0.008	0.35
9.75	70.057	2070.0	0.008	0.34
9.80	70.263	2077.2	0.008	0.33
9.85	70.468	2084.4	0.008	0.33
9.90	70.673	2091.6	0.008	0.32
9.95	70.877	2098.8	0.008	0.31
10.00	71.080	2106.2	0.008	0.30
10.05	71.283	2113.8	0.008	0.29
10.10	71.485	2121.5	0.008	0.28
10.15	71.687	2129.1	0.008	0.28

Ex Basin		$Q_{Sub\ Drain}$=	0.000	cfs
Elevation	Q_{AVG} (CFS)	DV (CF)	DT (HR)	Total T
10.20	71.888	2136.8	0.008	0.27
10.25	72.088	2144.4	0.008	0.26
10.30	72.288	2152.1	0.008	0.25
10.35	72.488	2159.7	0.008	0.24
10.40	72.686	2167.4	0.008	0.23
10.45	72.885	2175.0	0.008	0.23
10.50	73.083	2182.7	0.008	0.22
10.55	73.280	2190.3	0.008	0.21
10.60	73.477	2198.0	0.008	0.20
10.65	73.673	2205.6	0.008	0.19
10.70	73.868	2213.3	0.008	0.19
10.75	74.064	2220.9	0.008	0.18
10.80	74.258	2228.6	0.008	0.17
10.85	74.452	2236.2	0.008	0.16
10.90	74.646	2243.9	0.008	0.15
10.95	77.222	2251.5	0.008	0.14
11.00	81.771	2259.4	0.007	0.14
11.05	87.605	2267.6	0.007	0.13
11.10	94.478	2275.7	0.006	0.12
11.15	102.247	2283.8	0.006	0.11
11.20	110.817	2292.0	0.006	0.11
11.25	120.117	2300.1	0.005	0.10
11.30	130.093	2308.2	0.005	0.10
11.35	140.701	2316.4	0.004	0.09
11.40	151.905	2324.5	0.004	0.09
11.45	163.673	2332.6	0.004	0.09
11.50	175.981	2340.7	0.004	0.08
11.55	188.804	2348.9	0.003	0.08
11.60	202.122	2357.0	0.003	0.07
11.65	215.918	2365.1	0.003	0.07
11.70	230.175	2373.3	0.003	0.07
11.75	244.878	2381.4	0.003	0.07
11.80	260.014	2389.5	0.002	0.06
11.85	275.572	2397.7	0.002	0.06
11.90	291.538	2405.8	0.002	0.06
11.95	307.904	2413.9	0.002	0.06
12.00	324.660	2422.4	0.002	0.05
12.05	341.796	2431.2	0.002	0.05
12.10	359.305	2440.1	0.002	0.05
12.15	377.178	2448.9	0.002	0.05
12.20	395.408	2457.7	0.002	0.05
12.25	413.988	2466.5	0.002	0.04
12.30	432.911	2475.3	0.002	0.04
12.35	452.172	2484.2	0.002	0.04
12.40	463.944	2493.0	0.001	0.04
12.45	470.466	2501.8	0.001	0.04
12.50	476.887	2510.6	0.001	0.04
12.55	483.210	2519.5	0.001	0.04
12.60	489.440	2528.3	0.001	0.03
12.65	495.582	2537.1	0.001	0.03
12.70	501.639	2545.9	0.001	0.03

Ex Basin		$Q_{Sub\ Drain}$=	0.000	cfs
Elevation	Q_{AVG} (CFS)	DV (CF)	DT (HR)	Total T
12.75	507.614	2554.7	0.001	0.03
12.80	513.511	2563.6	0.001	0.03
12.85	519.333	2572.4	0.001	0.03
12.90	525.083	2581.2	0.001	0.03
12.95	530.763	2590.0	0.001	0.02
13.00	536.375	2598.8	0.001	0.02
13.05	541.924	2607.7	0.001	0.02
13.10	547.409	2616.5	0.001	0.02
13.15	552.834	2625.3	0.001	0.02
13.20	558.201	2634.1	0.001	0.02
13.25	563.512	2643.0	0.001	0.02
13.30	568.767	2651.8	0.001	0.02
13.35	573.970	2660.6	0.001	0.01
13.40	579.121	2669.4	0.001	0.01
13.45	584.222	2678.2	0.001	0.01
13.50	589.275	2687.1	0.001	0.01
13.55	594.281	2695.9	0.001	0.01
13.60	599.241	2704.7	0.001	0.01
13.65	604.156	2713.5	0.001	0.01
13.70	609.029	2722.3	0.001	0.00
13.75	613.859	2731.2	0.001	0.00
13.80	618.648	2740.0	0.001	0.00
13.85	623.397	2748.8	0.001	0.00
13.90	628.107	0.0	0.000	0.00

Otay Village 7 R-8, Ex Basin

Discharge vs Elevation Table

1 Orifice Stag diameter:	10 "	2 Orifice Stag diameter:	12 "	3 Orifice Stag diameter:	18 "	4 Orifice Stag diameter:	18 "	Emergency w	8X8	
Number:	1	number of orif:	1	Number:	2	Number:	3	Invert:	11.50 ft	
Cg-low:	0.61	Cg-middle:	0.61	Cg-low:	0.61	Cg-low:	0.61	Area	64.00 sq ft	8' x 8'
invert elev:	0.00 ft	invert elev:	1.50 ft	invert elev:	3.00 ft	invert elev:	5.50 ft	Circumferen	32 ft	

Elev	h	H/D-1	H/D-2	H/D-3	H/D-4	H/D-peak	Qlow-orif	Qlow-weir	Qtot-1	Qmid-orif	Qmid-weir	Qtot-2	Qtop-orif	Qtop-weir	Qtot-3	Qtop-orif	Qtop-weir	Qtot-4	Q emergency	Qtot
	(ft)	-	-	-	-	-	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
390	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000
390.05	0.05	0.06	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.008
390.10	0.10	0.12	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.031
390.15	0.15	0.18	0.00	0.00	0.00	0.00	0.00	0.07	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.069
390.20	0.20	0.24	0.00	0.00	0.00	0.00	0.00	0.12	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.120
390.25	0.25	0.30	0.00	0.00	0.00	0.00	0.00	0.18	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.184
390.30	0.30	0.36	0.00	0.00	0.00	0.00	0.00	0.26	0.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.262
390.35	0.35	0.42	0.00	0.00	0.00	0.00	0.00	0.35	0.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.350
390.40	0.40	0.48	0.00	0.00	0.00	0.00	0.00	0.45	0.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.450
390.45	0.45	0.54	0.00	0.00	0.00	0.00	0.49	0.56	0.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.560
390.50	0.50	0.60	0.00	0.00	0.00	0.00	0.77	0.68	0.68	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.680
390.55	0.55	0.66	0.00	0.00	0.00	0.00	0.97	0.81	0.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.808
390.60	0.60	0.72	0.00	0.00	0.00	0.00	1.14	0.94	0.94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.943
390.65	0.65	0.78	0.00	0.00	0.00	0.00	1.29	1.08	1.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.085
390.70	0.70	0.84	0.00	0.00	0.00	0.00	1.42	1.23	1.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.232
390.75	0.75	0.90	0.00	0.00	0.00	0.00	1.54	1.38	1.38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.385
390.80	0.80	0.96	0.00	0.00	0.00	0.00	1.86	1.54	1.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.541
390.85	0.85	1.02	0.00	0.00	0.00	0.00	1.76	1.70	1.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.700
390.90	0.90	1.08	0.00	0.00	0.00	0.00	1.86	1.86	1.86	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.861
390.95	0.95	1.14	0.00	0.00	0.00	0.00	1.95	2.02	1.95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.950
391.00	1.00	1.20	0.00	0.00	0.00	0.00	2.04	2.18	2.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.039
391.05	1.05	1.26	0.00	0.00	0.00	0.00	2.12	2.35	2.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.125
391.10	1.10	1.32	0.00	0.00	0.00	0.00	2.21	2.50	2.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.207
391.15	1.15	1.38	0.00	0.00	0.00	0.00	2.29	2.66	2.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.286
391.20	1.20	1.44	0.00	0.00	0.00	0.00	2.36	2.81	2.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.363
391.25	1.25	1.50	0.00	0.00	0.00	0.00	2.44	2.96	2.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.437
391.30	1.30	1.56	0.00	0.00	0.00	0.00	2.51	3.11	2.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.509
391.35	1.35	1.62	0.00	0.00	0.00	0.00	2.58	3.25	2.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.579
391.40	1.40	1.68	0.00	0.00	0.00	0.00	2.65	3.38	2.65	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.648
391.45	1.45	1.74	0.00	0.00	0.00	0.00	2.71	3.51	2.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.714
391.50	1.50	1.80	0.00	0.00	0.00	0.00	2.78	3.63	2.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.779
391.55	1.55	1.86	0.05	0.00	0.00	0.00	2.84	3.74	2.84	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.851
391.60	1.60	1.92	0.10	0.00	0.00	0.00	2.90	3.84	2.90	0.00	0.03	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.939
391.65	1.65	1.98	0.15	0.00	0.00	0.00	2.97	3.93	2.97	0.00	0.08	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.041
391.70	1.70	2.04	0.20	0.00	0.00	0.00	3.02	4.02	3.02	0.00	0.13	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.157
391.75	1.75	2.10	0.25	0.00	0.00	0.00	3.08	4.10	3.08	0.00	0.20	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.288
391.80	1.80	2.16	0.30	0.00	0.00	0.00	3.14	4.17	3.14	0.00	0.29	0.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.431
391.85	1.85	2.22	0.35	0.00	0.00	0.00	3.20	4.23	3.20	0.00	0.39	0.39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.588
391.90	1.90	2.28	0.40	0.00	0.00	0.00	3.25	4.28	3.25	0.00	0.50	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.756
391.95	1.95	2.34	0.45	0.00	0.00	0.00	3.31	4.33	3.31	0.00	0.63	0.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.936
392.00	2.00	2.40	0.50	0.00	0.00	0.00	3.36	4.36	3.36	0.00	0.77	0.77	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.126
392.05	2.05	2.46	0.55	0.00	0.00	0.00	3.41	4.39	3.41	0.86	0.91	0.91	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.327
392.10	2.10	2.52	0.60	0.00	0.00	0.00	3.46	4.41	3.46	1.22	1.07	1.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.536
392.15	2.15	2.58	0.65	0.00	0.00	0.00	3.52	4.43	3.52	1.49	1.24	1.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.754
392.20	2.20	2.64	0.70	0.00	0.00	0.00	3.57	4.44	3.57	1.72	1.41	1.41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.980
392.25	2.25	2.70	0.75	0.00	0.00	0.00	3.62	4.45	3.62	1.92	1.60	1.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.213
392.30	2.30	2.76	0.80	0.00	0.00	0.00	3.66	4.46	3.66	2.11	1.79	1.79	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.452
392.35	2.35	2.82	0.85	0.00	0.00	0.00	3.71	4.46	3.71	2.27	1.98	1.98	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.696
392.40	2.40	2.88	0.90	0.00	0.00	0.00	3.76	4.46	3.76	2.43	2.18	2.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.944
392.45	2.45	2.94	0.95	0.00	0.00	0.00	3.81	4.47	3.81	2.58	2.39	2.39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.196
392.50	2.50	3.00	1.00	0.00	0.00	0.00	3.85	4.47	3.85	2.72	2.60	2.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.451
392.55	2.55	3.06	1.05	0.00	0.00	0.00	3.90	4.49	3.90	2.85	2.81	2.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.708
392.60	2.60	3.12	1.10	0.00	0.00	0.00	3.95	4.51	3.95	2.98	3.02	2.98	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.923
392.65	2.65	3.18	1.15	0.00	0.00	0.00	3.99	4.54	3.99	3.10	3.23	3.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.090
392.70	2.70	3.24	1.20	0.00	0.00	0.00	4.03	4.58	4.03	3.22	3.45	3.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.251
392.75	2.75	3.30	1.25	0.00	0.00	0.00	4.08	4.64	4.08	3.33	3.66	3.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.408
392.80	2.80	3.36	1.30	0.00	0.00	0.00	4.12	4.71	4.12	3.44	3.87	3.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.561
392.85	2.85	3.42	1.35	0.00	0.00	0.00	4.16	4.80	4.16	3.54	4.08	3.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.710
392.90	2.90	3.48	1.40	0.00	0.00	0.00	4.21	4.92	4.21	3.65	4.28	3.65	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.855
392.95	2.95	3.54	1.45	0.00	0.00	0.00	4.25	5.07	4.25	3.75	4.48	3.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.997
393.00	3.00	3.60	1.50	0.00	0.00	0.00	4.29	5.24	4.29	3.84	4.68	3.84	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.136
393.05	3.05	3.66	1.55	0.03	0.00	0.00	4.33	5.45	4.33	3.94	4.87	3.94	0.00	0.02	0.02	0.00	0.00	0.00	0.00	8.295
393.10	3.10	3.72	1.60	0.07	0.00	0.00	4.37	5.70	4.37	4.03	5.05	4.03	0.00	0.09	0.09	0.00	0.00	0.00	0.00	8.492
393.15	3.15	3.78	1.65	0.10	0.00	0.00	4.41	5.99	4.41	4.12	5.23	4.12	0.00	0.19	0.19	0.00	0.00	0.00	0.00	8.726
393.20	3.20	3.84	1.70	0.13	0.00	0.00	4.45	6.32	4.45	4.21	5.40	4.21	0.00	0.33	0.33	0.00	0.00	0.00	0.00	8.998
393.25	3.25	3.90	1.75	0.17	0.00	0.00	4.49	6.71	4.49	4.30	5.56	4.30	0.00	0.51	0.51	0.00	0.00	0.00	0.00	9.306
393.30	3.30	3.96	1.80	0.20	0.00	0.00	4.53	7.15	4.53	4.38	5.72	4.38	0.00	0.73	0.73	0.00	0.00	0.00	0.00	9.649
393.35	3.35	4.02	1.85	0.23	0.00	0.00	4.57	7.66	4.57	4.47	5.87	4.47	0.00	0.99	0.99	0.00	0.00	0.00	0.00	10.027
393.40	3.40	4.08	1.90	0.27	0.00	0.00	4.61	8.23	4.61	4.55	6.00	4.55	0.00	1.28	1.28	0.00	0.00	0.00	0.00	10.439
393.45	3.45	4.14	1.95	0.30	0.00	0.00	4.65	8.88	4.65	4.63	6.13	4.63	0.00	1.60	1.60	0.00	0.00	0.00	0.00	10.884
393.50	3.50	4.20	2.00	0.33	0.00	0.00	4.69	9.60	4.69	4.71	6.25	4.71	0.00	1.96	1.96	0.00	0.00	0.00	0.00	11.360
393.55	3.55	4.26	2.05	0.37	0.00	0.00	4.73	10.41	4.73	4.79	6.36	4.79	0.00	2.36	2.36	0.00	0.00	0.00	0.00	11.868
393.60	3.60	4.32	2.10	0.40	0.00	0.00	4.76	11.31	4.76	4.86	6.47	4.86	0.00	2.78	2.78	0.00	0.00	0.00	0.00	12.405
393.65	3.65	4.38	2.15	0.43	0.00	0.00	4.80	12.31	4.80	4.94	6.56	4.94	0.00	3.23	3.23	0.00	0.00	0.00	0.00	12.971
393.70	3.70	4.44	2.20	0.47	0.00	0.00	4.84	13.41	4.84	5.01	6.64	5.01	0.00	3.71	3.71	0.00	0.00	0.00	0.00	13.565
393.75	3.75	4.50	2.25	0.50	0.00	0.00	4.87	14.63	4.87	5.09	6.71	5.09	0.00	4.22	4.22	0.00	0.00	0.00	0.00	14.185
393.80	3.80	4.56	2.30	0.53	0.00	0.00	4.91	15.96	4.91	5.16	6.78	5.16	3.87	4.76	4.76	0.00	0.00	0.00	0.00	14.831
393.85	3.85	4.62	2.35	0.57	0.00	0.00	4.95	17.42	4.95	5.23	6.83	5.23	5.47	5.32	5.32	0.00	0.00	0.00	0.00	15.500
393.90	3.90	4.68	2.40	0.60	0.00	0.00	4.98	19.02	4.98	5.30	6.88	5.30	6.70	5.91	5.91	0.00	0.00	0.00	0.00	16.192
393.95	3.95	4.74	2.45	0.63	0.00	0.00	5.02	20.76	5.02	5.37	6.92	5.37	7.74	6.52	6.52	0.00	0.00	0.00	0.00	16.906
394.00	4.00	4.80	2.50	0.67	0.00	0.00	5.05	22.65	5.05	5.44	6.95	5.44	8.65	7.15	7.15	0.00	0.00	0.00	0.00	17.639
394.05	4.05	4.86	2.55	0.70	0.00	0.00	5.09	24.71	5.09	5.50	6.98	5.50	9.48	7.80	7.80	0.00	0.00	0.00	0.00	18.392
394.10	4.10	4.92	2.60	0.73	0.00	0.00	5.12	26.93	5.12	5.57	7.00	5.57	10.24	8.47	8.47	0.00	0.00	0.00	0.00	19.162
394.15	4.15	4.98	2.65	0.77	0.00	0.00	5.16	29.33	5.16	5.64	7.01	5.64	10.94	9.15	9.15	0.00	0.00	0.00	0.00	19.948
394.20	4.20	5.04	2.70	0.80	0.00	0.00	5.19	31.93	5.19	5.70	7.02	5.70	11.61	9.85	9.85	0.00	0.00	0.00	0.00	20.750
394.25	4.25	5.10	2.75	0.83	0.00	0.00	5.23	34.72	5.23	5.77	7.03	5.77	12.23	10.57	10.57	0.00	0.00	0.00	0.00	21.564
394.30	4.30	5.16	2.80	0.87	0.00	0.00	5.26	37.73	5.26	5.83	7.03	5.83	12.83	11.30	11.30	0.00	0.00	0.00	0.00	22.391
394.35	4.35	5.22	2.85	0.90	0.00	0.00	5.30	40.96	5.30	5.89	7.04	5.89	13.40	12.04	12.04	0.00	0.00	0.00	0.00	23.228
394.40	4.40	5.28	2.90	0.93	0.00	0.00	5.33	44.42	5.33	5.96	7.04	5.96	13.95	12.79	12.79	0.00	0.00	0.00	0.00	24.074
394.45	4.45	5.34	2.95	0.97	0.00	0.00	5.36	48.13	5.36	6.02	7.05	6.02	14.48	13.55	13.55	0.00	0.00	0.00	0.00	24.929
394.50	4.50	5.40	3.00	1.00	0.00	0.00	5.40	52.09	5.40	6.08	7.06	6.08	14.98	14.32	14.32	0.00	0.00	0.00	0.00	25.789
394.55	4.55	5.46	3.05	1.03	0.00	0.00	5.43	56.32	5.43	6.14	7.08	6.14	15.47	15.09	15.09	0.00	0.00	0.00	0.00	26.655
394.60	4.60	5.52	3.10	1.07	0.00	0.00	5.46	60.83	5.46	6.20	7.10	6.20	15.95	15.86	15.86	0.00	0.00	0.00	0.00	27.525
394.65	4.65	5.58	3.15	1.10	0.00	0.00	5.49	65.64	5.49	6.26	7.13	6.26	16.41	16.64	16.64	0.00	0.00	0.00	0.00	28.397
394.70	4.70	5.64	3.20	1.13	0.00	0.00	5.53	70.75	5.53	6.32	7.18	6.32	16.86	17.43	16.86	0.00	0.00	0.00	0.00	28.706
394.75	4.75	5.70	3.25	1.17	0.00	0.00	5.56	76.19	5.56	6.38	7.24	6.38	17.30	18.21	17.30	0.00	0.00	0.00	0.00	29.235
394.80	4.80	5.76	3.30	1.20	0.00	0.00	5.59	81.96	5.59	6.43	7.31	6.43	17.73	18.99	17.73	0.00	0.00	0.00	0.00	29.752
394.85	4.85	5.82	3.35	1.23	0.00	0.00	5.62	88.09	5.62	6.49	7.41	6.49	18.15	19.77	18.15	0.00	0.00	0.00	0.00	30.258
394.90	4.90	5.88	3.40	1.27	0.00	0.00	5.65	94.57	5.65	6.55	7.53	6.55	18.55	20.55	18.55	0.00	0.00	0.00	0.00	30.754
394.95	4.95	5.94	3.45	1.30	0.00	0.00	5.68	101.44	5.68	6.60	7.67	6.60	18.95	21.32	18.95	0.00	0.00	0.00	0.00	31.241
395.00	5.00	6.00	3.50	1.33	0.00	0.00	5.72	108.71	5.72	6.66	7.83	6.66	19.34	22.08	19.34	0.00	0.00	0.00	0.00	31.718
395.05	5.05	6.06	3.55	1.37	0.00	0.00	5.75	116.38	5.75	6.71	8.03	6.71	19.73	22.84	19.73	0.00	0.00	0.00	0.00	32.188
395.10	5.10	6.12	3.60	1.40	0.00	0.00	5.78	124.49	5.78	6.77	8.27	6.77	20.10	23.59	20.10	0.00	0.00	0.00	0.00	32.649
395.15	5.15	6.18	3.65	1.43	0.00	0.00	5.81	133.04	5.81	6.82	8.54	6.82	20.47	24.33	20.47	0.00	0.00	0.00	0.00	33.103
395.20	5.20	6.24	3.70	1.47	0.00	0.00	5.84	142.05	5.84	6.88	8.85	6.88	20.83	25.05	20.83	0.00	0.00	0.00	0.00	33.550
395.25	5.25	6.30	3.75	1.50	0.00	0.00	5.87	151.54	5.87	6.93	9.21	6.93	21.19	25.77	21.19	0.00	0.00	0.00	0.00	33.990
395.30	5.30	6.36	3.80	1.53	0.00	0.00	5.90	161.53	5.90	6.98	9.61	6.98	21.54	26.47	21.54	0.00	0.00	0.00	0.00	34.424
395.35	5.35	6.42	3.85	1.57	0.00	0.00	5.93	172.04	5.93	7.04	10.07	7.04	21.88	27.16	21.88	0.00	0.00	0.00	0.00	34.852
395.40	5.40	6.48	3.90	1.60	0.00	0.00	5.96	183.09	5.96	7.09	10.58	7.09	22.22	27.84	22.22	0.00	0.00	0.00	0.00	35.273
395.45	5.45	6.54	3.95	1.63	0.00	0.00	5.99	194.69	5.99	7.14	11.16	7.14	22.56	28.50	22.56	0.00	0.00	0.00	0.00	35.689
395.50	5.50	6.60	4.00	1.67	0.00	0.00	6.02	206.86	6.02	7.19	11.81	7.19	22.89	29.14	22.89	0.00	0.00	0.00	0.00	36.100
395.55	5.55	6.66	4.05	1.70	0.03	0.00	6.05	219.63	6.05	7.24	12.52	7.24	23.21	29.76	23.21	0.00	0.03	0.03	0.00	36.539
395.60	5.60	6.72	4.10	1.73	0.07	0.00	6.08	233.02	6.08	7.29	13.31	7.29	23.53	30.37	23.53	0.00	0.13	0.13	0.00	37.034
395.65	5.65	6.78	4.15	1.77	0.10	0.00	6.11	247.05	6.11	7.35	14.19	7.35	23.85	30.95	23.85	0.00	0.28	0.28	0.00	37.585
395.70	5.70	6.84	4.20	1.80	0.13	0.00	6.14	261.73	6.14	7.40	15.15	7.40	24.16	31.52	24.16	0.00	0.50	0.50	0.00	38.190
395.75	5.75	6.90	4.25	1.83	0.17	0.00	6.17	277.09	6.17	7.45	16.20	7.45	24.47	32.06	24.47	0.00	0.77	0.77	0.00	38.848
395.80	5.80	6.96	4.30	1.87	0.20	0.00	6.19	293.16	6.19	7.49	17.35	7.49	24.77	32.59	24.77	0.00	1.10	1.10	0.00	39.558
395.85	5.85	7.02	4.35	1.90	0.23	0.00	6.22	309.96	6.22	7.54	18.61	7.54	25.07	33.09	25.07	0.00	1.48	1.48	0.00	40.320

390.20	0.20	0.24	0.00	0.00	0.00	0.00	0.00	0.12	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.120
390.25	0.25	0.30	0.00	0.00	0.00	0.00	0.00	0.18	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.184
395.90	5.90	7.08	4.40	1.93	0.27	0.00	6.25	327.51	6.25	7.59	19.98	7.59	25.37	33.57	25.37	0.00	1.92	1.92	0.00	41.130
395.95	5.95	7.14	4.45	1.97	0.30	0.00	6.28	345.83	6.28	7.64	21.46	7.64	25.66	34.03	25.66	0.00	2.41	2.41	0.00	41.989
396.00	6.00	7.20	4.50	2.00	0.33	0.00	6.31	364.95	6.31	7.69	23.07	7.69	25.95	34.47	25.95	0.00	2.94	2.94	0.00	42.895
396.05	6.05	7.26	4.55	2.03	0.37	0.00	6.34	384.90	6.34	7.74	24.81	7.74	26.24	34.88	26.24	0.00	3.53	3.53	0.00	43.845
396.10	6.10	7.32	4.60	2.07	0.40	0.00	6.37	405.69	6.37	7.78	26.69	7.78	26.52	35.27	26.52	0.00	4.17	4.17	0.00	44.840
396.15	6.15	7.38	4.65	2.10	0.43	0.00	6.39	427.36	6.39	7.83	28.71	7.83	26.80	35.64	26.80	0.00	4.85	4.85	0.00	45.876
396.20	6.20	7.44	4.70	2.13	0.47	0.00	6.42	449.93	6.42	7.88	30.89	7.88	27.08	35.98	27.08	0.00	5.57	5.57	0.00	46.952
396.25	6.25	7.50	4.75	2.17	0.50	0.00	6.45	473.44	6.45	7.93	33.23	7.93	27.36	36.30	27.36	0.00	6.34	6.34	0.00	48.067
396.30	6.30	7.56	4.80	2.20	0.53	0.00	6.48	497.90	6.48	7.97	35.73	7.97	27.63	36.60	27.63	5.80	7.14	7.14	0.00	49.218
396.35	6.35	7.62	4.85	2.23	0.57	0.00	6.50	523.34	6.50	8.02	38.41	8.02	27.90	36.87	27.90	8.21	7.99	7.99	0.00	50.405
396.40	6.40	7.68	4.90	2.27	0.60	0.00	6.53	549.80	6.53	8.06	41.28	8.06	28.16	37.13	28.16	10.05	8.86	8.86	0.00	51.624
396.45	6.45	7.74	4.95	2.30	0.63	0.00	6.56	577.30	6.56	8.11	44.34	8.11	28.43	37.36	28.43	11.61	9.78	9.78	0.00	52.874
396.50	6.50	7.80	5.00	2.33	0.67	0.00	6.59	605.87	6.59	8.16	47.60	8.16	28.69	37.56	28.69	12.98	10.72	10.72	0.00	54.154
396.55	6.55	7.86	5.05	2.37	0.70	0.00	6.61	635.55	6.61	8.20	51.08	8.20	28.95	37.75	28.95	14.21	11.70	11.70	0.00	55.461
396.60	6.60	7.92	5.10	2.40	0.73	0.00	6.64	666.36	6.64	8.25	54.78	8.25	29.21	37.92	29.21	15.35	12.70	12.70	0.00	56.793
396.65	6.65	7.98	5.15	2.43	0.77	0.00	6.67	698.34	6.67	8.29	58.70	8.29	29.46	38.07	29.46	16.41	13.73	13.73	0.00	58.148
396.70	6.70	8.04	5.20	2.47	0.80	0.00	6.69	731.51	6.69	8.34	62.87	8.34	29.72	38.20	29.72	17.41	14.78	14.78	0.00	59.524
396.75	6.75	8.10	5.25	2.50	0.83	0.00	6.72	765.91	6.72	8.38	67.29	8.38	29.97	38.31	29.97	18.35	15.85	15.85	0.00	60.919
396.80	6.80	8.16	5.30	2.53	0.87	0.00	6.75	801.57	6.75	8.42	71.97	8.42	30.22	38.41	30.22	19.25	16.95	16.95	0.00	62.332
396.85	6.85	8.22	5.35	2.57	0.90	0.00	6.77	838.53	6.77	8.47	76.93	8.47	30.46	38.49	30.46	20.10	18.06	18.06	0.00	63.759
396.90	6.90	8.28	5.40	2.60	0.93	0.00	6.80	876.82	6.80	8.51	82.17	8.51	30.71	38.56	30.71	20.92	19.18	19.18	0.00	65.199
396.95	6.95	8.34	5.45	2.63	0.97	0.00	6.82	916.47	6.82	8.55	87.70	8.55	30.95	38.61	30.95	21.71	20.32	20.32	0.00	66.650
397.00	7.00	8.40	5.50	2.67	1.00	0.00	6.85	957.52	6.85	8.60	93.54	8.60	31.19	38.65	31.19	22.47	21.47	21.47	0.00	68.110
397.05	7.05	8.46	5.55	2.70	1.03	0.00	6.88	1000.01	6.88	8.64	99.69	8.64	31.43	38.69	31.43	23.21	22.63	22.63	0.00	69.577
397.10	7.10	8.52	5.60	2.73	1.07	0.00	6.90	1043.97	6.90	8.68	106.18	8.68	31.67	38.71	31.67	23.93	23.80	23.80	0.00	71.048
397.15	7.15	8.58	5.65	2.77	1.10	0.00	6.93	1089.44	6.93	8.73	113.00	8.73	31.90	38.74	31.90	24.62	24.97	24.97	0.00	72.522
397.20	7.20	8.64	5.70	2.80	1.13	0.00	6.95	1136.46	6.95	8.77	120.19	8.77	32.14	38.75	32.14	25.29	26.14	25.29	0.00	73.151
397.25	7.25	8.70	5.75	2.83	1.17	0.00	6.98	1185.06	6.98	8.81	127.74	8.81	32.37	38.77	32.37	25.95	27.31	25.95	0.00	74.108
397.30	7.30	8.76	5.80	2.87	1.20	0.00	7.00	1235.29	7.00	8.85	135.67	8.85	32.60	38.78	32.60	26.59	28.49	26.59	0.00	75.047
397.35	7.35	8.82	5.85	2.90	1.23	0.00	7.03	1287.18	7.03	8.89	143.99	8.89	32.83	38.80	32.83	27.22	29.65	27.22	0.00	75.968
397.40	7.40	8.88	5.90	2.93	1.27	0.00	7.06	1340.78	7.06	8.93	152.73	8.93	33.05	38.83	33.05	27.83	30.82	27.83	0.00	76.874
397.45	7.45	8.94	5.95	2.97	1.30	0.00	7.08	1396.12	7.08	8.98	161.88	8.98	33.28	38.86	33.28	28.43	31.97	28.43	0.00	77.764
397.50	7.50	9.00	6.00	3.00	1.33	0.00	7.11	1453.24	7.11	9.02	171.48	9.02	33.50	38.90	33.50	29.01	33.12	29.01	0.00	78.641
397.55	7.55	9.06	6.05	3.03	1.37	0.00	7.13	1512.20	7.13	9.06	181.52	9.06	33.73	38.96	33.73	29.59	34.26	29.59	0.00	79.504
397.60	7.60	9.12	6.10	3.07	1.40	0.00	7.16	1573.02	7.16	9.10	192.03	9.10	33.95	39.03	33.95	30.15	35.38	30.15	0.00	80.355
397.65	7.65	9.18	6.15	3.10	1.43	0.00	7.18	1635.76	7.18	9.14	203.02	9.14	34.17	39.13	34.17	30.71	36.49	30.71	0.00	81.193
397.70	7.70	9.24	6.20	3.13	1.47	0.00	7.21	1700.46	7.21	9.18	214.51	9.18	34.39	39.25	34.39	31.25	37.58	31.25	0.00	82.020
397.75	7.75	9.30	6.25	3.17	1.50	0.00	7.23	1767.16	7.23	9.22	226.52	9.22	34.60	39.39	34.60	31.78	38.66	31.78	0.00	82.836
397.80	7.80	9.36	6.30	3.20	1.53	0.00	7.25	1835.91	7.25	9.26	239.05	9.26	34.82	39.57	34.82	32.31	39.71	32.31	0.00	83.642
397.85	7.85	9.42	6.35	3.23	1.57	0.00	7.28	1906.75	7.28	9.30	252.13	9.30	35.03	39.77	35.03	32.83	40.74	32.83	0.00	84.437
397.90	7.90	9.48	6.40	3.27	1.60	0.00	7.30	1979.73	7.30	9.34	265.77	9.34	35.25	40.02	35.25	33.34	41.76	33.34	0.00	85.223
397.95	7.95	9.54	6.45	3.30	1.63	0.00	7.33	2054.90	7.33	9.38	279.99	9.38	35.46	40.31	35.46	33.84	42.74	33.84	0.00	86.000
398.00	8.00	9.60	6.50	3.33	1.67	0.00	7.35	2132.31	7.35	9.42	294.81	9.42	35.67	40.65	35.67	34.33	43.71	34.33	0.00	86.768
398.05	8.05	9.66	6.55	3.37	1.70	0.00	7.38	2212.00	7.38	9.46	310.24	9.46	35.88	41.03	35.88	34.82	44.64	34.82	0.00	87.528
398.10	8.10	9.72	6.60	3.40	1.73	0.00	7.40	2294.03	7.40	9.50	326.31	9.50	36.08	41.47	36.08	35.30	45.55	35.30	0.00	88.279
398.15	8.15	9.78	6.65	3.43	1.77	0.00	7.42	2378.44	7.42	9.53	343.03	9.53	36.29	41.98	36.29	35.77	46.43	35.77	0.00	89.023
398.20	8.20	9.84	6.70	3.47	1.80	0.00	7.45	2465.28	7.45	9.57	360.43	9.57	36.50	42.54	36.50	36.24	47.28	36.24	0.00	89.758
398.25	8.25	9.90	6.75	3.50	1.83	0.00	7.47	2554.61	7.47	9.61	378.51	9.61	36.70	43.18	36.70	36.70	48.10	36.70	0.00	90.487
398.30	8.30	9.96	6.80	3.53	1.87	0.00	7.50	2646.48	7.50	9.65	397.30	9.65	36.90	43.89	36.90	37.16	48.88	37.16	0.00	91.208
398.35	8.35	10.02	6.85	3.57	1.90	0.00	7.52	2740.94	7.52	9.69	416.83	9.69	37.11	44.68	37.11	37.61	49.64	37.61	0.00	91.923
398.40	8.40	10.08	6.90	3.60	1.93	0.00	7.54	2838.05	7.54	9.73	437.10	9.73	37.31	45.56	37.31	38.05	50.36	38.05	0.00	92.631
398.45	8.45	10.14	6.95	3.63	1.97	0.00	7.57	2937.85	7.57	9.76	458.15	9.76	37.51	46.53	37.51	38.49	51.05	38.49	0.00	93.332
398.50	8.50	10.20	7.00	3.67	2.00	0.00	7.59	3040.41	7.59	9.80	479.98	9.80	37.71	47.60	37.71	38.93	51.70	38.93	0.00	94.028
398.55	8.55	10.26	7.05	3.70	2.03	0.00	7.61	3145.78	7.61	9.84	502.63	9.84	37.90	48.77	37.90	39.36	52.32	39.36	0.00	94.717
398.60	8.60	10.32	7.10	3.73	2.07	0.00	7.64	3254.01	7.64	9.88	526.12	9.88	38.10	50.05	38.10	39.78	52.90	39.78	0.00	95.400
398.65	8.65	10.38	7.15	3.77	2.10	0.00	7.66	3365.17	7.66	9.91	550.46	9.91	38.30	51.45	38.30	40.20	53.45	40.20	0.00	96.078
398.70	8.70	10.44	7.20	3.80	2.13	0.00	7.68	3479.31	7.68	9.95	575.69	9.95	38.49	52.97	38.49	40.62	53.97	40.62	0.00	96.750
398.75	8.75	10.50	7.25	3.83	2.17	0.00	7.71	3596.49	7.71	9.99	601.81	9.99	38.69	54.62	38.69	41.03	54.45	41.03	0.00	97.416
398.80	8.80	10.56	7.30	3.87	2.20	0.00	7.73	3716.77	7.73	10.03	628.87	10.03	38.88	56.40	38.88	41.44	54.90	41.44	0.00	98.077
398.85	8.85	10.62	7.35	3.90	2.23	0.00	7.75	3840.21	7.75	10.06	656.87	10.06	39.07	58.34	39.07	41.85	55.31	41.85	0.00	98.734
398.90	8.90	10.68	7.40	3.93	2.27	0.00	7.78	3966.87	7.78	10.10	685.85	10.10	39.26	60.42	39.26	42.25	55.69	42.25	0.00	99.385
398.95	8.95	10.74	7.45	3.97	2.30	0.00	7.80	4096.81	7.80	10.14	715.82	10.14	39.45	62.66	39.45	42.64	56.03	42.64	0.00	100.031
399.00	9.00	10.80	7.50	4.00	2.33	0.00	7.82	4230.10	7.82	10.17	746.82	10.17	39.64	65.07	39.64	43.04	56.35	43.04	0.00	100.672
399.05	9.05	10.86	7.55	4.03	2.37	0.00	7.84	4366.80	7.84	10.21	778.87	10.21	39.83	67.65	39.83	43.43	56.63	43.43	0.00	101.309
399.10	9.10	10.92	7.60	4.07	2.40	0.00	7.87	4506.97	7.87	10.24	811.99	10.24	40.02	70.42	40.02	43.81	56.88	43.81	0.00	101.941
399.15	9.15	10.98	7.65	4.10	2.43	0.00	7.89	4650.68	7.89	10.28	846.21	10.28	40.20	73.38	40.20	44.19	57.10	44.19	0.00	102.569
399.20	9.20	11.04	7.70	4.13	2.47	0.00	7.91	4797.99	7.91	10.32	881.55	10.32	40.39	76.54	40.39	44.57	57.30	44.57	0.00	103.193
399.25	9.25	11.10	7.75	4.17	2.50	0.00	7.94	4948.97	7.94	10.35	918.05	10.35	40.57	79.91	40.57	44.95	57.47	44.95	0.00	103.812
399.30	9.30	11.16	7.80	4.20	2.53	0.00	7.96	5103.69	7.96	10.39	955.73	10.39	40.76	83.49	40.76	45.32	57.61	45.32	0.00	104.427
399.35	9.35	11.22	7.85	4.23	2.57	0.00	7.98	5262.21	7.98	10.42	994.62	10.42	40.94	87.30	40.94	45.69	57.73	45.69	0.00	105.038
399.40	9.40	11.28	7.90	4.27	2.60	0.00	8.00	5424.61	8.00	10.46	1034.74	10.46	41.12	91.35	41.12	46.06	57.83	46.06	0.00	105.645
399.45	9.45	11.34	7.95	4.30	2.63	0.00	8.02	5590.95	8.02	10.49	1076.13	10.49	41.31	95.65	41.31	46.42	57.92	46.42	0.00	106.248
399.50	9.50	11.40	8.00	4.33	2.67	0.00	8.05	5761.30	8.05	10.53	1118.81	10.53	41.49	100.20	41.49	46.79	57.98	46.79	0.00	106.848
399.55	9.55	11.46	8.05	4.37	2.70	0.00	8.07	5935.74	8.07	10.56	1162.82	10.56	41.67	105.02	41.67	47.14	58.03	47.14	0.00	107.443
399.60	9.60	11.52	8.10	4.40	2.73	0.00	8.09	6114.34	8.09	10.60	1208.17	10.60	41.85	110.11	41.85	47.50	58.07	47.50	0.00	108.035
399.65	9.65	11.58	8.15	4.43	2.77	0.00	8.11	6297.17	8.11	10.63	1254.91	10.63	42.02	115.50	42.02	47.85	58.10	47.85	0.00	108.624
399.70	9.70	11.64	8.20	4.47	2.80	0.00	8.13	6484.31	8.13	10.67	1303.07	10.67	42.20	121.18	42.20	48.20	58.13	48.20	0.00	109.209
399.75	9.75	11.70	8.25	4.50	2.83	0.00	8.16	6675.82	8.16	10.70	1352.66	10.70	42.38	127.17	42.38	48.55	58.15	48.55	0.00	109.790
399.80	9.80	11.76	8.30	4.53	2.87	0.00	8.18	6871.79	8.18	10.74	1403.74	10.74	42.56	133.48	42.56	48.90	58.18	48.90	0.00	110.368
399.85	9.85	11.82	8.35	4.57	2.90	0.00	8.20	7072.29	8.20	10.77	1456.32	10.77	42.73	140.12	42.73	49.24	58.20	49.24	0.00	110.943
399.90	9.90	11.88	8.40	4.60	2.93	0.00	8.22	7277.40	8.22	10.81	1510.44	10.81	42.91	147.11	42.91	49.58	58.24	49.58	0.00	111.515
399.95	9.95	11.94	8.45	4.63	2.97	0.00	8.24	7487.19	8.24	10.84	1566.13	10.84	43.08	154.45	43.08	49.92	58.29	49.92	0.00	112.083
400.00	10.00	12.00	8.50	4.67	3.00	0.00	8.27	7701.75	8.27	10.87	1623.43	10.87	43.25	162.16	43.25	50.26	58.36	50.26	0.00	112.648
400.05	10.05	12.06	8.55	4.70	3.03	0.00	8.29	7921.16	8.29	10.91	1682.37	10.91	43.43	170.25	43.43	50.59	58.44	50.59	0.00	113.210
400.10	10.10	12.12	8.60	4.73	3.07	0.00	8.31	8145.49	8.31	10.94	1742.98	10.94	43.60	178.73	43.60	50.92	58.55	50.92	0.00	113.769
400.15	10.15	12.18	8.65	4.77	3.10	0.00	8.33	8374.83	8.33	10.98	1805.30	10.98	43.77	187.62	43.77	51.25	58.69	51.25	0.00	114.325
400.20	10.20	12.24	8.70	4.80	3.13	0.00	8.35	8609.26	8.35	11.01	1869.37	11.01	43.94	196.93	43.94	51.58	58.87	51.58	0.00	114.878
400.25	10.25	12.30	8.75	4.83	3.17	0.00	8.37	8848.87	8.37	11.04	1935.21	11.04	44.11	206.67	44.11	51.90	59.09	51.90	0.00	115.428
400.30	10.30	12.36	8.80	4.87	3.20	0.00	8.39	9093.73	8.39	11.08	2002.87	11.08	44.28	216.86	44.28	52.23	59.35	52.23	0.00	115.976
400.35	10.35	12.42	8.85	4.90	3.23	0.00	8.41	9343.94	8.41	11.11	2072.38	11.11	44.45	227.51	44.45	52.55	59.66	52.55	0.00	116.520
400.40	10.40	12.48	8.90	4.93	3.27	0.00	8.44	9599.58	8.44	11.14	2143.79	11.14	44.62	238.63	44.62	52.87	60.03	52.87	0.00	117.062
400.45	10.45	12.54	8.95	4.97	3.30	0.00	8.46	9860.73	8.46	11.18	2217.11	11.18	44.78	250.24	44.78	53.19	60.47	53.19	0.00	117.601
400.50	10.50	12.60	9.00	5.00	3.33	0.00	8.48	10127.49	8.48	11.21	2292.40	11.21	44.95	262.36	44.95	53.50	60.97	53.50	0.00	118.138
400.55	10.55	12.66	9.05	5.03	3.37	0.00	8.50	10399.94	8.50	11.24	2369.70	11.24	45.12	275.00	45.12	53.81	61.55	53.81	0.00	118.672
400.60	10.60	12.72	9.10	5.07	3.40	0.00	8.52	10678.17	8.52	11.27	2449.03	11.27	45.28	288.17	45.28	54.13	62.21	54.13	0.00	119.203
400.65	10.65	12.78	9.15	5.10	3.43	0.00	8.54	10962.28	8.54	11.31	2530.45	11.31	45.45	301.89	45.45	54.44	62.96	54.44	0.00	119.732
400.70	10.70	12.84	9.20	5.13	3.47	0.00	8.56	11252.35	8.56	11.34	2613.99	11.34	45.61	316.18	45.61	54.75	63.81	54.75	0.00	120.258
400.75	10.75	12.90	9.25	5.17	3.50	0.00	8.58	11548.49	8.58	11.37	2699.69	11.37	45.77	331.05	45.77	55.05	64.77	55.05	0.00	120.782
400.80	10.80	12.96	9.30	5.20	3.53	0.00	8.60	11850.77	8.60	11.41	2787.59	11.41	45.94	346.51	45.94	55.36	65.83	55.36	0.00	121.303
400.85	10.85	13.02	9.35	5.23	3.57	0.00	8.62	12159.30	8.62	11.44	2877.73	11.44	46.10	362.60	46.10	55.66	67.02	55.66	0.00	121.822
400.90	10.90	13.08	9.40	5.27	3.60	0.00	8.64	12474.17	8.64	11.47	2970.16	11.47	46.26	379.31	46.26	55.96	68.34	55.96	0.00	122.339
400.95	10.95	13.14	9.45	5.30	3.63	0.00	8.67	12795.48	8.67	11.50	3064.92	11.50	46.42	396.68	46.42	56.26	69.79	56.26	0.00	122.853
401.00	11.00	13.20	9.50	5.33	3.67	0.00	8.69	13123.32	8.69	11.53	3162.05	11.53	46.58	414.71	46.58	56.56	71.39	56.56	0.00	123.365
401.05	11.05	13.26	9.55	5.37	3.70	0.00	8.71	13457.80	8.71	11.57	3261.59	11.57	46.75	433.42	46.75	56.86	73.15	56.86	0.00	123.875
401.10	11.10	13.32	9.60	5.40	3.73	0.00	8.73	13799.01	8.73	11.60	3363.59	11.60	46.90	452.84	46.90	57.15	75.07	57.15	0.00	124.383
401.15	11.15	13.38	9.65	5.43	3.77	0.00	8.75	14147.06	8.75	11.63	3468.10	11.63	47.06	472.98	47.06	57.45	77.17	57.45	0.00	124.888
401.20	11.20	13.44	9.70	5.47	3.80	0.00	8.77	14502.03	8.77	11.66	3575.15	11.66	47.22	493.87	47.22	57.74	79.45	57.74	0.00	125.391
401.25	11.25	13.50	9.75	5.50	3.83	0.00	8.79	14864.05	8.79	11.69	3684.79	11.69	47.38	515.51	47.38	58.03	81.93	58.03	0.00	125.892
401.30	11.30	13.56	9.80	5.53	3.87	0.00	8.81	15233.20	8.81	11.72	3797.08	11.72	47.54	537.92	47.54	58.32	84.61	58.32	0.00	126.391
401.35	11.35	13.62	9.85	5.57	3.90	0.00	8.83	15609.60	8.83	11.76	3912.05	11.76	47.70	561.14	47.70	58.61	87.50	58.61	0.00	126.888
401.40	11.40	13.68	9.90	5.60	3.93	0.00	8.85	15993.35	8.85	11.79	4029.75	11.79	47.85	585.18	47.85	58.89	90.63	58.89	0.00	127.383
401.45	11.45	13.74	9.95	5.63	3.97	0.00	8.87	16384.55	8.87	11.82	4150.23	11.82	48.01	610.05	48.01	59.18	93.99	59.18	0.00	127.875
401.50	11.50	13.80	10.00	5.67	4.00	0.00	8.89	16783.32	8.89	11.85	4273.55	11.85	48.16	635.78	48.16	59.46	97.61	59.46	0.00	128.366
401.55	11.55	13.86	10.05	5.70	4.03	0.01	8.91	17189.76	8.91	11.88	4399.74	11.88	48.32	662.39	48.32	59.75	101.48	59.75	2.38	131.238
401.60	11.60	13.92	10.10	5.73	4.07	0.02	8.93	17603.97	8.93	11.91	4528.85	11.91	48.47	689.90	48.47	60.03	105.63	60.03	6.74	136.081
401.65	11.65	13.98	10.15	5.77	4.10	0.03	8.95	18026.08	8.95	11.94	4660.95	11.94	48.63	718.34	48.63	60.31	110.07	60.31	12.38	142.208
401.70	11.70	14.04	10.20	5.80	4.13	0.04	8.97	18456.19	8.97	11.97	4796.07	11.97	48.78	747.72	48.78	60.58	114.81	60.58	19.06	149.372
401.75	11.75	14.10	10.25	5.83	4.17	0.05	8.99	18894.42	8.99	12.01	4934.27	12.01	48.94	778.06	48.94	60.86	119.86	60.86	26.64	157.431
401.80	11.80	14.16	10.30	5.87	4.20	0.06	9.01	19340.87	9.01	12.04	5075.59	12.04	49.09	809.39	49.09	61.14	125.24	61.14	35.02	166.289
401.85	11.85	14.22	10.35	5.90	4.23	0.07	9.03	19795.66	9.03	12.07	5220.10	12.07	49.24	841.74	49.24	61.41	130.96	61.41	44.13	175.877
401.90	11.90	14.28	10.40	5.93	4.27	0.08	9.05	20258.91	9.05	12.10	5367.85	12.10	49.39	875.12	49.39	61.69	137.03	61.69	53.92	186.139
401.96	11.96	14.35	10.46	5.97	4.31	0.09	9.07	20826.14	9.07	12.13	5549.48	12.13	49.57	916.57	49.57	62.01	144.81	62.01	66.49	199.282
402.00	12.00	14.40	10.50	6.00	4.33	0.09	9.09	21211.26	9.09	12.16	5673.25	12.16	49.69	945.07	49.69	62.23	150.30	62.23	75.35	208.518
402.05	12.05	14.46	10.55	6.03	4.37	0.10	9.11	21700.59	9.11	12.19	5831.02	12.19	49.84	981.69	49.84	62.50	157.53	62.50	86.93	220.569
402.10	12.10	14.52	10.60	6.07	4.40	0.11	9.13	22198.84	9.13	12.22	5992.24	12.22	49.99	1019.45	49.99	62.77	165.17	62.77	99.05	233.157

390.20	0.20	0.24	0.00	0.00	0.00	0.00	0.00	0.12	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.120
390.25	0.25	0.30	0.00	0.00	0.00	0.00	0.00	0.18	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.184
402.15	12.15	14.58	10.65	6.10	4.43	0.12	9.15	22706.15	9.15	12.25	6156.96	12.25	50.14	1058.36	50.14	63.04	173.25	63.04	111.68	246.259
402.20	12.20	14.64	10.70	6.13	4.47	0.13	9.17	23222.63	9.17	12.28	6325.25	12.28	50.29	1098.44	50.29	63.30	181.77	63.30	124.82	259.856
402.25	12.25	14.70	10.75	6.17	4.50	0.14	9.18	23748.41	9.18	12.31	6497.16	12.31	50.44	1139.74	50.44	63.57	190.75	63.57	138.43	273.929
402.30	12.30	14.76	10.80	6.20	4.53	0.15	9.20	24283.61	9.20	12.34	6672.74	12.34	50.59	1182.26	50.59	63.83	200.22	63.83	152.50	288.461
402.35	12.35	14.82	10.85	6.23	4.57	0.16	9.22	24828.35	9.22	12.37	6852.05	12.37	50.74	1226.04	50.74	64.10	210.18	64.10	167.01	303.439
402.40	12.40	14.88	10.90	6.27	4.60	0.17	9.24	25382.76	9.24	12.40	7035.16	12.40	50.88	1271.11	50.88	64.36	220.66	64.36	181.97	318.849
402.45	12.45	14.94	10.95	6.30	4.63	0.18	9.26	25946.97	9.26	12.43	7222.12	12.43	51.03	1317.48	51.03	64.62	231.67	64.62	197.34	334.678
402.50	12.50	15.00	11.00	6.33	4.67	0.19	9.28	26521.11	9.28	12.46	7412.99	12.46	51.18	1365.20	51.18	64.88	243.24	64.88	213.12	350.916
402.55	12.55	15.06	11.05	6.37	4.70	0.20	9.30	27105.31	9.30	12.49	7607.83	12.49	51.32	1414.27	51.32	65.14	255.37	65.14	229.30	367.552
402.60	12.60	15.12	11.10	6.40	4.73	0.21	9.32	27699.69	9.32	12.52	7806.71	12.52	51.47	1464.74	51.47	65.40	268.10	65.40	245.87	384.577
402.65	12.65	15.18	11.15	6.43	4.77	0.22	9.34	28304.39	9.34	12.55	8009.68	12.55	51.61	1516.64	51.61	65.65	281.43	65.65	262.83	401.981
402.70	12.70	15.24	11.20	6.47	4.80	0.23	9.36	28919.54	9.36	12.58	8216.80	12.58	51.76	1569.98	51.76	65.91	295.39	65.91	280.15	419.756
402.75	12.75	15.30	11.25	6.50	4.83	0.23	9.38	29545.28	9.38	12.61	8428.14	12.61	51.90	1624.80	51.90	66.16	310.00	66.16	297.84	437.894
402.80	12.80	15.36	11.30	6.53	4.87	0.24	9.40	30181.74	9.40	12.63	8643.77	12.63	52.05	1681.13	52.05	66.42	325.29	66.42	315.89	456.389
402.85	12.85	15.42	11.35	6.57	4.90	0.25	9.41	30829.05	9.41	12.66	8863.74	12.66	52.19	1738.99	52.19	66.67	341.26	66.67	334.29	475.232
402.90	12.90	15.48	11.40	6.60	4.93	0.26	9.43	31487.36	9.43	12.69	9088.12	12.69	52.33	1798.43	52.33	66.92	357.95	66.92	353.03	494.418
402.95	12.95	15.54	11.45	6.63	4.97	0.27	9.45	32156.81	9.45	12.72	9316.97	12.72	52.48	1859.46	52.48	67.17	375.37	67.17	372.11	513.940
403.00	13.00	15.60	11.50	6.67	5.00	0.28	9.47	32837.53	9.47	12.75	9550.37	12.75	52.62	1922.12	52.62	67.42	393.54	67.42	383.71	525.972
403.05	13.05	15.66	11.55	6.70	5.03	0.29	9.49	33529.66	9.49	12.78	9788.37	12.78	52.76	1986.44	52.76	67.67	412.50	67.67	390.05	532.754
403.10	13.10	15.72	11.60	6.73	5.07	0.30	9.51	34233.34	9.51	12.81	10031.05	12.81	52.90	2052.45	52.90	67.92	432.25	67.92	396.29	539.433
403.15	13.15	15.78	11.65	6.77	5.10	0.31	9.53	34948.73	9.53	12.84	10278.48	12.84	53.04	2120.18	53.04	68.17	452.83	68.17	402.43	546.013
403.20	13.20	15.84	11.70	6.80	5.13	0.32	9.55	35675.96	9.55	12.87	10530.71	12.87	53.19	2189.68	53.19	68.42	474.26	68.42	408.49	552.500
403.25	13.25	15.90	11.75	6.83	5.17	0.33	9.56	36415.18	9.56	12.90	10787.82	12.90	53.33	2260.96	53.33	68.66	496.57	68.66	414.45	558.897
403.30	13.30	15.96	11.80	6.87	5.20	0.34	9.58	37166.53	9.58	12.92	11049.89	12.92	53.47	2334.06	53.47	68.91	519.77	68.91	420.33	565.209
403.35	13.35	16.02	11.85	6.90	5.23	0.35	9.60	37930.17	9.60	12.95	11316.97	12.95	53.61	2409.01	53.61	69.15	543.89	69.15	426.13	571.437
403.40	13.40	16.08	11.90	6.93	5.27	0.36	9.62	38706.24	9.62	12.98	11589.15	12.98	53.75	2485.86	53.75	69.39	568.97	69.39	431.85	577.587
403.45	13.45	16.14	11.95	6.97	5.30	0.37	9.64	39494.89	9.64	13.01	11866.48	13.01	53.88	2564.63	53.88	69.64	595.01	69.64	437.49	583.660
403.50	13.50	16.20	12.00	7.00	5.33	0.38	9.66	40296.28	9.66	13.04	12149.06	13.04	54.02	2645.35	54.02	69.88	622.06	69.88	443.07	589.661
403.55	13.55	16.26	12.05	7.03	5.37	0.38	9.68	41110.56	9.68	13.07	12436.94	13.07	54.16	2728.07	54.16	70.12	650.14	70.12	448.57	595.590
403.60	13.60	16.32	12.10	7.07	5.40	0.39	9.69	41937.87	9.69	13.09	12730.20	13.09	54.30	2812.82	54.30	70.36	679.26	70.36	454.01	601.452
403.65	13.65	16.38	12.15	7.10	5.43	0.40	9.71	42778.39	9.71	13.12	13028.92	13.12	54.44	2899.63	54.44	70.60	709.48	70.60	459.38	607.248
403.70	13.70	16.44	12.20	7.13	5.47	0.41	9.73	43632.26	9.73	13.15	13333.17	13.15	54.57	2988.54	54.57	70.83	740.80	70.83	464.69	612.981
403.75	13.75	16.50	12.25	7.17	5.50	0.42	9.75	44499.63	9.75	13.18	13643.03	13.18	54.71	3079.59	54.71	71.07	773.26	71.07	469.94	618.653
403.80	13.80	16.56	12.30	7.20	5.53	0.43	9.77	45380.68	9.77	13.21	13958.57	13.21	54.85	3172.82	54.85	71.31	806.89	71.31	475.13	624.265
403.85	13.85	16.62	12.35	7.23	5.57	0.44	9.79	46275.56	9.79	13.23	14279.87	13.23	54.98	3268.25	54.98	71.54	841.71	71.54	480.27	629.820
403.90	13.90	16.68	12.40	7.27	5.60	0.45	9.80	47184.42	9.80	13.26	14607.00	13.26	55.12	3365.94	55.12	71.78	877.76	71.78	485.35	635.319

Otay Ranch Village 7 R-8 / Stage Storage	
Ex Detention Bain	
Depth (ft)	Area (sqft)
0.00	17535
0.05	17647
0.10	17758
0.15	17870
0.20	17982
0.25	18093
0.30	18205
0.35	18317
0.40	18428
0.45	18540
0.50	18651
0.55	18763
0.60	18875
0.65	18986
0.70	19098
0.75	19210
0.80	19321
0.85	19433
0.90	19545
0.95	19656
1.00	19768
1.05	19873
1.10	19979
1.15	20085
1.20	20190
1.25	20296
1.30	20401
1.35	20507
1.40	20613
1.45	20718
1.50	20824
1.55	20929
1.60	21035
1.65	21140
1.70	21246
1.75	21352
1.80	21457
1.85	21563
1.90	21668
1.95	21774
2.00	21880
2.05	21991

Depth (ft)	Area (sqft)
2.10	22102
2.15	22213
2.20	22325
2.25	22436
2.30	22547
2.35	22659
2.40	22770
2.45	22881
2.50	22993
2.55	23104
2.60	23215
2.65	23326
2.70	23438
2.75	23549
2.80	23660
2.85	23772
2.90	23883
2.95	23994
3.00	24106
3.05	24215
3.10	24325
3.15	24435
3.20	24545
3.25	24655
3.30	24765
3.35	24875
3.40	24985
3.45	25095
3.50	25205
3.55	25315
3.60	25425
3.65	25535
3.70	25645
3.75	25755
3.80	25865
3.85	25975
3.90	26085
3.95	26195
4.00	26305
4.05	26420
4.10	26536
4.15	26652
4.20	26768
4.25	26883
4.30	26999

Depth (ft)	Area (sqft)
4.35	27115
4.40	27230
4.45	27346
4.50	27462
4.55	27578
4.60	27693
4.65	27809
4.70	27925
4.75	28040
4.80	28156
4.85	28272
4.90	28388
4.95	28503
5.00	28619
5.05	28739
5.10	28860
5.15	28980
5.20	29101
5.25	29221
5.30	29342
5.35	29462
5.40	29582
5.45	29703
5.50	29823
5.55	29944
5.60	30064
5.65	30184
5.70	30305
5.75	30425
5.80	30546
5.85	30666
5.90	30787
5.95	30907
6.00	31027
6.05	31160
6.10	31292
6.15	31424
6.20	31557
6.25	31689
6.30	31821
6.35	31954
6.40	32086
6.45	32219
6.50	32351
6.55	32483

Depth (ft)	Area (sqft)
6.60	32616
6.65	32748
6.70	32880
6.75	33013
6.80	33145
6.85	33277
6.90	33410
6.95	33542
7.00	33674
7.05	33810
7.10	33945
7.15	34081
7.20	34216
7.25	34352
7.30	34487
7.35	34623
7.40	34758
7.45	34894
7.50	35029
7.55	35165
7.60	35300
7.65	35436
7.70	35571
7.75	35707
7.80	35842
7.85	35977
7.90	36113
7.95	36248
8.00	36384
8.05	36523
8.10	36662
8.15	36801
8.20	36941
8.25	37080
8.30	37219
8.35	37358
8.40	37497
8.45	37636
8.50	37776
8.55	37915
8.60	38054
8.65	38193
8.70	38332
8.75	38471
8.80	38611

Depth (ft)	Area (sqft)
8.85	38750
8.90	38889
8.95	39028
9.00	39167
9.05	39311
9.10	39455
9.15	39599
9.20	39743
9.25	39887
9.30	40031
9.35	40175
9.40	40319
9.45	40463
9.50	40607
9.55	40751
9.60	40895
9.65	41039
9.70	41183
9.75	41327
9.80	41471
9.85	41615
9.90	41759
9.95	41903
10.00	42047
10.05	42200
10.10	42353
10.15	42506
10.20	42659
10.25	42812
10.30	42965
10.35	43118
10.40	43271
10.45	43424
10.50	43577
10.55	43730
10.60	43883
10.65	44036
10.70	44189
10.75	44342
10.80	44495
10.85	44648
10.90	44801
10.95	44954
11.00	45107
11.05	45270

Depth (ft)	Area (sqft)
11.10	45432
11.15	45595
11.20	45758
11.25	45920
11.30	46083
11.35	46246
11.40	46408
11.45	46571
11.50	46734
11.55	46896
11.60	47059
11.65	47222
11.70	47384
11.75	47547
11.80	47710
11.85	47872
11.90	48035
11.95	48198
12.00	48360
12.05	48537
12.10	48713
12.15	48889
12.20	49066
12.25	49242
12.30	49419
12.35	49595
12.40	49772
12.45	49948
12.50	50124
12.55	50301
12.60	50477
12.65	50654
12.70	50830
12.75	51007
12.80	51183
12.85	51359
12.90	51536
12.95	51712
13.00	51889
13.05	52065
13.10	52242
13.15	52418
13.20	52594
13.25	52771
13.30	52947

Depth (ft)	Area (sqft)
13.35	53124
13.40	53300
13.45	53477
13.50	53653
13.55	53829
13.60	54006
13.65	54182
13.70	54359
13.75	54535
13.80	54712
13.85	54888
13.90	55064

Ex Basin		$Q_{Sub\ Drain}$=	0.000	cfs
Elevation	Q_{AVG} (CFS)	DV (CF)	DT (HR)	Total T
0.00	0.000	879.5	60.807	93.32
0.05	0.008	885.1	12.577	32.51
0.10	0.031	890.7	4.968	19.94
0.15	0.069	896.3	2.642	14.97
0.20	0.120	901.9	1.646	12.33
0.25	0.184	907.5	1.130	10.68
0.30	0.262	913.0	0.829	9.55
0.35	0.350	918.6	0.637	8.72
0.40	0.450	924.2	0.508	8.08
0.45	0.560	929.8	0.417	7.58
0.50	0.680	935.4	0.349	7.16
0.55	0.808	940.9	0.299	6.81
0.60	0.943	946.5	0.259	6.51
0.65	1.085	952.1	0.228	6.25
0.70	1.232	957.7	0.203	6.02
0.75	1.385	963.3	0.183	5.82
0.80	1.541	968.9	0.166	5.64
0.85	1.700	974.4	0.152	5.47
0.90	1.861	980.0	0.143	5.32
0.95	1.950	985.6	0.137	5.18
1.00	2.039	991.0	0.132	5.04
1.05	2.125	996.3	0.128	4.91
1.10	2.207	1001.6	0.124	4.78
1.15	2.286	1006.9	0.120	4.65
1.20	2.363	1012.1	0.117	4.53
1.25	2.437	1017.4	0.114	4.42
1.30	2.509	1022.7	0.112	4.30
1.35	2.579	1028.0	0.109	4.19
1.40	2.648	1033.3	0.107	4.08
1.45	2.714	1038.5	0.105	3.98
1.50	2.779	1043.8	0.103	3.87
1.55	2.851	1049.1	0.101	3.77
1.60	2.939	1054.4	0.098	3.67
1.65	3.041	1059.7	0.095	3.57
1.70	3.157	1064.9	0.092	3.47
1.75	3.288	1070.2	0.088	3.38
1.80	3.431	1075.5	0.085	3.29
1.85	3.588	1080.8	0.082	3.21
1.90	3.756	1086.1	0.078	3.13
1.95	3.936	1091.3	0.075	3.05
2.00	4.126	1096.8	0.072	2.97
2.05	4.327	1102.3	0.069	2.90
2.10	4.536	1107.9	0.066	2.83
2.15	4.754	1113.5	0.064	2.77
2.20	4.980	1119.0	0.061	2.70
2.25	5.213	1124.6	0.059	2.64
2.30	5.452	1130.1	0.056	2.58
2.35	5.696	1135.7	0.054	2.53
2.40	5.944	1141.3	0.052	2.47
2.45	6.196	1146.8	0.050	2.42
2.50	6.451	1152.4	0.049	2.37

Ex Basin		$Q_{Sub\ Drain}$=	0.000	cfs
Elevation	Q_{AVG} (CFS)	DV (CF)	DT (HR)	Total T
2.55	6.708	1158.0	0.047	2.32
2.60	6.923	1163.5	0.046	2.27
2.65	7.090	1169.1	0.045	2.23
2.70	7.251	1174.7	0.045	2.18
2.75	7.408	1180.2	0.044	2.14
2.80	7.561	1185.8	0.043	2.09
2.85	7.710	1191.4	0.043	2.05
2.90	7.855	1196.9	0.042	2.01
2.95	7.997	1202.5	0.041	1.97
3.00	8.136	1208.0	0.041	1.92
3.05	8.295	1213.5	0.040	1.88
3.10	8.492	1219.0	0.039	1.84
3.15	8.726	1224.5	0.038	1.80
3.20	8.998	1230.0	0.037	1.77
3.25	9.306	1235.5	0.036	1.73
3.30	9.649	1241.0	0.035	1.69
3.35	10.027	1246.5	0.034	1.66
3.40	10.439	1252.0	0.033	1.62
3.45	10.884	1257.5	0.031	1.59
3.50	11.360	1263.0	0.030	1.56
3.55	11.868	1268.5	0.029	1.53
3.60	12.405	1274.0	0.028	1.50
3.65	12.971	1279.5	0.027	1.47
3.70	13.565	1285.0	0.026	1.45
3.75	14.185	1290.5	0.025	1.42
3.80	14.831	1296.0	0.024	1.39
3.85	15.500	1301.5	0.023	1.37
3.90	16.192	1307.0	0.022	1.35
3.95	16.906	1312.5	0.021	1.33
4.00	17.639	1318.1	0.020	1.31
4.05	18.392	1323.9	0.020	1.28
4.10	19.162	1329.7	0.019	1.27
4.15	19.948	1335.5	0.018	1.25
4.20	20.750	1341.3	0.018	1.23
4.25	21.564	1347.1	0.017	1.21
4.30	22.391	1352.8	0.016	1.19
4.35	23.228	1358.6	0.016	1.18
4.40	24.074	1364.4	0.015	1.16
4.45	24.929	1370.2	0.015	1.15
4.50	25.789	1376.0	0.015	1.13
4.55	26.655	1381.8	0.014	1.12
4.60	27.525	1387.6	0.014	1.10
4.65	28.397	1393.3	0.014	1.09
4.70	28.706	1399.1	0.013	1.07
4.75	29.235	1404.9	0.013	1.06
4.80	29.752	1410.7	0.013	1.05
4.85	30.258	1416.5	0.013	1.03
4.90	30.754	1422.3	0.013	1.02
4.95	31.241	1428.1	0.013	1.01
5.00	31.718	1434.0	0.012	1.00
5.05	32.188	1440.0	0.012	0.98

Ex Basin		$Q_{Sub\ Drain}$=	0.000	cfs
Elevation	Q_{AVG} (CFS)	DV (CF)	DT (HR)	Total T
5.10	32.649	1446.0	0.012	0.97
5.15	33.103	1452.0	0.012	0.96
5.20	33.550	1458.0	0.012	0.95
5.25	33.990	1464.1	0.012	0.94
5.30	34.424	1470.1	0.012	0.92
5.35	34.852	1476.1	0.012	0.91
5.40	35.273	1482.1	0.012	0.90
5.45	35.689	1488.2	0.012	0.89
5.50	36.100	1494.2	0.011	0.88
5.55	36.539	1500.2	0.011	0.87
5.60	37.034	1506.2	0.011	0.85
5.65	37.585	1512.2	0.011	0.84
5.70	38.190	1518.3	0.011	0.83
5.75	38.848	1524.3	0.011	0.82
5.80	39.558	1530.3	0.011	0.81
5.85	40.320	1536.3	0.010	0.80
5.90	41.130	1542.3	0.010	0.79
5.95	41.989	1548.4	0.010	0.78
6.00	42.895	1554.7	0.010	0.77
6.05	43.845	1561.3	0.010	0.76
6.10	44.840	1567.9	0.010	0.75
6.15	45.876	1574.5	0.009	0.74
6.20	46.952	1581.1	0.009	0.73
6.25	48.067	1587.8	0.009	0.72
6.30	49.218	1594.4	0.009	0.71
6.35	50.405	1601.0	0.009	0.70
6.40	51.624	1607.6	0.009	0.69
6.45	52.874	1614.2	0.008	0.69
6.50	54.154	1620.9	0.008	0.68
6.55	55.461	1627.5	0.008	0.67
6.60	56.793	1634.1	0.008	0.66
6.65	58.148	1640.7	0.008	0.65
6.70	59.524	1647.3	0.008	0.65
6.75	60.919	1653.9	0.007	0.64
6.80	62.332	1660.6	0.007	0.63
6.85	63.759	1667.2	0.007	0.62
6.90	65.199	1673.8	0.007	0.62
6.95	66.650	1680.4	0.007	0.61
7.00	68.110	1687.1	0.007	0.60
7.05	69.577	1693.9	0.007	0.59
7.10	71.048	1700.7	0.007	0.59
7.15	72.522	1707.4	0.007	0.58
7.20	73.151	1714.2	0.006	0.58
7.25	74.108	1721.0	0.006	0.57
7.30	75.047	1727.7	0.006	0.56
7.35	75.968	1734.5	0.006	0.56
7.40	76.874	1741.3	0.006	0.55
7.45	77.764	1748.1	0.006	0.54
7.50	78.641	1754.8	0.006	0.54
7.55	79.504	1761.6	0.006	0.53
7.60	80.355	1768.4	0.006	0.52

Ex Basin		$Q_{Sub\ Drain}$=	0.000	cfs
Elevation	Q_{AVG} (CFS)	DV (CF)	DT (HR)	Total T
7.65	81.193	1775.2	0.006	0.52
7.70	82.020	1781.9	0.006	0.51
7.75	82.836	1788.7	0.006	0.51
7.80	83.642	1795.5	0.006	0.50
7.85	84.437	1802.3	0.006	0.49
7.90	85.223	1809.0	0.006	0.49
7.95	86.000	1815.8	0.006	0.48
8.00	86.768	1822.7	0.006	0.48
8.05	87.528	1829.6	0.006	0.47
8.10	88.279	1836.6	0.006	0.47
8.15	89.023	1843.6	0.006	0.46
8.20	89.758	1850.5	0.006	0.45
8.25	90.487	1857.5	0.006	0.45
8.30	91.208	1864.4	0.006	0.44
8.35	91.923	1871.4	0.006	0.44
8.40	92.631	1878.3	0.006	0.43
8.45	93.332	1885.3	0.006	0.43
8.50	94.028	1892.3	0.006	0.42
8.55	94.717	1899.2	0.006	0.41
8.60	95.400	1906.2	0.006	0.41
8.65	96.078	1913.1	0.006	0.40
8.70	96.750	1920.1	0.005	0.40
8.75	97.416	1927.1	0.005	0.39
8.80	98.077	1934.0	0.005	0.39
8.85	98.734	1941.0	0.005	0.38
8.90	99.385	1947.9	0.005	0.38
8.95	100.031	1954.9	0.005	0.37
9.00	100.672	1962.0	0.005	0.37
9.05	101.309	1969.2	0.005	0.36
9.10	101.941	1976.4	0.005	0.35
9.15	102.569	1983.6	0.005	0.35
9.20	103.193	1990.8	0.005	0.34
9.25	103.812	1998.0	0.005	0.34
9.30	104.427	2005.2	0.005	0.33
9.35	105.038	2012.4	0.005	0.33
9.40	105.645	2019.6	0.005	0.32
9.45	106.248	2026.8	0.005	0.32
9.50	106.848	2034.0	0.005	0.31
9.55	107.443	2041.2	0.005	0.31
9.60	108.035	2048.4	0.005	0.30
9.65	108.624	2055.6	0.005	0.30
9.70	109.209	2062.8	0.005	0.29
9.75	109.790	2070.0	0.005	0.29
9.80	110.368	2077.2	0.005	0.28
9.85	110.943	2084.4	0.005	0.28
9.90	111.515	2091.6	0.005	0.27
9.95	112.083	2098.8	0.005	0.26
10.00	112.648	2106.2	0.005	0.26
10.05	113.210	2113.8	0.005	0.25
10.10	113.769	2121.5	0.005	0.25
10.15	114.325	2129.1	0.005	0.24

Ex Basin		$Q_{Sub\ Drain}$=	0.000	cfs
Elevation	Q_{AVG} (CFS)	DV (CF)	DT (HR)	Total T
10.20	114.878	2136.8	0.005	0.24
10.25	115.428	2144.4	0.005	0.23
10.30	115.976	2152.1	0.005	0.23
10.35	116.520	2159.7	0.005	0.22
10.40	117.062	2167.4	0.005	0.22
10.45	117.601	2175.0	0.005	0.21
10.50	118.138	2182.7	0.005	0.21
10.55	118.672	2190.3	0.005	0.20
10.60	119.203	2198.0	0.005	0.20
10.65	119.732	2205.6	0.005	0.19
10.70	120.258	2213.3	0.005	0.19
10.75	120.782	2220.9	0.005	0.18
10.80	121.303	2228.6	0.005	0.18
10.85	121.822	2236.2	0.005	0.17
10.90	122.339	2243.9	0.005	0.17
10.95	122.853	2251.5	0.005	0.16
11.00	123.365	2259.4	0.005	0.16
11.05	123.875	2267.6	0.005	0.15
11.10	124.383	2275.7	0.005	0.15
11.15	124.888	2283.8	0.005	0.14
11.20	125.391	2292.0	0.005	0.14
11.25	125.892	2300.1	0.005	0.13
11.30	126.391	2308.2	0.005	0.13
11.35	126.888	2316.4	0.005	0.12
11.40	127.383	2324.5	0.005	0.12
11.45	127.875	2332.6	0.005	0.11
11.50	128.366	2340.7	0.005	0.11
11.55	131.238	2348.9	0.005	0.10
11.60	136.081	2357.0	0.005	0.10
11.65	142.208	2365.1	0.005	0.09
11.70	149.372	2373.3	0.004	0.09
11.75	157.431	2381.4	0.004	0.08
11.80	166.289	2389.5	0.004	0.08
11.85	175.877	2397.7	0.004	0.08
11.90	186.139	2405.8	0.003	0.07
11.95	199.282	2413.9	0.003	0.07
12.00	208.518	2422.4	0.003	0.06
12.05	220.569	2431.2	0.003	0.06
12.10	233.157	2440.1	0.003	0.06
12.15	246.259	2448.9	0.003	0.06
12.20	259.856	2457.7	0.003	0.05
12.25	273.929	2466.5	0.002	0.05
12.30	288.461	2475.3	0.002	0.05
12.35	303.439	2484.2	0.002	0.05
12.40	318.849	2493.0	0.002	0.04
12.45	334.678	2501.8	0.002	0.04
12.50	350.916	2510.6	0.002	0.04
12.55	367.552	2519.5	0.002	0.04
12.60	384.577	2528.3	0.002	0.04
12.65	401.981	2537.1	0.002	0.03
12.70	419.756	2545.9	0.002	0.03

Ex Basin		$Q_{Sub\ Drain}$=	0.000	cfs
Elevation	Q_{AVG} (CFS)	DV (CF)	DT (HR)	Total T
12.75	437.894	2554.7	0.002	0.03
12.80	456.389	2563.6	0.002	0.03
12.85	475.232	2572.4	0.001	0.03
12.90	494.418	2581.2	0.001	0.03
12.95	513.940	2590.0	0.001	0.02
13.00	525.972	2598.8	0.001	0.02
13.05	532.754	2607.7	0.001	0.02
13.10	539.433	2616.5	0.001	0.02
13.15	546.013	2625.3	0.001	0.02
13.20	552.500	2634.1	0.001	0.02
13.25	558.897	2643.0	0.001	0.02
13.30	565.209	2651.8	0.001	0.01
13.35	571.437	2660.6	0.001	0.01
13.40	577.587	2669.4	0.001	0.01
13.45	583.660	2678.2	0.001	0.01
13.50	589.661	2687.1	0.001	0.01
13.55	595.590	2695.9	0.001	0.01
13.60	601.452	2704.7	0.001	0.01
13.65	607.248	2713.5	0.001	0.01
13.70	612.981	2722.3	0.001	0.00
13.75	618.653	2731.2	0.001	0.00
13.80	624.265	2740.0	0.001	0.00
13.85	629.820	2748.8	0.001	0.00
13.90	635.319	0.0	0.000	0.00

POC 2

Vault #1 Discharge

Discharge vs Elevation Table

Low orifice:	1.922 "	Top orifice:	3 "
Number:	1	Number:	4
Cg-low:	0.61	Cg-low:	0.61
invert elev:	0.00 ft	invert elev:	4.00 ft
Middle orifice:	2.5 "	Emergency inlet:	
number of orif:	2	Rim height:	4.65 ft
Cg-middle:	0.61	Riser Box LxW	3x1.92 sq ft
invert elev:	2.70 ft	Weir Length	5.75 ft

h (ft)	H/D-low -	H/D-mid -	H/D-top -	Qlow-orif (cfs)	Qlow-weir (cfs)	Qtot-low (cfs)	Qmid-orif (cfs)	Qmid-weir (cfs)	Qtot-med (cfs)	Qtop-orif (cfs)	Qtop-weir (cfs)	Qtot-top (cfs)	Qemerg (cfs)	Qtot (cfs)
0.0	0.00	0.00	0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0.1	0.62	0.00	0.00	0.014	0.012	0.012	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.012
0.2	1.25	0.00	0.00	0.034	0.037	0.034	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.034
0.3	1.87	0.00	0.00	0.046	0.061	0.046	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.046
0.4	2.50	0.00	0.00	0.056	0.071	0.056	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.056
0.5	3.12	0.00	0.00	0.064	0.073	0.064	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.0639
0.6	3.75	0.00	0.00	0.071	0.094	0.071	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.0711
0.7	4.37	0.00	0.00	0.078	0.197	0.078	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.0776
0.8	5.00	0.00	0.00	0.084	0.485	0.084	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.0837
0.9	5.62	0.00	0.00	0.089	1.117	0.089	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.0893
1.0	6.24	0.00	0.00	0.095	2.310	0.095	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.0946
1.1	6.87	0.00	0.00	0.100	4.354	0.100	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.0996
1.2	7.49	0.00	0.00	0.104	7.619	0.104	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.1044
1.3	8.12	0.00	0.00	0.109	12.564	0.109	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.1089
1.4	8.74	0.00	0.00	0.113	19.747	0.113	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.1133
1.5	9.37	0.00	0.00	0.118	29.837	0.118	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.1175
1.6	9.99	0.00	0.00	0.122	43.617	0.122	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.1216
1.7	10.61	0.00	0.00	0.126	61.999	0.126	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.1255
1.8	11.24	0.00	0.00	0.129	86.031	0.129	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.1293
1.9	11.86	0.00	0.00	0.133	116.909	0.133	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.1330
2.0	12.49	0.00	0.00	0.137	155.979	0.137	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.1366
2.1	13.11	0.00	0.00	0.140	204.758	0.140	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.1402
2.2	13.74	0.00	0.00	0.144	264.932	0.144	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.1436
2.3	14.36	0.00	0.00	0.147	338.373	0.147	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.1469
2.4	14.99	0.00	0.00	0.150	427.143	0.150	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.1502
2.5	15.61	0.00	0.00	0.153	533.510	0.153	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.1534
2.6	16.23	0.00	0.00	0.157	659.949	0.157	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.1566
2.7	16.86	0.00	0.00	0.160	809.159	0.160	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.1596
2.8	17.48	0.48	0.00	0.163	984.067	0.163	0.000	0.028	0.028	0.000	0.000	0.000	0.000	0.1908
2.9	18.11	0.96	0.00	0.166	1187.841	0.166	0.103	0.096	0.096	0.000	0.000	0.000	0.000	0.2619
3.0	18.73	1.44	0.00	0.169	1423.896	0.169	0.148	0.176	0.148	0.000	0.000	0.000	0.000	0.3162
3.1	19.36	1.92	0.00	0.171	1695.907	0.171	0.182	0.240	0.182	0.000	0.000	0.000	0.000	0.3529
3.2	19.98	2.40	0.00	0.174	2007.816	0.174	0.210	0.273	0.210	0.000	0.000	0.000	0.000	0.3842
3.3	20.60	2.88	0.00	0.177	2363.841	0.177	0.235	0.279	0.235	0.000	0.000	0.000	0.000	0.4120
3.4	21.23	3.36	0.00	0.180	2768.486	0.180	0.258	0.294	0.258	0.000	0.000	0.000	0.000	0.4373
3.5	21.85	3.84	0.00	0.182	3226.553	0.182	0.278	0.395	0.278	0.000	0.000	0.000	0.000	0.4608
3.6	22.48	4.32	0.00	0.185	3743.147	0.185	0.298	0.707	0.298	0.000	0.000	0.000	0.000	0.4828
3.7	23.10	4.80	0.00	0.188	4323.686	0.188	0.316	1.416	0.316	0.000	0.000	0.000	0.000	0.5035
3.8	23.73	5.28	0.00	0.190	4973.915	0.190	0.333	2.776	0.333	0.000	0.000	0.000	0.000	0.5233
3.9	24.35	5.76	0.00	0.193	5699.910	0.193	0.349	5.123	0.349	0.000	0.000	0.000	0.000	0.5421
4.0	24.98	6.24	0.00	0.195	6508.090	0.195	0.365	8.878	0.365	0.000	0.000	0.000	0.000	0.5602
4.1	25.60	6.72	0.40	0.198	7405.224	0.198	0.380	14.564	0.380	0.000	0.063	0.063	0.000	0.6407
4.2	26.22	7.20	0.80	0.200	8398.446	0.200	0.394	22.809	0.394	0.263	0.223	0.223	0.000	0.8180
4.3	26.85	7.68	1.20	0.203	9495.256	0.203	0.408	34.362	0.408	0.402	0.431	0.402	0.000	1.0129
4.4	27.47	8.16	1.60	0.205	10703.536	0.205	0.422	50.098	0.422	0.504	0.631	0.504	0.000	1.1306
4.5	28.10	8.64	2.00	0.207	12031.558	0.207	0.435	71.029	0.435	0.589	0.782	0.589	0.000	1.2305
4.6	28.72	9.12	2.40	0.210	13487.992	0.210	0.447	98.314	0.447	0.662	0.860	0.662	0.000	1.3194
4.7	29.35	9.60	2.80	0.212	15081.914	0.212	0.460	133.269	0.460	0.729	0.879	0.729	0.214	1.6144
4.8	29.97	10.08	3.20	0.214	16822.820	0.214	0.471	177.378	0.471	0.790	0.897	0.790	1.112	2.5878
4.9	30.59	10.56	3.60	0.217	18720.631	0.217	0.483	232.298	0.483	0.846	1.033	0.846	2.393	3.9393
5.0	31.22	11.04	4.00	0.219	20785.704	0.219	0.495	299.874	0.495	0.899	1.476	0.899	3.965	5.5771
5.1	31.84	11.52	4.40	0.221	23028.842	0.221	0.506	382.146	0.506	0.949	2.497	0.949	5.780	7.4558
5.2	32.47	12.00	4.80	0.223	25461.303	0.223	0.517	481.359	0.517	0.997	4.466	0.997	7.810	9.5464
5.3	33.09	12.48	5.20	0.225	28094.808	0.225	0.527	599.973	0.527	1.042	7.859	1.042	10.034	11.8286
5.4	33.72	12.96	5.60	0.227	30941.553	0.227	0.538	740.673	0.538	1.085	13.272	1.085	12.437	14.2872
5.5	34.34	13.44	6.00	0.230	34014.214	0.230	0.548	906.377	0.548	1.127	21.435	1.127	15.005	16.9098
5.6	34.97	13.92	6.40	0.232	37325.962	0.232	0.558	1100.248	0.558	1.167	33.221	1.167	17.730	19.6866
5.7	35.59	14.40	6.80	0.234	40890.467	0.234	0.568	1325.704	0.568	1.206	49.663	1.206	20.601	22.6094
5.8	36.21	14.88	7.20	0.236	44721.914	0.236	0.578	1586.423	0.578	1.244	71.961	1.244	23.613	25.6709
5.9	36.84	15.36	7.60	0.238	48835.003	0.238	0.587	1886.359	0.587	1.281	101.498	1.281	26.759	28.8651
6.0	37.46	15.84	8.00	0.240	53244.966	0.240	0.597	2229.747	0.597	1.316	139.852	1.316	30.034	32.1867

Vault #1 Stage Storage

depth	area	area (ac)	elevation	volume (cf)	volume (acft)
0.0	2500	0.06	446.0	0	0.00
0.1	2500	0.06	446.1	250	0.01
0.2	2500	0.06	446.2	500	0.01
0.3	2500	0.06	446.3	750	0.02
0.4	2500	0.06	446.4	1000	0.02
0.5	2500	0.06	446.5	1250	0.03
0.6	2500	0.06	446.6	1500	0.03
0.7	2500	0.06	446.7	1750	0.04
0.8	2500	0.06	446.8	2000	0.05
0.9	2500	0.06	446.9	2250	0.05
1.0	2500	0.06	447.0	2500	0.06
1.1	2500	0.06	447.1	2750	0.06
1.2	2500	0.06	447.2	3000	0.07
1.3	2500	0.06	447.3	3250	0.07
1.4	2500	0.06	447.4	3500	0.08
1.5	2500	0.06	447.5	3750	0.09
1.6	2500	0.06	447.6	4000	0.09
1.7	2500	0.06	447.7	4250	0.10
1.8	2500	0.06	447.8	4500	0.10
1.9	2500	0.06	447.9	4750	0.11
2.0	2500	0.06	448.0	5000	0.11
2.1	2500	0.06	448.1	5250	0.12
2.2	2500	0.06	448.2	5500	0.13
2.3	2500	0.06	448.3	5750	0.13
2.4	2500	0.06	448.4	6000	0.14
2.5	2500	0.06	448.5	6250	0.14
2.6	2500	0.06	448.6	6500	0.15
2.7	2500	0.06	448.7	6750	0.15
2.8	2500	0.06	448.8	7000	0.16
2.9	2500	0.06	448.9	7250	0.17
3.0	2500	0.06	449.0	7500	0.17
3.1	2500	0.06	449.1	7750	0.18
3.2	2500	0.06	449.2	8000	0.18
3.3	2500	0.06	449.3	8250	0.19
3.4	2500	0.06	449.4	8500	0.20
3.5	2500	0.06	449.5	8750	0.20
3.6	2500	0.06	449.6	9000	0.21
3.7	2500	0.06	449.7	9250	0.21
3.8	2500	0.06	449.8	9500	0.22
3.9	2500	0.06	449.9	9750	0.22
4.0	2500	0.06	450.0	10000	0.23
4.1	2500	0.06	450.1	10250	0.24
4.2	2500	0.06	450.2	10500	0.24
4.3	2500	0.06	450.3	10750	0.25
4.4	2500	0.06	450.4	11000	0.25
4.5	2500	0.06	450.5	11250	0.26
4.6	2500	0.06	450.6	11500	0.26
4.7	2500	0.06	450.7	11750	0.27
4.8	2500	0.06	450.8	12000	0.28
4.9	2500	0.06	450.9	12250	0.28
5.0	2500	0.06	451.0	12500	0.29
5.1	2500	0.06	451.1	12750	0.29
5.2	2500	0.06	451.2	13000	0.30
5.3	2500	0.06	451.3	13250	0.30
5.4	2500	0.06	451.4	13500	0.31
5.5	2500	0.06	451.5	13750	0.32
5.6	2500	0.06	451.6	14000	0.32
5.7	2500	0.06	451.7	14250	0.33
5.8	2500	0.06	451.8	14500	0.33
5.9	2500	0.06	451.9	14750	0.34
6.0	2500	0.06	452.0	15000	0.34

Vault #1		$Q_{Sub\ Drain}$=	N/A	cfs
Elevation	Q_{AVG} (CFS)	DV (CF)	DT (HR)	Total T
446.1	0.006	250	11.74	35.8
446.2	0.023	250	3.02	24.1
446.3	0.040	250	1.73	21.1
446.4	0.051	250	1.36	19.3
446.5	0.060	250	1.16	18.0
446.6	0.068	250	1.03	16.8
446.7	0.074	250	0.93	15.8
446.8	0.081	250	0.86	14.8
446.9	0.086	250	0.80	14.0
447.0	0.092	250	0.76	13.2
447.1	0.097	250	0.72	12.4
447.2	0.102	250	0.68	11.7
447.3	0.107	250	0.65	11.0
447.4	0.111	250	0.62	10.4
447.5	0.115	250	0.60	9.8
447.6	0.120	250	0.58	9.2
447.7	0.124	250	0.56	8.6
447.8	0.127	250	0.54	8.0
447.9	0.131	250	0.53	7.5
448.0	0.135	250	0.51	6.9
448.1	0.138	250	0.50	6.4
448.2	0.142	250	0.49	5.9
448.3	0.145	250	0.48	5.4
448.4	0.149	250	0.47	5.0
448.5	0.152	250	0.46	4.5
448.6	0.155	250	0.45	4.0
448.7	0.158	250	0.44	3.6
448.8	0.175	250	0.40	3.1
448.9	0.226	250	0.31	2.7
449.0	0.289	250	0.24	2.4
449.1	0.335	250	0.21	2.2
449.2	0.369	250	0.19	2.0
449.3	0.398	250	0.17	1.8
449.4	0.425	250	0.16	1.6
449.5	0.449	250	0.15	1.5
449.6	0.472	250	0.15	1.3
449.7	0.493	250	0.14	1.2
449.8	0.513	250	0.14	1.0
449.9	0.533	250	0.13	0.9
450.0	0.551	250	0.13	0.8
450.1	0.600	250	0.12	0.6
450.2	0.729	250	0.10	0.5
450.3	0.915	250	0.08	0.4
450.4	1.072	250	0.06	0.3
450.5	1.181	250	0.06	0.3
450.6	1.275	250	0.05	0.2
450.7	1.467	250	0.05	0.2
450.8	2.101	250	0.03	0.1
450.9	3.264	250	0.02	0.1
451.0	4.758	250	0.01	0.1
451.1	6.516	250	0.01	0.0
451.2	8.501	250	0.01	0.0
451.3	10.688	250	0.01	0.0
451.4	13.058	250	0.01	0.0
451.5	15.598	250	0.00	0.0
451.6	18.298	250	0.00	0.0
451.7	21.148	250	0.00	0.0
451.8	24.140	250	0.00	0.0
451.9	27.268	250	0.00	0.0
452.0	30.526	250	0.00	0.0

IV. SWMM INPUT DATA (EXISTING AND PROPOSED MODELS)

Attached are the EPA-SWMM Model outputs for pre-development and post-development conditions for the POC. Similar modeling was used for analyzing the remaining POC locations using the input data found in the previous section. Each area, i.e., sub-catchments, outfalls, storage units, weir as a discharge, and outfalls (point of compliance), also are shown, as applicable.

Variables in the modeling are associated with typical recommended values by the EPA-SWMM model and typical values found in technical literature (such as Maidment's Handbook of Hydrology). Recommended values for the SWMM model have been obtained from the City of Chula Vista BMP manual Appendix G.

Soil characteristics of the existing soils were determined based on data provided by Geotechnical Engineer/Geologist. KEY ASSUMPTIONS: Group C & D soils are representative of the existing conditions for the site.

Some values incorporated within the SWMM model have been determined from the professional experience of H&A using conservative assumptions that tend to increase the size of the needed BMP and also generate a long-term runoff as a percentage of rainfall similar to those measured in gage stations in Southern California by the USGS.

Description of model parameters and assumptions:

N-Imperv – Manning's N for impervious surfaces
0.012 (typical)

N-Perv – Manning's N for pervious surfaces
0.15

Dstore-Imperv – Depth of depression storage on impervious area (in)
0.05 (typical)

Dstore-Perv – Depth of depression storage on pervious area (in)
0.100

%Zero-Imperv – Percentage of impervious area with no depression storage (%)
25 (typical)

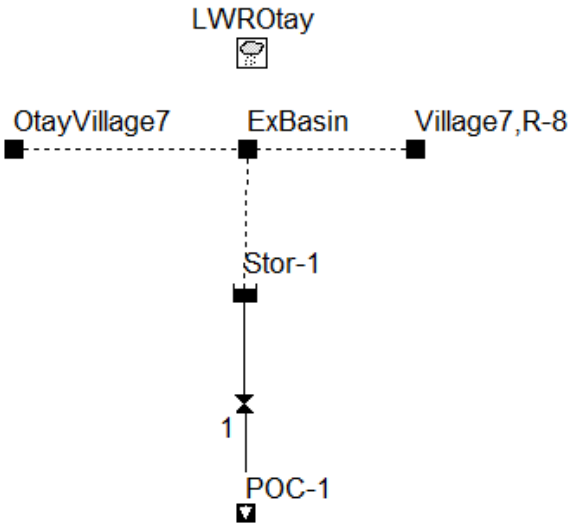
Suction Head – Soil capillary suction head (in)

Conductivity – Soil saturated hydraulic conductivity (in/hr)
-75% of these values if subcatchment is graded/compacted

Initial Deficit – Initial moisture deficit (fraction)

Soil Type	Suction Head	Conductivity	Initial Deficit
A	1.5	0.3	0.33
B	3	0.2	0.32
C	6	0.1	0.31
D	9	0.025	0.30

POC 1 – Pre-Developed Condition



SWMM Model - EX Condition Input Data

```
[TITLE]
;;Project Title/Notes

[OPTIONS]
;;Option             Value
FLOW_UNITS           CFS
INFILTRATION         GREEN_AMPT
FLOW_ROUTING         KINWAVE
LINK_OFFSETS         DEPTH
MIN_SLOPE            0
ALLOW_PONDING        NO
SKIP_STEADY_STATE    NO

START_DATE           08/28/1951
START_TIME           00:00:00
REPORT_START_DATE    08/28/1951
REPORT_START_TIME    00:00:00
END_DATE             03/16/2008
END_TIME             23:00:00
SWEEP_START          01/01
SWEEP_END            12/31
DRY_DAYS             0
REPORT_STEP          01:00:00
WET_STEP             00:15:00
DRY_STEP             04:00:00
ROUTING_STEP         0:01:00
RULE_STEP            00:00:00

INERTIAL_DAMPING     PARTIAL
NORMAL_FLOW_LIMITED  BOTH
FORCE_MAIN_EQUATION  H-W
VARIABLE_STEP        0.75
LENGTHENING_STEP     0
MIN_SURFAREA         12.557
MAX_TRIALS           8
HEAD_TOLERANCE       0.005
SYS_FLOW_TOL         5
LAT_FLOW_TOL         5
MINIMUM_STEP         0.5
THREADS              1

[EVAPORATION]
;;Data Source    Parameters
;;-------------- ----------------
MONTHLY          0.06   0.08   0.11   0.16   0.18   0.21   0.21   0.20   0.16   0.12   0.08   0.06
DRY_ONLY         NO

[RAINGAGES]
;;Name           Format    Interval SCF      Source
;;-------------- --------- ------ ------ ----------
LWROtay          INTENSITY 1:00     1.0      TIMESERIES LWROtay

[SUBCATCHMENTS]
;;Name           Rain Gage        Outlet           Area     %Imperv  Width    %Slope   CurbLen  SnowPack
;;-------------- ---------------- ---------------- -------- -------- -------- -------- -------- ----------------
ExBasin          LWROtay          Stor-1           2.96     1.5      225      0.1      0
;Proposed Developed Area - Village 7 R-8
Village7,R-8     LWROtay          ExBasin          13.58    0        1193     12.78    0
;Existing Developed Area - Otay Village 7
OtayVillage7     LWROtay          ExBasin          136.19   47       1594     2.37     0

[SUBAREAS]
;;Subcatchment   N-Imperv   N-Perv     S-Imperv   S-Perv     PctZero    RouteTo    PctRouted
;;-------------- ---------- ---------- ---------- ---------- ---------- ---------- ----------
ExBasin          0.012      0.15       0.05       .10        25         OUTLET
Village7,R-8     0.012      0.15       0.05       0.10       25         OUTLET
OtayVillage7     0.012      0.15       0.05       0.10       25         OUTLET

[INFILTRATION]
;;Subcatchment   Suction    Ksat       IMD
;;-------------- ---------- ---------- ----------
```

```
ExBasin          9          0.01875    0.33
Village7,R-8     9          0.025      0.33
OtayVillage7     9          0.01875    .33

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

[STORAGE]
;;Name           Elev.    MaxDepth   InitDepth  Shape      Curve Name/Params            N/A      Fevap    Psi
  Ksat     IMD
;;-------------- -------- ---------- ---------- ---------- ---------------------------- -------- --------
   -------- --------
;ExBasin
Stor-1           390      10.9       0          TABULAR    ExBasin                      0        1

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

;;-------------- ---------------- ---------------- ---------- --------------- ---------------- ----------
--------
1                Stor-1           POC-1            0          TABULAR/DEPTH   ExBasinOutlet               NO


[CURVES]
;;Name           Type       X-Value    Y-Value
;;-------------- ---------- ---------- ----------
;Ex Basin Outlet
ExBasinOutlet    Rating     0.00       0.000
ExBasinOutlet               0.05       0.015
ExBasinOutlet               0.10       0.057
ExBasinOutlet               0.15       0.125
ExBasinOutlet               0.20       0.219
ExBasinOutlet               0.25       0.339
ExBasinOutlet               0.30       0.484
ExBasinOutlet               0.35       0.654
ExBasinOutlet               0.40       0.849
ExBasinOutlet               0.45       1.069
ExBasinOutlet               0.50       1.312
ExBasinOutlet               0.55       1.579
ExBasinOutlet               0.60       1.869
ExBasinOutlet               0.65       2.182
ExBasinOutlet               0.70       2.518
ExBasinOutlet               0.75       2.876
ExBasinOutlet               0.80       3.255
ExBasinOutlet               0.85       3.656
ExBasinOutlet               0.90       4.078
ExBasinOutlet               0.95       4.520
ExBasinOutlet               1.00       4.982
ExBasinOutlet               1.05       5.463
ExBasinOutlet               1.10       5.964
ExBasinOutlet               1.15       6.483
ExBasinOutlet               1.20       7.020
ExBasinOutlet               1.25       7.575
ExBasinOutlet               1.30       8.147
ExBasinOutlet               1.35       8.735
ExBasinOutlet               1.40       9.340
ExBasinOutlet               1.45       9.960
ExBasinOutlet               1.50       10.596
ExBasinOutlet               1.55       11.246
ExBasinOutlet               1.60       11.910
ExBasinOutlet               1.65       12.588
ExBasinOutlet               1.70       13.279
ExBasinOutlet               1.75       13.982
ExBasinOutlet               1.80       14.698
ExBasinOutlet               1.85       15.424
ExBasinOutlet               1.90       16.162
ExBasinOutlet               1.95       16.910
ExBasinOutlet               2.00       17.668
ExBasinOutlet               2.05       18.435
```

ExBasinOutlet	2.10	19.211
ExBasinOutlet	2.15	19.995
ExBasinOutlet	2.20	20.787
ExBasinOutlet	2.25	21.586
ExBasinOutlet	2.30	22.391
ExBasinOutlet	2.35	23.203
ExBasinOutlet	2.40	24.020
ExBasinOutlet	2.45	24.842
ExBasinOutlet	2.50	25.668
ExBasinOutlet	2.55	26.498
ExBasinOutlet	2.60	27.331
ExBasinOutlet	2.65	28.167
ExBasinOutlet	2.70	29.005
ExBasinOutlet	2.75	29.430
ExBasinOutlet	2.80	29.916
ExBasinOutlet	2.85	30.395
ExBasinOutlet	2.90	30.866
ExBasinOutlet	2.95	31.330
ExBasinOutlet	3.00	31.788
ExBasinOutlet	3.05	32.239
ExBasinOutlet	3.10	32.683
ExBasinOutlet	3.15	33.122
ExBasinOutlet	3.20	33.555
ExBasinOutlet	3.25	33.983
ExBasinOutlet	3.30	34.405
ExBasinOutlet	3.35	34.822
ExBasinOutlet	3.40	35.234
ExBasinOutlet	3.45	35.641
ExBasinOutlet	3.50	36.044
ExBasinOutlet	3.55	36.442
ExBasinOutlet	3.60	36.836
ExBasinOutlet	3.65	37.226
ExBasinOutlet	3.70	37.612
ExBasinOutlet	3.75	37.994
ExBasinOutlet	3.80	38.372
ExBasinOutlet	3.85	38.746
ExBasinOutlet	3.90	39.117
ExBasinOutlet	3.95	39.484
ExBasinOutlet	4.00	39.848
ExBasinOutlet	4.05	40.209
ExBasinOutlet	4.10	40.566
ExBasinOutlet	4.15	40.921
ExBasinOutlet	4.20	41.272
ExBasinOutlet	4.25	41.620
ExBasinOutlet	4.30	41.966
ExBasinOutlet	4.35	42.308
ExBasinOutlet	4.40	42.648
ExBasinOutlet	4.45	42.985
ExBasinOutlet	4.50	43.320
ExBasinOutlet	4.55	43.652
ExBasinOutlet	4.60	43.981
ExBasinOutlet	4.65	44.308
ExBasinOutlet	4.70	44.633
ExBasinOutlet	4.75	44.955
ExBasinOutlet	4.80	45.275
ExBasinOutlet	4.85	45.593
ExBasinOutlet	4.90	45.908
ExBasinOutlet	4.95	46.221
ExBasinOutlet	5.00	46.533
ExBasinOutlet	5.05	46.842
ExBasinOutlet	5.10	47.149
ExBasinOutlet	5.15	47.454
ExBasinOutlet	5.20	47.757
ExBasinOutlet	5.25	48.059
ExBasinOutlet	5.30	48.358
ExBasinOutlet	5.35	48.656
ExBasinOutlet	5.40	48.952
ExBasinOutlet	5.45	49.246
ExBasinOutlet	5.50	49.538
ExBasinOutlet	5.55	49.828
ExBasinOutlet	5.60	50.117

ExBasinOutlet	5.65	50.404
ExBasinOutlet	5.70	50.690
ExBasinOutlet	5.75	50.974
ExBasinOutlet	5.80	51.256
ExBasinOutlet	5.85	51.537
ExBasinOutlet	5.90	51.817
ExBasinOutlet	5.95	52.094
ExBasinOutlet	6.00	52.371
ExBasinOutlet	6.05	52.646
ExBasinOutlet	6.10	52.919
ExBasinOutlet	6.15	53.191
ExBasinOutlet	6.20	53.462
ExBasinOutlet	6.25	53.731
ExBasinOutlet	6.30	53.999
ExBasinOutlet	6.35	54.266
ExBasinOutlet	6.40	54.531
ExBasinOutlet	6.45	54.795
ExBasinOutlet	6.50	55.058
ExBasinOutlet	6.55	55.320
ExBasinOutlet	6.60	55.580
ExBasinOutlet	6.65	55.839
ExBasinOutlet	6.70	56.097
ExBasinOutlet	6.75	56.354
ExBasinOutlet	6.80	56.609
ExBasinOutlet	6.85	56.864
ExBasinOutlet	6.90	57.117
ExBasinOutlet	6.95	57.369
ExBasinOutlet	7.00	57.620
ExBasinOutlet	7.05	57.870
ExBasinOutlet	7.10	58.119
ExBasinOutlet	7.15	58.367
ExBasinOutlet	7.20	58.614
ExBasinOutlet	7.25	58.860
ExBasinOutlet	7.30	59.104
ExBasinOutlet	7.35	59.348
ExBasinOutlet	7.40	59.591
ExBasinOutlet	7.45	59.833
ExBasinOutlet	7.50	60.073
ExBasinOutlet	7.55	60.313
ExBasinOutlet	7.60	60.552
ExBasinOutlet	7.65	60.790
ExBasinOutlet	7.70	61.027
ExBasinOutlet	7.75	61.263
ExBasinOutlet	7.80	61.498
ExBasinOutlet	7.85	61.733
ExBasinOutlet	7.90	61.966
ExBasinOutlet	7.95	62.199
ExBasinOutlet	8.00	62.430
ExBasinOutlet	8.05	62.661
ExBasinOutlet	8.10	62.891
ExBasinOutlet	8.15	63.120
ExBasinOutlet	8.20	63.348
ExBasinOutlet	8.25	63.576
ExBasinOutlet	8.30	63.802
ExBasinOutlet	8.35	64.028
ExBasinOutlet	8.40	64.253
ExBasinOutlet	8.45	64.478
ExBasinOutlet	8.50	64.701
ExBasinOutlet	8.55	64.924
ExBasinOutlet	8.60	65.146
ExBasinOutlet	8.65	65.367
ExBasinOutlet	8.70	65.587
ExBasinOutlet	8.75	65.807
ExBasinOutlet	8.80	66.026
ExBasinOutlet	8.85	66.244
ExBasinOutlet	8.90	66.462
ExBasinOutlet	8.95	66.679
ExBasinOutlet	9.00	66.895
ExBasinOutlet	9.05	67.110
ExBasinOutlet	9.10	67.325
ExBasinOutlet	9.15	67.539

ExBasinOutlet	9.20	67.753
ExBasinOutlet	9.25	67.965
ExBasinOutlet	9.30	68.177
ExBasinOutlet	9.35	68.389
ExBasinOutlet	9.40	68.600
ExBasinOutlet	9.45	68.810
ExBasinOutlet	9.50	69.019
ExBasinOutlet	9.55	69.228
ExBasinOutlet	9.60	69.436
ExBasinOutlet	9.65	69.644
ExBasinOutlet	9.70	69.851
ExBasinOutlet	9.75	70.057
ExBasinOutlet	9.80	70.263
ExBasinOutlet	9.85	70.468
ExBasinOutlet	9.90	70.673
ExBasinOutlet	9.95	70.877
ExBasinOutlet	10.00	71.080
ExBasinOutlet	10.05	71.283
ExBasinOutlet	10.10	71.485
ExBasinOutlet	10.15	71.687
ExBasinOutlet	10.20	71.888
ExBasinOutlet	10.25	72.088
ExBasinOutlet	10.30	72.288
ExBasinOutlet	10.35	72.488
ExBasinOutlet	10.40	72.686
ExBasinOutlet	10.45	72.885
ExBasinOutlet	10.50	73.083
ExBasinOutlet	10.55	73.280
ExBasinOutlet	10.60	73.477
ExBasinOutlet	10.65	73.673
ExBasinOutlet	10.70	73.868
ExBasinOutlet	10.75	74.064
ExBasinOutlet	10.80	74.258
ExBasinOutlet	10.85	74.452
ExBasinOutlet	10.90	74.646
ExBasinOutlet	10.95	74.839
ExBasinOutlet	11.00	75.032
ExBasinOutlet	11.05	75.224
ExBasinOutlet	11.10	75.416
ExBasinOutlet	11.15	75.607
ExBasinOutlet	11.20	75.797
ExBasinOutlet	11.25	75.988
ExBasinOutlet	11.30	76.177
ExBasinOutlet	11.35	76.367
ExBasinOutlet	11.40	76.555
ExBasinOutlet	11.45	76.744
ExBasinOutlet	11.50	76.932
ExBasinOutlet	11.55	77.119
ExBasinOutlet	11.60	77.306
ExBasinOutlet	11.65	77.492
ExBasinOutlet	11.70	77.678
ExBasinOutlet	11.75	77.864
ExBasinOutlet	11.80	78.049
ExBasinOutlet	11.85	78.234
ExBasinOutlet	11.90	78.418
ExBasinOutlet	11.95	80.985
ExBasinOutlet	12.00	85.525
ExBasinOutlet	12.05	91.350
ExBasinOutlet	12.10	98.213
ExBasinOutlet	12.15	105.973
ExBasinOutlet	12.20	114.534
ExBasinOutlet	12.25	123.826
ExBasinOutlet	12.30	133.793
ExBasinOutlet	12.35	144.392
ExBasinOutlet	12.40	155.587
ExBasinOutlet	12.45	167.347
ExBasinOutlet	12.50	179.646
ExBasinOutlet	12.55	192.461
ExBasinOutlet	12.60	205.771
ExBasinOutlet	12.65	219.558
ExBasinOutlet	12.70	233.807

```
ExBasinOutlet               12.75      248.502
ExBasinOutlet               12.80      263.630
ExBasinOutlet               12.85      279.179
ExBasinOutlet               12.90      295.137
ExBasinOutlet               12.95      311.495
ExBasinOutlet               13.00      328.243
ExBasinOutlet               13.05      345.371
ExBasinOutlet               13.10      362.872
ExBasinOutlet               13.15      380.737
ExBasinOutlet               13.20      398.959
ExBasinOutlet               13.25      417.531
ExBasinOutlet               13.30      436.447
ExBasinOutlet               13.35      455.701
ExBasinOutlet               13.40      467.465
ExBasinOutlet               13.45      473.980
ExBasinOutlet               13.50      480.393
ExBasinOutlet               13.55      486.708
ExBasinOutlet               13.60      492.931
ExBasinOutlet               13.65      499.066
ExBasinOutlet               13.70      505.115
ExBasinOutlet               13.75      511.083
ExBasinOutlet               13.80      516.973
ExBasinOutlet               13.85      522.788
ExBasinOutlet               13.90      528.530
;
;Ex Basin
ExBasin          Storage    0.00       17535
ExBasin                     0.05       17647
ExBasin                     0.10       17758
ExBasin                     0.15       17870
ExBasin                     0.20       17982
ExBasin                     0.25       18093
ExBasin                     0.30       18205
ExBasin                     0.35       18317
ExBasin                     0.40       18428
ExBasin                     0.45       18540
ExBasin                     0.50       18651
ExBasin                     0.55       18763
ExBasin                     0.60       18875
ExBasin                     0.65       18986
ExBasin                     0.70       19098
ExBasin                     0.75       19210
ExBasin                     0.80       19321
ExBasin                     0.85       19433
ExBasin                     0.90       19545
ExBasin                     0.95       19656
ExBasin                     1.00       19768
ExBasin                     1.05       19873
ExBasin                     1.10       19979
ExBasin                     1.15       20085
ExBasin                     1.20       20190
ExBasin                     1.25       20296
ExBasin                     1.30       20401
ExBasin                     1.35       20507
ExBasin                     1.40       20613
ExBasin                     1.45       20718
ExBasin                     1.50       20824
ExBasin                     1.55       20929
ExBasin                     1.60       21035
ExBasin                     1.65       21140
ExBasin                     1.70       21246
ExBasin                     1.75       21352
ExBasin                     1.80       21457
ExBasin                     1.85       21563
ExBasin                     1.90       21668
ExBasin                     1.95       21774
ExBasin                     2.00       21880
ExBasin                     2.05       21991
ExBasin                     2.10       22102
ExBasin                     2.15       22213
ExBasin                     2.20       22325
```

ExBasin	2.25	22436
ExBasin	2.30	22547
ExBasin	2.35	22659
ExBasin	2.40	22770
ExBasin	2.45	22881
ExBasin	2.50	22993
ExBasin	2.55	23104
ExBasin	2.60	23215
ExBasin	2.65	23326
ExBasin	2.70	23438
ExBasin	2.75	23549
ExBasin	2.80	23660
ExBasin	2.85	23772
ExBasin	2.90	23883
ExBasin	2.95	23994
ExBasin	3.00	24106
ExBasin	3.05	24215
ExBasin	3.10	24325
ExBasin	3.15	24435
ExBasin	3.20	24545
ExBasin	3.25	24655
ExBasin	3.30	24765
ExBasin	3.35	24875
ExBasin	3.40	24985
ExBasin	3.45	25095
ExBasin	3.50	25205
ExBasin	3.55	25315
ExBasin	3.60	25425
ExBasin	3.65	25535
ExBasin	3.70	25645
ExBasin	3.75	25755
ExBasin	3.80	25865
ExBasin	3.85	25975
ExBasin	3.90	26085
ExBasin	3.95	26195
ExBasin	4.00	26305
ExBasin	4.05	26420
ExBasin	4.10	26536
ExBasin	4.15	26652
ExBasin	4.20	26768
ExBasin	4.25	26883
ExBasin	4.30	26999
ExBasin	4.35	27115
ExBasin	4.40	27230
ExBasin	4.45	27346
ExBasin	4.50	27462
ExBasin	4.55	27578
ExBasin	4.60	27693
ExBasin	4.65	27809
ExBasin	4.70	27925
ExBasin	4.75	28040
ExBasin	4.80	28156
ExBasin	4.85	28272
ExBasin	4.90	28388
ExBasin	4.95	28503
ExBasin	5.00	28619
ExBasin	5.05	28739
ExBasin	5.10	28860
ExBasin	5.15	28980
ExBasin	5.20	29101
ExBasin	5.25	29221
ExBasin	5.30	29342
ExBasin	5.35	29462
ExBasin	5.40	29582
ExBasin	5.45	29703
ExBasin	5.50	29823
ExBasin	5.55	29944
ExBasin	5.60	30064
ExBasin	5.65	30184
ExBasin	5.70	30305
ExBasin	5.75	30425

ExBasin	5.80	30546
ExBasin	5.85	30666
ExBasin	5.90	30787
ExBasin	5.95	30907
ExBasin	6.00	31027
ExBasin	6.05	31160
ExBasin	6.10	31292
ExBasin	6.15	31424
ExBasin	6.20	31557
ExBasin	6.25	31689
ExBasin	6.30	31821
ExBasin	6.35	31954
ExBasin	6.40	32086
ExBasin	6.45	32219
ExBasin	6.50	32351
ExBasin	6.55	32483
ExBasin	6.60	32616
ExBasin	6.65	32748
ExBasin	6.70	32880
ExBasin	6.75	33013
ExBasin	6.80	33145
ExBasin	6.85	33277
ExBasin	6.90	33410
ExBasin	6.95	33542
ExBasin	7.00	33674
ExBasin	7.05	33810
ExBasin	7.10	33945
ExBasin	7.15	34081
ExBasin	7.20	34216
ExBasin	7.25	34352
ExBasin	7.30	34487
ExBasin	7.35	34623
ExBasin	7.40	34758
ExBasin	7.45	34894
ExBasin	7.50	35029
ExBasin	7.55	35165
ExBasin	7.60	35300
ExBasin	7.65	35436
ExBasin	7.70	35571
ExBasin	7.75	35707
ExBasin	7.80	35842
ExBasin	7.85	35977
ExBasin	7.90	36113
ExBasin	7.95	36248
ExBasin	8.00	36384
ExBasin	8.05	36523
ExBasin	8.10	36662
ExBasin	8.15	36801
ExBasin	8.20	36941
ExBasin	8.25	37080
ExBasin	8.30	37219
ExBasin	8.35	37358
ExBasin	8.40	37497
ExBasin	8.45	37636
ExBasin	8.50	37776
ExBasin	8.55	37915
ExBasin	8.60	38054
ExBasin	8.65	38193
ExBasin	8.70	38332
ExBasin	8.75	38471
ExBasin	8.80	38611
ExBasin	8.85	38750
ExBasin	8.90	38889
ExBasin	8.95	39028
ExBasin	9.00	39167
ExBasin	9.05	39311
ExBasin	9.10	39455
ExBasin	9.15	39599
ExBasin	9.20	39743
ExBasin	9.25	39887
ExBasin	9.30	40031

ExBasin	9.35	40175
ExBasin	9.40	40319
ExBasin	9.45	40463
ExBasin	9.50	40607
ExBasin	9.55	40751
ExBasin	9.60	40895
ExBasin	9.65	41039
ExBasin	9.70	41183
ExBasin	9.75	41327
ExBasin	9.80	41471
ExBasin	9.85	41615
ExBasin	9.90	41759
ExBasin	9.95	41903
ExBasin	10.00	42047
ExBasin	10.05	42200
ExBasin	10.10	42353
ExBasin	10.15	42506
ExBasin	10.20	42659
ExBasin	10.25	42812
ExBasin	10.30	42965
ExBasin	10.35	43118
ExBasin	10.40	43271
ExBasin	10.45	43424
ExBasin	10.50	43577
ExBasin	10.55	43730
ExBasin	10.60	43883
ExBasin	10.65	44036
ExBasin	10.70	44189
ExBasin	10.75	44342
ExBasin	10.80	44495
ExBasin	10.85	44648
ExBasin	10.90	44801
ExBasin	10.95	44954
ExBasin	11.00	45107
ExBasin	11.05	45270
ExBasin	11.10	45432
ExBasin	11.15	45595
ExBasin	11.20	45758
ExBasin	11.25	45920
ExBasin	11.30	46083
ExBasin	11.35	46246
ExBasin	11.40	46408
ExBasin	11.45	46571
ExBasin	11.50	46734
ExBasin	11.55	46896
ExBasin	11.60	47059
ExBasin	11.65	47222
ExBasin	11.70	47384
ExBasin	11.75	47547
ExBasin	11.80	47710
ExBasin	11.85	47872
ExBasin	11.90	48035
ExBasin	11.95	48198
ExBasin	12.00	48360
ExBasin	12.05	48537
ExBasin	12.10	48713
ExBasin	12.15	48889
ExBasin	12.20	49066
ExBasin	12.25	49242
ExBasin	12.30	49419
ExBasin	12.35	49595
ExBasin	12.40	49772
ExBasin	12.45	49948
ExBasin	12.50	50124
ExBasin	12.55	50301
ExBasin	12.60	50477
ExBasin	12.65	50654
ExBasin	12.70	50830
ExBasin	12.75	51007
ExBasin	12.80	51183
ExBasin	12.85	51359

```
ExBasin                    12.90      51536
ExBasin                    12.95      51712
ExBasin                    13.00      51889
ExBasin                    13.05      52065
ExBasin                    13.10      52242
ExBasin                    13.15      52418
ExBasin                    13.20      52594
ExBasin                    13.25      52771
ExBasin                    13.30      52947
ExBasin                    13.35      53124
ExBasin                    13.40      53300
ExBasin                    13.45      53477
ExBasin                    13.50      53653
ExBasin                    13.55      53829
ExBasin                    13.60      54006
ExBasin                    13.65      54182
ExBasin                    13.70      54359
ExBasin                    13.75      54535
ExBasin                    13.80      54712
ExBasin                    13.85      54888
ExBasin                    13.90      55064

[TIMESERIES]
;;Name           Date       Time       Value
;;-------------- ---------- ---------- ----------
;Lower Otay Rain Gage from San Diego County
LWROtay          FILE "lower_otay.prn"

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

[TAGS]

[MAP]
DIMENSIONS 0.000 0.000 10000.000 10000.000
Units      None

[COORDINATES]
;;Node           X-Coord            Y-Coord
;;-------------- ------------------ ------------------
POC-1            1488.812           3184.165
Stor-1           1480.207           4268.503

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

[Polygons]
;;Subcatchment   X-Coord            Y-Coord
;;-------------- ------------------ ------------------
ExBasin          1497.418           4991.394
Village7,R-8     2332.186           4991.394
OtayVillage7     335.628            4991.394
OtayVillage7     335.628            4991.394

[SYMBOLS]
;;Gage           X-Coord            Y-Coord
;;-------------- ------------------ ------------------
LWROtay          1531.842           5456.110
```

SWMM Model - EX Condition Output Report

EPA STORM WATER MANAGEMENT MODEL - VERSION 5.1 (Build 5.1.014)

****
NOTE: The summary statistics displayed in this report are
based on results found at every computational time step,
not just on results from each reporting time step.
****

****
Analysis Options
****
Flow Units ..... CFS
Process Models:
  Rainfall/Runoff ..... YES
  RDII ..... NO
  Snowmelt ..... NO
  Groundwater ..... NO
  Flow Routing ..... YES
  Ponding Allowed ..... NO
  Water Quality ..... NO
Infiltration Method ..... GREEN_AMPT
Flow Routing Method ..... KINWAVE
Starting Date 08/28/1951 00:00:00
Ending Date 03/16/2008 23:00:00
Antecedent Dry Days 0.0
Report Time Step 01:00:00
Wet Time Step 00:15:00
Dry Time Step 04:00:00
Routing Time Step ..... 60.00 sec

Runoff Quantity Continuity	Volume acre-feet	Depth inches
Total Precipitation	7547.280	592.990
Evaporation Loss	853.542	67.063
Infiltration Loss	3808.808	299.258
Surface Runoff	2917.807	229.252
Final Storage	0.307	0.024
Continuity Error (%)	-0.440	

Flow Routing Continuity	Volume acre-feet	Volume 10^6 gal
Dry Weather Inflow	0.000	0.000
Wet Weather Inflow	2917.805	950.810
Groundwater Inflow	0.000	0.000
RDII Inflow	0.000	0.000
External Inflow	0.000	0.000
External Outflow	2906.865	947.245
Flooding Loss	0.000	0.000
Evaporation Loss	9.134	2.977
Exfiltration Loss	0.000	0.000
Initial Stored Volume	0.000	0.000
Final Stored Volume	0.102	0.033
Continuity Error (%)	0.058	

****
Highest Flow Instability Indexes
****
All links are stable.

****
Routing Time Step Summary
****

Minimum Time Step : 60.00 sec
Average Time Step : 60.00 sec
Maximum Time Step : 60.00 sec
Percent in Steady State : 0.00
Average Iterations per Step : 1.00
Percent Not Converging : 0.00

****
Subcatchment Runoff Summary
****

Subcatchment	Total Precip in	Total Runon in	Total Evap in	Total Infil in	Imperv Runoff in	Perv Runoff in	Total Runoff in	Total Runoff 10^6 gal	Peak Runoff CFS	Runoff Coeff
ExBasin	592.99	12486.50	118.96	1162.72	194.50	11634.44	11828.95	950.74	78.19	0.904
Village7,R-8	592.99	0.00	17.91	493.97	0.00	83.14	83.14	30.66	9.46	0.140
OtayVillage7	592.99	0.00	70.84	261.08	223.04	40.06	263.10	972.93	75.92	0.444

****
Node Depth Summary
****

Node	Type	Average Depth Feet	Maximum Depth Feet	Maximum HGL Feet	Time of Max Occurrence days hr:min	Reported Max Depth Feet
POC-1	OUTFALL	0.00	0.00	0.00	0 00:00	0.00
Stor-1	STORAGE	0.02	5.73	395.73	16971 17:45	5.58

****
Node Inflow Summary
****

Node	Type	Maximum Lateral Inflow CFS	Maximum Total Inflow CFS	Time of Max Occurrence days hr:min	Lateral Inflow Volume 10^6 gal	Total Inflow Volume 10^6 gal	Flow Balance Error Percent
POC-1	OUTFALL	0.00	50.84	16971 17:45	0	947	0.000
Stor-1	STORAGE	78.19	78.19	16971 17:16	951	951	0.058

****
Node Flooding Summary
****

No nodes were flooded.

****
Storage Volume Summary
****

Storage Unit	Average Volume 1000 ft3	Avg Pcnt Full	Evap Pcnt Loss	Exfil Pcnt Loss	Maximum Volume 1000 ft3	Max Pcnt Full	Time of Max Occurrence days hr:min	Maximum Outflow CFS
Stor-1	0.380	0	0	0	136.579	41	16971 17:44	50.84

****
Outfall Loading Summary
****

Outfall Node	Flow Freq Pcnt	Avg Flow CFS	Max Flow CFS	Total Volume 10^6 gal
POC-1	11.73	0.60	50.84	947.175
System	11.73	0.60	50.84	947.175

****
Link Flow Summary
****

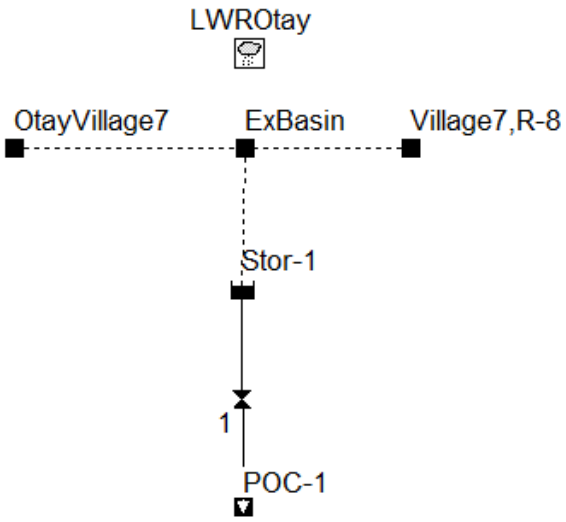
Link	Type	Maximum |Flow| CFS	Time of Max Occurrence days hr:min	Maximum |Veloc| ft/sec	Max/ Full Flow	Max/ Full Depth
1	DUMMY	50.84	16971 17:45			

****
Conduit Surcharge Summary
****

No conduits were surcharged.

Analysis begun on: Thu Apr 6 10:23:43 2023
Analysis ended on: Thu Apr 6 10:24:14 2023
Total elapsed time: 00:00:31

POC 1 – Developed Condition



SWMM Model - PR Condition Input Data

```
[TITLE]
;;Project Title/Notes

[OPTIONS]
;;Option             Value
FLOW_UNITS           CFS
INFILTRATION         GREEN_AMPT
FLOW_ROUTING         KINWAVE
LINK_OFFSETS         DEPTH
MIN_SLOPE            0
ALLOW_PONDING        NO
SKIP_STEADY_STATE    NO

START_DATE           08/28/1951
START_TIME           00:00:00
REPORT_START_DATE    08/28/1951
REPORT_START_TIME    00:00:00
END_DATE             03/16/2008
END_TIME             23:00:00
SWEEP_START          01/01
SWEEP_END            12/31
DRY_DAYS             0
REPORT_STEP          01:00:00
WET_STEP             00:15:00
DRY_STEP             04:00:00
ROUTING_STEP         0:01:00
RULE_STEP            00:00:00

INERTIAL_DAMPING     PARTIAL
NORMAL_FLOW_LIMITED  BOTH
FORCE_MAIN_EQUATION  H-W
VARIABLE_STEP        0.75
LENGTHENING_STEP     0
MIN_SURFAREA         12.557
MAX_TRIALS           8
HEAD_TOLERANCE       0.005
SYS_FLOW_TOL         5
LAT_FLOW_TOL         5
MINIMUM_STEP         0.5
THREADS              1

[EVAPORATION]
;;Data Source    Parameters
;;-------------- ----------------
MONTHLY          0.06   0.08   0.11   0.16   0.18   0.21   0.21   0.20   0.16   0.12   0.08   0.06
DRY_ONLY         NO

[RAINGAGES]
;;Name           Format    Interval SCF      Source
;;-------------- --------- ------ ------ ----------
LWROtay          INTENSITY 1:00     1.0      TIMESERIES LWROtay

[SUBCATCHMENTS]
;;Name           Rain Gage        Outlet           Area     %Imperv  Width    %Slope   CurbLen  SnowPack
;;-------------- ---------------- ---------------- -------- -------- -------- -------- -------- ----------------
ExBasin          LWROtay          Stor-1           2.96     1.5      225      0.1      0
;Proposed Developed Area - Village 7 R-8
Village7,R-8     LWROtay          ExBasin          13.82    48       1648     3.28     0
;Existing Developed Area - Otay Village 7
OtayVillage7     LWROtay          ExBasin          135.87   47       1594     2.37     0

[SUBAREAS]
;;Subcatchment   N-Imperv   N-Perv     S-Imperv   S-Perv     PctZero    RouteTo    PctRouted
;;-------------- ---------- ---------- ---------- ---------- ---------- ---------- ----------
ExBasin          0.012      0.15       0.05       .1         25         OUTLET
Village7,R-8     0.012      0.15       0.05       0.10       25         OUTLET
OtayVillage7     0.012      0.15       0.05       0.10       25         OUTLET

[INFILTRATION]
;;Subcatchment   Suction    Ksat       IMD
;;-------------- ---------- ---------- ----------
```

```
ExBasin          9          0.01875    0.33
Village7,R-8     9          0.01875    0.33
OtayVillage7     9          0.01875    0.33

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

[STORAGE]
;;Name           Elev.    MaxDepth   InitDepth  Shape      Curve Name/Params            N/A      Fevap    Psi
  Ksat     IMD
;;-------------- -------- ---------- ---------- ---------- ---------------------------- -------- --------
   -------- --------
;ExBasin
Stor-1           390      10.9       0          TABULAR    ExBasin                      0        1

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

;;-------------- ---------------- ---------------- ---------- --------------- ---------------- ----------
--------
1                Stor-1           POC-1            0          TABULAR/DEPTH   ExBasinOutlet               NO


[CURVES]
;;Name           Type       X-Value    Y-Value
;;-------------- ---------- ---------- ----------
;Ex Basin Outlet
ExBasinOutlet    Rating     0.00       0.000
ExBasinOutlet               0.05       0.008
ExBasinOutlet               0.10       0.031
ExBasinOutlet               0.15       0.069
ExBasinOutlet               0.20       0.120
ExBasinOutlet               0.25       0.184
ExBasinOutlet               0.30       0.262
ExBasinOutlet               0.35       0.350
ExBasinOutlet               0.40       0.450
ExBasinOutlet               0.45       0.560
ExBasinOutlet               0.50       0.680
ExBasinOutlet               0.55       0.808
ExBasinOutlet               0.60       0.943
ExBasinOutlet               0.65       1.085
ExBasinOutlet               0.70       1.232
ExBasinOutlet               0.75       1.385
ExBasinOutlet               0.80       1.541
ExBasinOutlet               0.85       1.700
ExBasinOutlet               0.90       1.861
ExBasinOutlet               0.95       1.950
ExBasinOutlet               1.00       2.039
ExBasinOutlet               1.05       2.125
ExBasinOutlet               1.10       2.207
ExBasinOutlet               1.15       2.286
ExBasinOutlet               1.20       2.363
ExBasinOutlet               1.25       2.437
ExBasinOutlet               1.30       2.509
ExBasinOutlet               1.35       2.579
ExBasinOutlet               1.40       2.648
ExBasinOutlet               1.45       2.714
ExBasinOutlet               1.50       2.779
ExBasinOutlet               1.55       2.851
ExBasinOutlet               1.60       2.939
ExBasinOutlet               1.65       3.041
ExBasinOutlet               1.70       3.157
ExBasinOutlet               1.75       3.288
ExBasinOutlet               1.80       3.431
ExBasinOutlet               1.85       3.588
ExBasinOutlet               1.90       3.756
ExBasinOutlet               1.95       3.936
ExBasinOutlet               2.00       4.126
ExBasinOutlet               2.05       4.327
```

ExBasinOutlet	2.10	4.536
ExBasinOutlet	2.15	4.754
ExBasinOutlet	2.20	4.980
ExBasinOutlet	2.25	5.213
ExBasinOutlet	2.30	5.452
ExBasinOutlet	2.35	5.696
ExBasinOutlet	2.40	5.944
ExBasinOutlet	2.45	6.196
ExBasinOutlet	2.50	6.451
ExBasinOutlet	2.55	6.708
ExBasinOutlet	2.60	6.923
ExBasinOutlet	2.65	7.090
ExBasinOutlet	2.70	7.251
ExBasinOutlet	2.75	7.408
ExBasinOutlet	2.80	7.561
ExBasinOutlet	2.85	7.710
ExBasinOutlet	2.90	7.855
ExBasinOutlet	2.95	7.997
ExBasinOutlet	3.00	8.136
ExBasinOutlet	3.05	8.295
ExBasinOutlet	3.10	8.492
ExBasinOutlet	3.15	8.726
ExBasinOutlet	3.20	8.998
ExBasinOutlet	3.25	9.306
ExBasinOutlet	3.30	9.649
ExBasinOutlet	3.35	10.027
ExBasinOutlet	3.40	10.439
ExBasinOutlet	3.45	10.884
ExBasinOutlet	3.50	11.360
ExBasinOutlet	3.55	11.868
ExBasinOutlet	3.60	12.405
ExBasinOutlet	3.65	12.971
ExBasinOutlet	3.70	13.565
ExBasinOutlet	3.75	14.185
ExBasinOutlet	3.80	14.831
ExBasinOutlet	3.85	15.500
ExBasinOutlet	3.90	16.192
ExBasinOutlet	3.95	16.906
ExBasinOutlet	4.00	17.639
ExBasinOutlet	4.05	18.392
ExBasinOutlet	4.10	19.162
ExBasinOutlet	4.15	19.948
ExBasinOutlet	4.20	20.750
ExBasinOutlet	4.25	21.564
ExBasinOutlet	4.30	22.391
ExBasinOutlet	4.35	23.228
ExBasinOutlet	4.40	24.074
ExBasinOutlet	4.45	24.929
ExBasinOutlet	4.50	25.789
ExBasinOutlet	4.55	26.655
ExBasinOutlet	4.60	27.525
ExBasinOutlet	4.65	28.397
ExBasinOutlet	4.70	28.706
ExBasinOutlet	4.75	29.235
ExBasinOutlet	4.80	29.752
ExBasinOutlet	4.85	30.258
ExBasinOutlet	4.90	30.754
ExBasinOutlet	4.95	31.241
ExBasinOutlet	5.00	31.718
ExBasinOutlet	5.05	32.188
ExBasinOutlet	5.10	32.649
ExBasinOutlet	5.15	33.103
ExBasinOutlet	5.20	33.550
ExBasinOutlet	5.25	33.990
ExBasinOutlet	5.30	34.424
ExBasinOutlet	5.35	34.852
ExBasinOutlet	5.40	35.273
ExBasinOutlet	5.45	35.689
ExBasinOutlet	5.50	36.100
ExBasinOutlet	5.55	36.539
ExBasinOutlet	5.60	37.034

ExBasinOutlet	5.65	37.585
ExBasinOutlet	5.70	38.190
ExBasinOutlet	5.75	38.848
ExBasinOutlet	5.80	39.558
ExBasinOutlet	5.85	40.320
ExBasinOutlet	5.90	41.130
ExBasinOutlet	5.95	41.989
ExBasinOutlet	6.00	42.895
ExBasinOutlet	6.05	43.845
ExBasinOutlet	6.10	44.840
ExBasinOutlet	6.15	45.876
ExBasinOutlet	6.20	46.952
ExBasinOutlet	6.25	48.067
ExBasinOutlet	6.30	49.218
ExBasinOutlet	6.35	50.405
ExBasinOutlet	6.40	51.624
ExBasinOutlet	6.45	52.874
ExBasinOutlet	6.50	54.154
ExBasinOutlet	6.55	55.461
ExBasinOutlet	6.60	56.793
ExBasinOutlet	6.65	58.148
ExBasinOutlet	6.70	59.524
ExBasinOutlet	6.75	60.919
ExBasinOutlet	6.80	62.332
ExBasinOutlet	6.85	63.759
ExBasinOutlet	6.90	65.199
ExBasinOutlet	6.95	66.650
ExBasinOutlet	7.00	68.110
ExBasinOutlet	7.05	69.577
ExBasinOutlet	7.10	71.048
ExBasinOutlet	7.15	72.522
ExBasinOutlet	7.20	73.151
ExBasinOutlet	7.25	74.108
ExBasinOutlet	7.30	75.047
ExBasinOutlet	7.35	75.968
ExBasinOutlet	7.40	76.874
ExBasinOutlet	7.45	77.764
ExBasinOutlet	7.50	78.641
ExBasinOutlet	7.55	79.504
ExBasinOutlet	7.60	80.355
ExBasinOutlet	7.65	81.193
ExBasinOutlet	7.70	82.020
ExBasinOutlet	7.75	82.836
ExBasinOutlet	7.80	83.642
ExBasinOutlet	7.85	84.437
ExBasinOutlet	7.90	85.223
ExBasinOutlet	7.95	86.000
ExBasinOutlet	8.00	86.768
ExBasinOutlet	8.05	87.528
ExBasinOutlet	8.10	88.279
ExBasinOutlet	8.15	89.023
ExBasinOutlet	8.20	89.758
ExBasinOutlet	8.25	90.487
ExBasinOutlet	8.30	91.208
ExBasinOutlet	8.35	91.923
ExBasinOutlet	8.40	92.631
ExBasinOutlet	8.45	93.332
ExBasinOutlet	8.50	94.028
ExBasinOutlet	8.55	94.717
ExBasinOutlet	8.60	95.400
ExBasinOutlet	8.65	96.078
ExBasinOutlet	8.70	96.750
ExBasinOutlet	8.75	97.416
ExBasinOutlet	8.80	98.077
ExBasinOutlet	8.85	98.734
ExBasinOutlet	8.90	99.385
ExBasinOutlet	8.95	100.031
ExBasinOutlet	9.00	100.672
ExBasinOutlet	9.05	101.309
ExBasinOutlet	9.10	101.941
ExBasinOutlet	9.15	102.569

ExBasinOutlet	9.20	103.193
ExBasinOutlet	9.25	103.812
ExBasinOutlet	9.30	104.427
ExBasinOutlet	9.35	105.038
ExBasinOutlet	9.40	105.645
ExBasinOutlet	9.45	106.248
ExBasinOutlet	9.50	106.848
ExBasinOutlet	9.55	107.443
ExBasinOutlet	9.60	108.035
ExBasinOutlet	9.65	108.624
ExBasinOutlet	9.70	109.209
ExBasinOutlet	9.75	109.790
ExBasinOutlet	9.80	110.368
ExBasinOutlet	9.85	110.943
ExBasinOutlet	9.90	111.515
ExBasinOutlet	9.95	112.083
ExBasinOutlet	10.00	112.648
ExBasinOutlet	10.05	113.210
ExBasinOutlet	10.10	113.769
ExBasinOutlet	10.15	114.325
ExBasinOutlet	10.20	114.878
ExBasinOutlet	10.25	115.428
ExBasinOutlet	10.30	115.976
ExBasinOutlet	10.35	116.520
ExBasinOutlet	10.40	117.062
ExBasinOutlet	10.45	117.601
ExBasinOutlet	10.50	118.138
ExBasinOutlet	10.55	118.672
ExBasinOutlet	10.60	119.203
ExBasinOutlet	10.65	119.732
ExBasinOutlet	10.70	120.258
ExBasinOutlet	10.75	120.782
ExBasinOutlet	10.80	121.303
ExBasinOutlet	10.85	121.822
ExBasinOutlet	10.90	122.339
ExBasinOutlet	10.95	122.853
ExBasinOutlet	11.00	123.365
ExBasinOutlet	11.05	123.875
ExBasinOutlet	11.10	124.383
ExBasinOutlet	11.15	124.888
ExBasinOutlet	11.20	125.391
ExBasinOutlet	11.25	125.892
ExBasinOutlet	11.30	126.391
ExBasinOutlet	11.35	126.888
ExBasinOutlet	11.40	127.383
ExBasinOutlet	11.45	127.875
ExBasinOutlet	11.50	128.366
ExBasinOutlet	11.55	131.238
ExBasinOutlet	11.60	136.081
ExBasinOutlet	11.65	142.208
ExBasinOutlet	11.70	149.372
ExBasinOutlet	11.75	157.431
ExBasinOutlet	11.80	166.289
ExBasinOutlet	11.85	175.877
ExBasinOutlet	11.90	186.139
ExBasinOutlet	11.95	197.031
ExBasinOutlet	12.00	208.518
ExBasinOutlet	12.05	220.569
ExBasinOutlet	12.10	233.157
ExBasinOutlet	12.15	246.259
ExBasinOutlet	12.20	259.856
ExBasinOutlet	12.25	273.929
ExBasinOutlet	12.30	288.461
ExBasinOutlet	12.35	303.439
ExBasinOutlet	12.40	318.849
ExBasinOutlet	12.45	334.678
ExBasinOutlet	12.50	350.916
ExBasinOutlet	12.55	367.552
ExBasinOutlet	12.60	384.577
ExBasinOutlet	12.65	401.981
ExBasinOutlet	12.70	419.756

```
ExBasinOutlet               12.75      437.894
ExBasinOutlet               12.80      456.389
ExBasinOutlet               12.85      475.232
ExBasinOutlet               12.90      494.418
ExBasinOutlet               12.95      513.940
ExBasinOutlet               13.00      525.972
ExBasinOutlet               13.05      532.754
ExBasinOutlet               13.10      539.433
ExBasinOutlet               13.15      546.013
ExBasinOutlet               13.20      552.500
ExBasinOutlet               13.25      558.897
ExBasinOutlet               13.30      565.209
ExBasinOutlet               13.35      571.437
ExBasinOutlet               13.40      577.587
ExBasinOutlet               13.45      583.660
ExBasinOutlet               13.50      589.661
ExBasinOutlet               13.55      595.590
ExBasinOutlet               13.60      601.452
ExBasinOutlet               13.65      607.248
ExBasinOutlet               13.70      612.981
ExBasinOutlet               13.75      618.653
ExBasinOutlet               13.80      624.265
ExBasinOutlet               13.85      629.820
ExBasinOutlet               13.90      635.319
;
;Ex Basin
ExBasin          Storage    0.00       17535
ExBasin                     0.05       17647
ExBasin                     0.10       17758
ExBasin                     0.15       17870
ExBasin                     0.20       17982
ExBasin                     0.25       18093
ExBasin                     0.30       18205
ExBasin                     0.35       18317
ExBasin                     0.40       18428
ExBasin                     0.45       18540
ExBasin                     0.50       18651
ExBasin                     0.55       18763
ExBasin                     0.60       18875
ExBasin                     0.65       18986
ExBasin                     0.70       19098
ExBasin                     0.75       19210
ExBasin                     0.80       19321
ExBasin                     0.85       19433
ExBasin                     0.90       19545
ExBasin                     0.95       19656
ExBasin                     1.00       19768
ExBasin                     1.05       19873
ExBasin                     1.10       19979
ExBasin                     1.15       20085
ExBasin                     1.20       20190
ExBasin                     1.25       20296
ExBasin                     1.30       20401
ExBasin                     1.35       20507
ExBasin                     1.40       20613
ExBasin                     1.45       20718
ExBasin                     1.50       20824
ExBasin                     1.55       20929
ExBasin                     1.60       21035
ExBasin                     1.65       21140
ExBasin                     1.70       21246
ExBasin                     1.75       21352
ExBasin                     1.80       21457
ExBasin                     1.85       21563
ExBasin                     1.90       21668
ExBasin                     1.95       21774
ExBasin                     2.00       21880
ExBasin                     2.05       21991
ExBasin                     2.10       22102
ExBasin                     2.15       22213
ExBasin                     2.20       22325
```

ExBasin	2.25	22436
ExBasin	2.30	22547
ExBasin	2.35	22659
ExBasin	2.40	22770
ExBasin	2.45	22881
ExBasin	2.50	22993
ExBasin	2.55	23104
ExBasin	2.60	23215
ExBasin	2.65	23326
ExBasin	2.70	23438
ExBasin	2.75	23549
ExBasin	2.80	23660
ExBasin	2.85	23772
ExBasin	2.90	23883
ExBasin	2.95	23994
ExBasin	3.00	24106
ExBasin	3.05	24215
ExBasin	3.10	24325
ExBasin	3.15	24435
ExBasin	3.20	24545
ExBasin	3.25	24655
ExBasin	3.30	24765
ExBasin	3.35	24875
ExBasin	3.40	24985
ExBasin	3.45	25095
ExBasin	3.50	25205
ExBasin	3.55	25315
ExBasin	3.60	25425
ExBasin	3.65	25535
ExBasin	3.70	25645
ExBasin	3.75	25755
ExBasin	3.80	25865
ExBasin	3.85	25975
ExBasin	3.90	26085
ExBasin	3.95	26195
ExBasin	4.00	26305
ExBasin	4.05	26420
ExBasin	4.10	26536
ExBasin	4.15	26652
ExBasin	4.20	26768
ExBasin	4.25	26883
ExBasin	4.30	26999
ExBasin	4.35	27115
ExBasin	4.40	27230
ExBasin	4.45	27346
ExBasin	4.50	27462
ExBasin	4.55	27578
ExBasin	4.60	27693
ExBasin	4.65	27809
ExBasin	4.70	27925
ExBasin	4.75	28040
ExBasin	4.80	28156
ExBasin	4.85	28272
ExBasin	4.90	28388
ExBasin	4.95	28503
ExBasin	5.00	28619
ExBasin	5.05	28739
ExBasin	5.10	28860
ExBasin	5.15	28980
ExBasin	5.20	29101
ExBasin	5.25	29221
ExBasin	5.30	29342
ExBasin	5.35	29462
ExBasin	5.40	29582
ExBasin	5.45	29703
ExBasin	5.50	29823
ExBasin	5.55	29944
ExBasin	5.60	30064
ExBasin	5.65	30184
ExBasin	5.70	30305
ExBasin	5.75	30425

ExBasin	5.80	30546
ExBasin	5.85	30666
ExBasin	5.90	30787
ExBasin	5.95	30907
ExBasin	6.00	31027
ExBasin	6.05	31160
ExBasin	6.10	31292
ExBasin	6.15	31424
ExBasin	6.20	31557
ExBasin	6.25	31689
ExBasin	6.30	31821
ExBasin	6.35	31954
ExBasin	6.40	32086
ExBasin	6.45	32219
ExBasin	6.50	32351
ExBasin	6.55	32483
ExBasin	6.60	32616
ExBasin	6.65	32748
ExBasin	6.70	32880
ExBasin	6.75	33013
ExBasin	6.80	33145
ExBasin	6.85	33277
ExBasin	6.90	33410
ExBasin	6.95	33542
ExBasin	7.00	33674
ExBasin	7.05	33810
ExBasin	7.10	33945
ExBasin	7.15	34081
ExBasin	7.20	34216
ExBasin	7.25	34352
ExBasin	7.30	34487
ExBasin	7.35	34623
ExBasin	7.40	34758
ExBasin	7.45	34894
ExBasin	7.50	35029
ExBasin	7.55	35165
ExBasin	7.60	35300
ExBasin	7.65	35436
ExBasin	7.70	35571
ExBasin	7.75	35707
ExBasin	7.80	35842
ExBasin	7.85	35977
ExBasin	7.90	36113
ExBasin	7.95	36248
ExBasin	8.00	36384
ExBasin	8.05	36523
ExBasin	8.10	36662
ExBasin	8.15	36801
ExBasin	8.20	36941
ExBasin	8.25	37080
ExBasin	8.30	37219
ExBasin	8.35	37358
ExBasin	8.40	37497
ExBasin	8.45	37636
ExBasin	8.50	37776
ExBasin	8.55	37915
ExBasin	8.60	38054
ExBasin	8.65	38193
ExBasin	8.70	38332
ExBasin	8.75	38471
ExBasin	8.80	38611
ExBasin	8.85	38750
ExBasin	8.90	38889
ExBasin	8.95	39028
ExBasin	9.00	39167
ExBasin	9.05	39311
ExBasin	9.10	39455
ExBasin	9.15	39599
ExBasin	9.20	39743
ExBasin	9.25	39887
ExBasin	9.30	40031

ExBasin	9.35	40175
ExBasin	9.40	40319
ExBasin	9.45	40463
ExBasin	9.50	40607
ExBasin	9.55	40751
ExBasin	9.60	40895
ExBasin	9.65	41039
ExBasin	9.70	41183
ExBasin	9.75	41327
ExBasin	9.80	41471
ExBasin	9.85	41615
ExBasin	9.90	41759
ExBasin	9.95	41903
ExBasin	10.00	42047
ExBasin	10.05	42200
ExBasin	10.10	42353
ExBasin	10.15	42506
ExBasin	10.20	42659
ExBasin	10.25	42812
ExBasin	10.30	42965
ExBasin	10.35	43118
ExBasin	10.40	43271
ExBasin	10.45	43424
ExBasin	10.50	43577
ExBasin	10.55	43730
ExBasin	10.60	43883
ExBasin	10.65	44036
ExBasin	10.70	44189
ExBasin	10.75	44342
ExBasin	10.80	44495
ExBasin	10.85	44648
ExBasin	10.90	44801
ExBasin	10.95	44954
ExBasin	11.00	45107
ExBasin	11.05	45270
ExBasin	11.10	45432
ExBasin	11.15	45595
ExBasin	11.20	45758
ExBasin	11.25	45920
ExBasin	11.30	46083
ExBasin	11.35	46246
ExBasin	11.40	46408
ExBasin	11.45	46571
ExBasin	11.50	46734
ExBasin	11.55	46896
ExBasin	11.60	47059
ExBasin	11.65	47222
ExBasin	11.70	47384
ExBasin	11.75	47547
ExBasin	11.80	47710
ExBasin	11.85	47872
ExBasin	11.90	48035
ExBasin	11.95	48198
ExBasin	12.00	48360
ExBasin	12.05	48537
ExBasin	12.10	48713
ExBasin	12.15	48889
ExBasin	12.20	49066
ExBasin	12.25	49242
ExBasin	12.30	49419
ExBasin	12.35	49595
ExBasin	12.40	49772
ExBasin	12.45	49948
ExBasin	12.50	50124
ExBasin	12.55	50301
ExBasin	12.60	50477
ExBasin	12.65	50654
ExBasin	12.70	50830
ExBasin	12.75	51007
ExBasin	12.80	51183
ExBasin	12.85	51359

```
ExBasin                    12.90      51536
ExBasin                    12.95      51712
ExBasin                    13.00      51889
ExBasin                    13.05      52065
ExBasin                    13.10      52242
ExBasin                    13.15      52418
ExBasin                    13.20      52594
ExBasin                    13.25      52771
ExBasin                    13.30      52947
ExBasin                    13.35      53124
ExBasin                    13.40      53300
ExBasin                    13.45      53477
ExBasin                    13.50      53653
ExBasin                    13.55      53829
ExBasin                    13.60      54006
ExBasin                    13.65      54182
ExBasin                    13.70      54359
ExBasin                    13.75      54535
ExBasin                    13.80      54712
ExBasin                    13.85      54888
ExBasin                    13.90      55064

[TIMESERIES]
;;Name           Date       Time       Value
;;-------------- ---------- ---------- ----------
;Lower Otay Rain Gage from San Diego County
LWROtay          FILE "lower_otay.prn"

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

[TAGS]

[MAP]
DIMENSIONS 0.000 0.000 10000.000 10000.000
Units      None

[COORDINATES]
;;Node           X-Coord            Y-Coord
;;-------------- ------------------ ------------------
POC-1            1488.812           3184.165
Stor-1           1480.207           4268.503

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

[Polygons]
;;Subcatchment   X-Coord            Y-Coord
;;-------------- ------------------ ------------------
ExBasin          1497.418           4991.394
Village7,R-8     2332.186           4991.394
OtayVillage7     335.628            4991.394
OtayVillage7     335.628            4991.394

[SYMBOLS]
;;Gage           X-Coord            Y-Coord
;;-------------- ------------------ ------------------
LWROtay          1531.842           5456.110
```

SWMM Model - PR Condition Output Report

EPA STORM WATER MANAGEMENT MODEL - VERSION 5.1 (Build 5.1.014)

****
NOTE: The summary statistics displayed in this report are
based on results found at every computational time step,
not just on results from each reporting time step.
****

****
Analysis Options
****
Flow Units ..... CFS
Process Models:
  Rainfall/Runoff ..... YES
  RDII ..... NO
  Snowmelt ..... NO
  Groundwater ..... NO
  Flow Routing ..... YES
  Ponding Allowed ..... NO
  Water Quality ..... NO
Infiltration Method ..... GREEN_AMPT
Flow Routing Method ..... KINWAVE
Starting Date 08/28/1951 00:00:00
Ending Date 03/16/2008 23:00:00
Antecedent Dry Days 0.0
Report Time Step 01:00:00
Wet Time Step 00:15:00
Dry Time Step 04:00:00
Routing Time Step ..... 60.00 sec

Runoff Quantity Continuity	Volume acre-feet	Depth inches
Total Precipitation	7543.327	592.990
Evaporation Loss	904.241	71.083
Infiltration Loss	3525.937	277.178
Surface Runoff	3151.641	247.754
Final Storage	0.330	0.026
Continuity Error (%)	-0.515	

Flow Routing Continuity	Volume acre-feet	Volume 10^6 gal
Dry Weather Inflow	0.000	0.000
Wet Weather Inflow	3151.639	1027.009
Groundwater Inflow	0.000	0.000
RDII Inflow	0.000	0.000
External Inflow	0.000	0.000
External Outflow	3137.994	1022.562
Flooding Loss	0.000	0.000
Evaporation Loss	12.151	3.960
Exfiltration Loss	0.000	0.000
Initial Stored Volume	0.000	0.000
Final Stored Volume	0.152	0.049
Continuity Error (%)	0.043	

****
Highest Flow Instability Indexes
****
All links are stable.

****
Routing Time Step Summary
****

Minimum Time Step : 60.00 sec
Average Time Step : 60.00 sec
Maximum Time Step : 60.00 sec
Percent in Steady State : 0.00
Average Iterations per Step : 1.00
Percent Not Converging : 0.00

****
Subcatchment Runoff Summary
****

Subcatchment	Total Precip in	Total Runon in	Total Evap in	Total Infil in	Imperv Runoff in	Perv Runoff in	Total Runoff in	Total Runoff 10^6 gal	Peak Runoff CFS	Runoff Coeff
ExBasin	592.99	13467.52	120.55	1197.01	209.24	12567.69	12776.92	1026.93	79.33	0.909
Village7,R-8	592.99	0.00	62.51	241.17	239.04	56.57	295.61	110.93	10.43	0.499
OtayVillage7	592.99	0.00	70.88	260.80	223.05	40.28	263.33	971.51	75.78	0.444

****
Node Depth Summary
****

Node	Type	Average Depth Feet	Maximum Depth Feet	Maximum HGL Feet	Time of Max Occurrence days hr:min	Reported Max Depth Feet
POC-1	OUTFALL	0.00	0.00	0.00	0 00:00	0.00
Stor-1	STORAGE	0.04	6.82	396.82	16971 17:31	6.40

****
Node Inflow Summary
****

Node	Type	Maximum Lateral Inflow CFS	Maximum Total Inflow CFS	Time of Max Occurrence days hr:min	Lateral Inflow Volume 10^6 gal	Total Inflow Volume 10^6 gal	Flow Balance Error Percent
POC-1	OUTFALL	0.00	62.83	16971 17:31	0	1.02e+03	0.000
Stor-1	STORAGE	79.33	79.33	16971 17:16	1.03e+03	1.03e+03	0.043

****
Node Flooding Summary
****

No nodes were flooded.

****
Storage Volume Summary
****

Storage Unit	Average Volume 1000 ft3	Avg Pcnt Full	Evap Pcnt Loss	Exfil Pcnt Loss	Maximum Volume 1000 ft3	Max Pcnt Full	Time of Max Occurrence days hr:min	Maximum Outflow CFS
Stor-1	0.775	0	0	0	171.244	52	16971 17:30	62.84

****
Outfall Loading Summary
****

Outfall Node	Flow Freq Pcnt	Avg Flow CFS	Max Flow CFS	Total Volume 10^6 gal
POC-1	15.09	0.51	62.83	1022.486
System	15.09	0.51	62.83	1022.486

****
Link Flow Summary
****

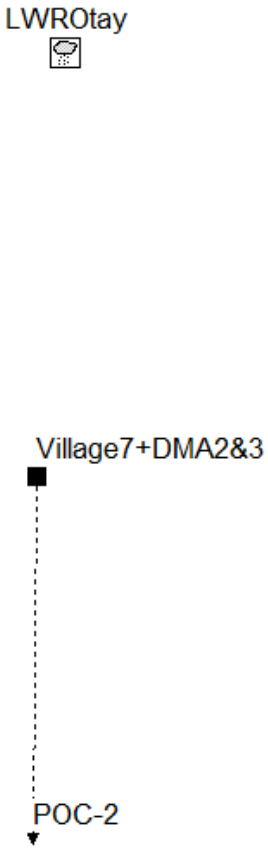
Link	Type	Maximum |Flow| CFS	Time of Max Occurrence days hr:min	Maximum |Veloc| ft/sec	Max/ Full Flow	Max/ Full Depth
1	DUMMY	62.83	16971 17:31			

****
Conduit Surcharge Summary
****

No conduits were surcharged.

Analysis begun on: Thu Apr 6 10:59:56 2023
Analysis ended on: Thu Apr 6 11:00:24 2023
Total elapsed time: 00:00:28

POC 2 – Pre-Developed Condition



SWMM Model - EX Condition Input Data

```
[TITLE]
;;Project Title/Notes

[OPTIONS]
;;Option             Value
FLOW_UNITS           CFS
INFILTRATION         GREEN_AMPT
FLOW_ROUTING         KINWAVE
LINK_OFFSETS         DEPTH
MIN_SLOPE            0
ALLOW_PONDING        NO
SKIP_STEADY_STATE    NO

START_DATE           08/28/1951
START_TIME           00:00:00
REPORT_START_DATE    08/28/1951
REPORT_START_TIME    00:00:00
END_DATE             03/16/2008
END_TIME             23:00:00
SWEEP_START          01/01
SWEEP_END            12/31
DRY_DAYS             0
REPORT_STEP          01:00:00
WET_STEP             00:15:00
DRY_STEP             04:00:00
ROUTING_STEP         0:01:00
RULE_STEP            00:00:00

INERTIAL_DAMPING     PARTIAL
NORMAL_FLOW_LIMITED  BOTH
FORCE_MAIN_EQUATION  H-W
VARIABLE_STEP        0.75
LENGTHENING_STEP     0
MIN_SURFAREA         12.557
MAX_TRIALS           8
HEAD_TOLERANCE       0.005
SYS_FLOW_TOL         5
LAT_FLOW_TOL         5
MINIMUM_STEP         0.5
THREADS              1

[EVAPORATION]
;;Data Source    Parameters
;;-------------- ----------------
MONTHLY          0.06   0.08   0.11   0.16   0.18   0.21   0.21   0.20   0.16   0.12   0.08   0.06
DRY_ONLY         NO

[RAINGAGES]
;;Name           Format    Interval SCF      Source
;;-------------- --------- ------ ------ ----------
LWROtay          INTENSITY 1:00     1.0      TIMESERIES LWROtay

[SUBCATCHMENTS]
;;Name           Rain Gage        Outlet           Area     %Imperv  Width    %Slope   CurbLen  SnowPack
;;-------------- ---------------- ---------------- -------- -------- -------- -------- -------- ----------------
;Proposed Developed Area - Village 7 R-8
Village7+DMA2&3  LWROtay          POC-2            89.63    64.9     1190     3.40     0

[SUBAREAS]
;;Subcatchment   N-Imperv   N-Perv     S-Imperv   S-Perv     PctZero    RouteTo    PctRouted
;;-------------- ---------- ---------- ---------- ---------- ---------- ---------- ----------
Village7+DMA2&3  0.012      0.15       0.05       0.10       25         OUTLET

[INFILTRATION]
;;Subcatchment   Suction    Ksat       IMD
;;-------------- ---------- ---------- ----------
Village7+DMA2&3  9          0.01875    0.33

[OUTFALLS]
;;Name           Elevation  Type       Stage Data       Gated    Route To
;;-------------- ---------- ---------- ---------------- -------- ----------------
```

```
POC-2            0          FREE                        NO

[TIMESERIES]
;;Name           Date       Time       Value
;;-------------- ---------- ---------- ----------
;Lower Otay Rain Gage from San Diego County
LWROtay          FILE "lower_otay.prn"

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

[TAGS]

[MAP]
DIMENSIONS 0.000 0.000 10000.000 10000.000
Units      None

[COORDINATES]
;;Node           X-Coord            Y-Coord
;;-------------- ------------------ ------------------
POC-2            1488.812           3184.165

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

[Polygons]
;;Subcatchment   X-Coord            Y-Coord
;;-------------- ------------------ ------------------
Village7+DMA2&3  1503.198           4989.339

[SYMBOLS]
;;Gage           X-Coord            Y-Coord
;;-------------- ------------------ ------------------
LWROtay          1663.113           7089.552
```

SWMM Model - EX Condition Output Report

EPA STORM WATER MANAGEMENT MODEL - VERSION 5.1 (Build 5.1.014)

****
NOTE: The summary statistics displayed in this report are
based on results found at every computational time step,
not just on results from each reporting time step.
****

****
Analysis Options
****
Flow Units ..... CFS
Process Models:
  Rainfall/Runoff ..... YES
  RDII ..... NO
  Snowmelt ..... NO
  Groundwater ..... NO
  Flow Routing ..... NO
  Water Quality ..... NO
Infiltration Method ..... GREEN_AMPT
Starting Date 08/28/1951 00:00:00
Ending Date 03/16/2008 23:00:00
Antecedent Dry Days 0.0
Report Time Step 01:00:00
Wet Time Step 00:15:00
Dry Time Step 04:00:00

Runoff Quantity Continuity	Volume acre-feet	Depth inches
Total Precipitation	4429.141	592.990
Evaporation Loss	657.141	87.980
Infiltration Loss	1268.424	169.821
Surface Runoff	2526.138	338.209
Final Storage	0.187	0.025
Continuity Error (%)	-0.514	

Flow Routing Continuity	Volume acre-feet	Volume 10^6 gal
Dry Weather Inflow	0.000	0.000
Wet Weather Inflow	2526.138	823.180
Groundwater Inflow	0.000	0.000
RDII Inflow	0.000	0.000
External Inflow	0.000	0.000
External Outflow	2526.138	823.180
Flooding Loss	0.000	0.000
Evaporation Loss	0.000	0.000
Exfiltration Loss	0.000	0.000
Initial Stored Volume	0.000	0.000
Final Stored Volume	0.000	0.000
Continuity Error (%)	0.000	

****
Subcatchment Runoff Summary
****

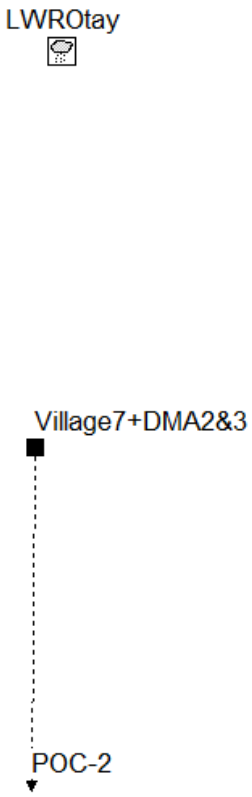
Subcatchment	Total Precip in	Total Runon in	Total Evap in	Total Infil in	Imperv Runoff in	Perv Runoff in	Total Runoff in	Total Runoff 10^6 gal	Peak Runoff CFS	Runoff Coeff

CFS

Village7&R-4	592.99	0.00	87.98	169.82	307.85	30.36	338.21	823.12
60.64	0.570							

Analysis begun on: Thu Apr 6 08:42:54 2023
Analysis ended on: Thu Apr 6 08:43:13 2023
Total elapsed time: 00:00:19

POC 2 – Mass Condition



SWMM Model - PR Condition Input Data

```
[TITLE]
;;Project Title/Notes

[OPTIONS]
;;Option             Value
FLOW_UNITS           CFS
INFILTRATION         GREEN_AMPT
FLOW_ROUTING         KINWAVE
LINK_OFFSETS         DEPTH
MIN_SLOPE            0
ALLOW_PONDING        NO
SKIP_STEADY_STATE    NO

START_DATE           08/28/1951
START_TIME           00:00:00
REPORT_START_DATE    08/28/1951
REPORT_START_TIME    00:00:00
END_DATE             03/16/2008
END_TIME             23:00:00
SWEEP_START          01/01
SWEEP_END            12/31
DRY_DAYS             0
REPORT_STEP          01:00:00
WET_STEP             00:15:00
DRY_STEP             04:00:00
ROUTING_STEP         0:01:00
RULE_STEP            00:00:00

INERTIAL_DAMPING     PARTIAL
NORMAL_FLOW_LIMITED  BOTH
FORCE_MAIN_EQUATION  H-W
VARIABLE_STEP        0.75
LENGTHENING_STEP     0
MIN_SURFAREA         12.557
MAX_TRIALS           8
HEAD_TOLERANCE       0.005
SYS_FLOW_TOL         5
LAT_FLOW_TOL         5
MINIMUM_STEP         0.5
THREADS              1

[EVAPORATION]
;;Data Source    Parameters
;;-------------- ----------------
MONTHLY          0.06   0.08   0.11   0.16   0.18   0.21   0.21   0.20   0.16   0.12   0.08   0.06
DRY_ONLY         NO

[RAINGAGES]
;;Name           Format    Interval SCF      Source
;;-------------- --------- ------ ------ ----------
LWROtay          INTENSITY 1:00     1.0      TIMESERIES LWROtay

[SUBCATCHMENTS]
;;Name           Rain Gage        Outlet           Area     %Imperv  Width    %Slope   CurbLen  SnowPack
;;-------------- ---------------- ---------------- -------- -------- -------- -------- -------- ----------------
;Proposed Developed Area - Village 7 R-8
Village7+DMA2&3  LWROtay          POC-2            89.63    65.1     1190     3.40     0

[SUBAREAS]
;;Subcatchment   N-Imperv   N-Perv     S-Imperv   S-Perv     PctZero    RouteTo    PctRouted
;;-------------- ---------- ---------- ---------- ---------- ---------- ---------- ----------
Village7+DMA2&3  0.012      0.15       0.05       0.10       25         OUTLET

[INFILTRATION]
;;Subcatchment   Suction    Ksat       IMD
;;-------------- ---------- ---------- ----------
Village7+DMA2&3  9          0.01875    0.33

[OUTFALLS]
;;Name           Elevation  Type       Stage Data       Gated    Route To
;;-------------- ---------- ---------- ---------------- -------- ----------------
```

```
POC-2            0          FREE                        NO

[TIMESERIES]
;;Name           Date       Time       Value
;;-------------- ---------- ---------- ----------
;Lower Otay Rain Gage from San Diego County
LWROtay          FILE "lower_otay.prn"

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

[TAGS]

[MAP]
DIMENSIONS 0.000 0.000 10000.000 10000.000
Units      None

[COORDINATES]
;;Node           X-Coord            Y-Coord
;;-------------- ------------------ ------------------
POC-2            1488.812           3184.165

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

[Polygons]
;;Subcatchment   X-Coord            Y-Coord
;;-------------- ------------------ ------------------
Village7+DMA2&3  1503.198           4989.339

[SYMBOLS]
;;Gage           X-Coord            Y-Coord
;;-------------- ------------------ ------------------
LWROtay          1663.113           7089.552
```

SWMM Model - PR Condition Output Report

EPA STORM WATER MANAGEMENT MODEL - VERSION 5.1 (Build 5.1.014)

****
NOTE: The summary statistics displayed in this report are
based on results found at every computational time step,
not just on results from each reporting time step.
****

****
Analysis Options
****
Flow Units ..... CFS
Process Models:
  Rainfall/Runoff ..... YES
  RDII ..... NO
  Snowmelt ..... NO
  Groundwater ..... NO
  Flow Routing ..... NO
  Water Quality ..... NO
Infiltration Method ..... GREEN_AMPT
Starting Date 08/28/1951 00:00:00
Ending Date 03/16/2008 23:00:00
Antecedent Dry Days 0.0
Report Time Step 01:00:00
Wet Time Step 00:15:00
Dry Time Step 04:00:00

Runoff Quantity Continuity	Volume acre-feet	Depth inches
Total Precipitation	4429.141	592.990
Evaporation Loss	658.698	88.189
Infiltration Loss	1260.938	168.819
Surface Runoff	2532.003	338.994
Final Storage	0.188	0.025
Continuity Error (%)	-0.512	

Flow Routing Continuity	Volume acre-feet	Volume 10^6 gal
Dry Weather Inflow	0.000	0.000
Wet Weather Inflow	2532.003	825.091
Groundwater Inflow	0.000	0.000
RDII Inflow	0.000	0.000
External Inflow	0.000	0.000
External Outflow	2532.003	825.091
Flooding Loss	0.000	0.000
Evaporation Loss	0.000	0.000
Exfiltration Loss	0.000	0.000
Initial Stored Volume	0.000	0.000
Final Stored Volume	0.000	0.000
Continuity Error (%)	0.000	

****
Subcatchment Runoff Summary
****

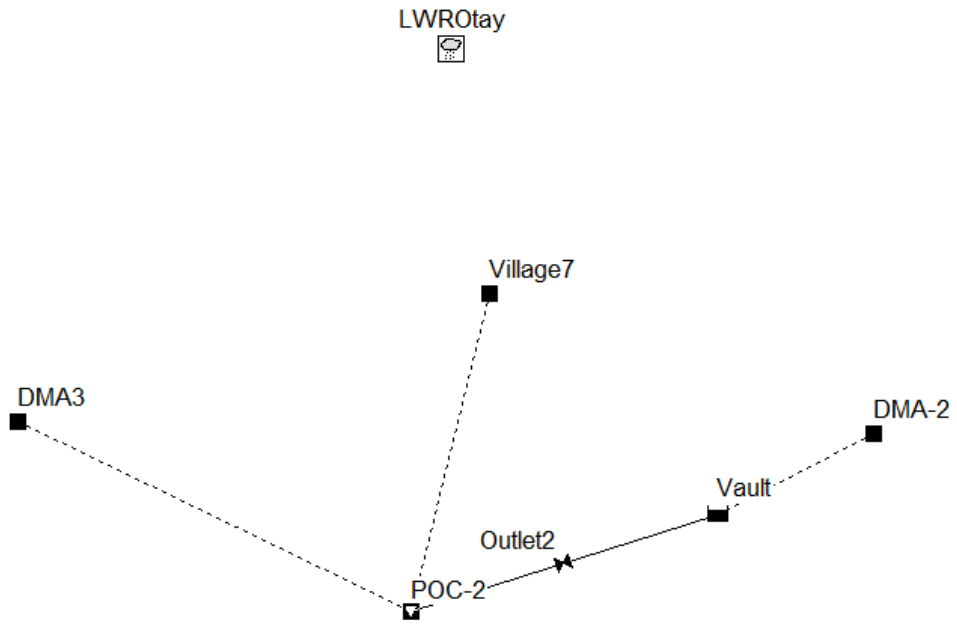
Subcatchment	Total Precip in	Total Runon in	Total Evap in	Total Infil in	Imperv Runoff in	Perv Runoff in	Total Runoff in	Total Runoff 10^6 gal	Peak Runoff CFS	Runoff Coeff

CFS

Village7+DMA2&3	592.99	0.00	88.19	168.82	308.77	30.22	338.99	825.03	60.72	0.572

Analysis begun on: Thu Apr 6 10:44:29 2023
Analysis ended on: Thu Apr 6 10:44:49 2023
Total elapsed time: 00:00:20

POC 2 – Developed Condition



SWMM Model - PR Condition Input Data

```
[TITLE]
;;Project Title/Notes

[OPTIONS]
;;Option             Value
FLOW_UNITS           CFS
INFILTRATION         GREEN_AMPT
FLOW_ROUTING         KINWAVE
LINK_OFFSETS         DEPTH
MIN_SLOPE            0
ALLOW_PONDING        NO
SKIP_STEADY_STATE    NO

START_DATE           08/28/1951
START_TIME           00:00:00
REPORT_START_DATE    08/28/1951
REPORT_START_TIME    00:00:00
END_DATE             03/16/2008
END_TIME             23:00:00
SWEEP_START          01/01
SWEEP_END            12/31
DRY_DAYS             0
REPORT_STEP          01:00:00
WET_STEP             00:15:00
DRY_STEP             04:00:00
ROUTING_STEP         0:01:00
RULE_STEP            00:00:00

INERTIAL_DAMPING     PARTIAL
NORMAL_FLOW_LIMITED  BOTH
FORCE_MAIN_EQUATION  H-W
VARIABLE_STEP        0.75
LENGTHENING_STEP     0
MIN_SURFAREA         12.557
MAX_TRIALS           8
HEAD_TOLERANCE       0.005
SYS_FLOW_TOL         5
LAT_FLOW_TOL         5
MINIMUM_STEP         0.5
THREADS              1

[EVAPORATION]
;;Data Source    Parameters
;;-------------- ----------------
MONTHLY          0.06   0.08   0.11   0.16   0.18   0.21   0.21   0.20   0.16   0.12   0.08   0.06
DRY_ONLY         NO

[RAINGAGES]
;;Name           Format    Interval SCF      Source
;;-------------- --------- ------ ------ ----------
LWROtay          INTENSITY 1:00     1.0      TIMESERIES LWROtay

[SUBCATCHMENTS]
;;Name           Rain Gage        Outlet           Area     %Imperv  Width    %Slope   CurbLen  SnowPack
;;-------------- ---------------- ---------------- -------- -------- -------- -------- -------- ----------------
;Proposed Developed Area - Village 7 R-8
Village7         LWROtay          POC-2            86.52    67.3     1193     3.40     0
DMA3             LWROtay          POC-2            0.34     49.5     675      2.90     0
DMA-2            LWROtay          Vault            2.85     78       827      1.25     0

[SUBAREAS]
;;Subcatchment   N-Imperv   N-Perv     S-Imperv   S-Perv     PctZero    RouteTo    PctRouted
;;-------------- ---------- ---------- ---------- ---------- ---------- ---------- ----------
Village7         0.012      0.15       0.05       0.10       25         OUTLET
DMA3             0.012      0.15       0.05       0.10       25         OUTLET
DMA-2            0.012      0.15       0.05       0.10       25         OUTLET

[INFILTRATION]
;;Subcatchment   Suction    Ksat       IMD
;;-------------- ---------- ---------- ----------
Village7         9          0.01875    0.33
```

```
DMA3             9          0.01875    0.33
DMA-2            9          0.01875    0.33

[LID_CONTROLS]
;;Name           Type/Layer Parameters
;;-------------- ---------- ----------
BF-1-1           BC
BF-1-1           SURFACE    7.23       0.0        0.1        0.01       5
BF-1-1           SOIL       24         0.4        0.2        0.1        5          5          1.5
BF-1-1           STORAGE    12         0.67       0          0
BF-1-1           DRAIN      5.6496     0.5        0          6          0          0

[LID_USAGE]
;;Subcatchment   LID Process      Number  Area       Width      InitSat    FromImp    ToPerv     RptFile
         DrainTo          FromPerv
;;-------------- ---------------- ------- ---------- ---------- ---------- ---------- ----------
----------------------- ---------------- ----------

[OUTFALLS]
;;Name           Elevation  Type       Stage Data       Gated    Route To
;;-------------- ---------- ---------- ---------------- -------- ----------------
POC-2            0          FREE                        NO

[STORAGE]
;;Name           Elev.    MaxDepth   InitDepth  Shape      Curve Name/Params            N/A      Fevap    Psi
  Ksat     IMD
;;-------------- -------- ---------- ---------- ---------- ---------------------------- -------- --------
   -------- --------
Vault            0        5          0          TABULAR    Vault                        0        0

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

;;-------------- ---------------- ---------------- ---------- --------------- ---------------- ----------
--------
Outlet2          Vault            POC-2            0          TABULAR/DEPTH   Outlet1                     NO


[CURVES]
;;Name           Type       X-Value    Y-Value
;;-------------- ---------- ---------- ----------
Outlet1          Rating     0.0        0.000
Outlet1                     0.1        0.012
Outlet1                     0.2        0.034
Outlet1                     0.3        0.046
Outlet1                     0.4        0.056
Outlet1                     0.5        0.0639
Outlet1                     0.6        0.0711
Outlet1                     0.7        0.0776
Outlet1                     0.8        0.0837
Outlet1                     0.9        0.0893
Outlet1                     1.0        0.0946
Outlet1                     1.1        0.0996
Outlet1                     1.2        0.1044
Outlet1                     1.3        0.1089
Outlet1                     1.4        0.1133
Outlet1                     1.5        0.1175
Outlet1                     1.6        0.1216
Outlet1                     1.7        0.1255
Outlet1                     1.8        0.1293
Outlet1                     1.9        0.1330
Outlet1                     2.0        0.1366
Outlet1                     2.1        0.1402
Outlet1                     2.2        0.1436
Outlet1                     2.3        0.1469
Outlet1                     2.4        0.1502
Outlet1                     2.5        0.1534
Outlet1                     2.6        0.1566
Outlet1                     2.7        0.1596
Outlet1                     2.8        0.1908
Outlet1                     2.9        0.2619
```

```
Outlet1                     3.0        0.3162
Outlet1                     3.1        0.3529
Outlet1                     3.2        0.3842
Outlet1                     3.3        0.4120
Outlet1                     3.4        0.4373
Outlet1                     3.5        0.4608
Outlet1                     3.6        0.4828
Outlet1                     3.7        0.5035
Outlet1                     3.8        0.5233
Outlet1                     3.9        0.5421
Outlet1                     4.0        0.5602
Outlet1                     4.1        0.6407
Outlet1                     4.2        0.8180
Outlet1                     4.3        1.0129
Outlet1                     4.4        1.1306
Outlet1                     4.5        1.2305
Outlet1                     4.6        1.3194
Outlet1                     4.7        1.6144
Outlet1                     4.8        2.5878
Outlet1                     4.9        3.9393
Outlet1                     5.0        5.5771
Outlet1                     5.1        7.4558
Outlet1                     5.2        9.5464
Outlet1                     5.3        11.8286
Outlet1                     5.4        14.2872
Outlet1                     5.5        16.9098
Outlet1                     5.6        19.6866
Outlet1                     5.7        22.6094
Outlet1                     5.8        25.6709
Outlet1                     5.9        28.8651
Outlet1                     6.0        32.1867
;
Vault            Storage    0          2500
Vault                       6          2500

[TIMESERIES]
;;Name           Date       Time       Value
;;-------------- ---------- ---------- ----------
;Lower Otay Rain Gage from San Diego County
LWROtay          FILE "lower_otay.prn"

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

[TAGS]

[MAP]
DIMENSIONS 0.000 0.000 10000.000 10000.000
Units      None

[COORDINATES]
;;Node           X-Coord            Y-Coord
;;-------------- ------------------ ------------------
POC-2            1417.910           3891.258
Vault            3166.466           4439.083

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

[Polygons]
;;Subcatchment   X-Coord            Y-Coord
;;-------------- ------------------ ------------------
Village7         1865.672           5703.625
DMA3             -826.162           4974.182
DMA-2            4059.107           4909.530

[SYMBOLS]
```

;;Gage	X-Coord	Y-Coord
LWROtay	1663.113	7089.552

SWMM Model - PR Condition Output Report

EPA STORM WATER MANAGEMENT MODEL - VERSION 5.1 (Build 5.1.014)

****
NOTE: The summary statistics displayed in this report are
based on results found at every computational time step,
not just on results from each reporting time step.
****

****
Analysis Options
****
Flow Units ..... CFS
Process Models:
  Rainfall/Runoff ..... YES
  RDII ..... NO
  Snowmelt ..... NO
  Groundwater ..... NO
  Flow Routing ..... YES
  Ponding Allowed ..... NO
  Water Quality ..... NO
Infiltration Method ..... GREEN_AMPT
Flow Routing Method ..... KINWAVE
Starting Date 08/28/1951 00:00:00
Ending Date 03/16/2008 23:00:00
Antecedent Dry Days 0.0
Report Time Step 01:00:00
Wet Time Step 00:15:00
Dry Time Step 04:00:00
Routing Time Step ..... 60.00 sec

Runoff Quantity Continuity	Volume acre-feet	Depth inches
Total Precipitation	4433.094	592.990
Evaporation Loss	673.021	90.026
Infiltration Loss	1163.827	155.679
Surface Runoff	2620.259	350.497
Final Storage	0.194	0.026
Continuity Error (%)	-0.546	

Flow Routing Continuity	Volume acre-feet	Volume 10^6 gal
Dry Weather Inflow	0.000	0.000
Wet Weather Inflow	2620.259	853.850
Groundwater Inflow	0.000	0.000
RDII Inflow	0.000	0.000
External Inflow	0.000	0.000
External Outflow	2620.230	853.841
Flooding Loss	0.000	0.000
Evaporation Loss	0.000	0.000
Exfiltration Loss	0.000	0.000
Initial Stored Volume	0.000	0.000
Final Stored Volume	0.006	0.002
Continuity Error (%)	0.001	

****
Highest Flow Instability Indexes
****
All links are stable.

****
Routing Time Step Summary
****

```
  Minimum Time Step           :    60.00 sec
  Average Time Step           :    60.00 sec
  Maximum Time Step           :    60.00 sec
  Percent in Steady State     :     0.00
  Average Iterations per Step :     1.00
  Percent Not Converging      :     0.00
```

Subcatchment Runoff Summary

Subcatchment	Total Precip in	Total Runon in	Total Evap in	Total Infil in	Imperv Runoff in	Perv Runoff in	Total Runoff in	Total Runoff 10^6 gal	Peak Runoff CFS	Runoff Coeff
Village7	592.99	0.00	90.23	157.20	319.24	29.30	348.55	818.85	60.02	0.588
DMA3	592.99	0.00	60.45	228.98	250.97	63.52	314.49	2.90	0.26	0.530
DMA-2	592.99	0.00	87.23	100.72	388.08	25.88	413.96	32.04	2.31	0.698

Node Depth Summary

Node	Type	Average Depth Feet	Maximum Depth Feet	Maximum HGL Feet	Time of Max Occurrence days hr:min	Reported Max Depth Feet
POC-2	OUTFALL	0.00	0.00	0.00	0 00:00	0.00
Vault	STORAGE	0.02	4.64	4.64	16971 17:08	4.55

Node Inflow Summary

Node	Type	Maximum Lateral Inflow CFS	Maximum Total Inflow CFS	Time of Max Occurrence days hr:min	Lateral Inflow Volume 10^6 gal	Total Inflow Volume 10^6 gal	Flow Balance Error Percent
POC-2	OUTFALL	60.29	61.14	16971 17:01	822	854	0.000
Vault	STORAGE	2.31	2.31	17230 06:01	32	32	0.023

Node Flooding Summary

No nodes were flooded.

Storage Volume Summary

Storage Unit	Average Volume 1000 ft3	Avg Pcnt Full	Evap Pcnt Loss	Exfil Pcnt Loss	Maximum Volume 1000 ft3	Max Pcnt Full	Time of Max Occurrence days hr:min	Maximum Outflow CFS
Vault	0.057	0	0	0	11.603	93	16971 17:07	1.44

****
Outfall Loading Summary
****

Outfall Node	Flow Freq Pcnt	Avg Flow CFS	Max Flow CFS	Total Volume 10^6 gal
POC-2	7.96	0.80	61.14	853.778
System	7.96	0.80	61.14	853.778

****
Link Flow Summary
****

Link	Type	Maximum |Flow| CFS	Time of Max Occurrence days hr:min	Maximum |Veloc| ft/sec	Max/ Full Flow	Max/ Full Depth
Outlet2	DUMMY	1.44	16971 17:08			

****
Conduit Surcharge Summary
****

No conduits were surcharged.

Analysis begun on: Thu Apr 6 10:15:52 2023
Analysis ended on: Thu Apr 6 10:16:21 2023
Total elapsed time: 00:00:29

EXPLANATION OF SELECTED VARIABLES

Parameters for the pre- and post-development models include soil type group D in accordance with the San Diego County Hydrology Manual and the USGS Soil Survey. Suction head, conductivity and initial deficit corresponds to average values expected for the soil types, according to sources consulted, professional experience, and approximate values obtained by the City of Chula Vista BMP manual Appendix G.

Selection of a Kinematic Approach: As the continuous model is based on hourly rainfall, and the time of concentration for the pre-development and post-development conditions is significantly smaller than 60 minutes, precise routing of the flows through the impervious surfaces, the underdrain pipe system, and the discharge pipe was considered unnecessary. The truncation error of the precipitation into hourly steps is much more significant than the precise routing in a system where the time of concentration is much smaller than 1 hour.

V. HYDROMODIFICATION WATERSHED MAPS

SEE ATTCHMENT 2A FOR HMP EXHIBITS

Project Name/_____

ATTACHMENT 3

Structural BMP Maintenance Information
Hydromodification Control Measures

Project Name/_____

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

Attachment 3: For private entity operation and maintenance, Attachment 3 must include a Storm Water Management Facilities Maintenance Agreement with Grant of Access and Covenant's ("Maintenance Agreement") Template can be found at the following link (also refer to Chapter 8.2.1 for more information's):

The following information must be included in the exhibits attached to the Maintenance Agreement:

- ☒ Vicinity map (Depiction of Project Site)
- ☐ Legal Description for Project Site
- ☐ Site design BMPs for which DCV reduction is claimed for meeting the pollutant
- ☐ control obligations.
- ☐ BMP and HMP type, location, type, manufacture model, and dimensions, specifications, cross section
- ☐ LID features such as (permeable paver and LS location, dim, SF).
- ☒ Maintenance recommendations and frequency

Will be provided during final engineering

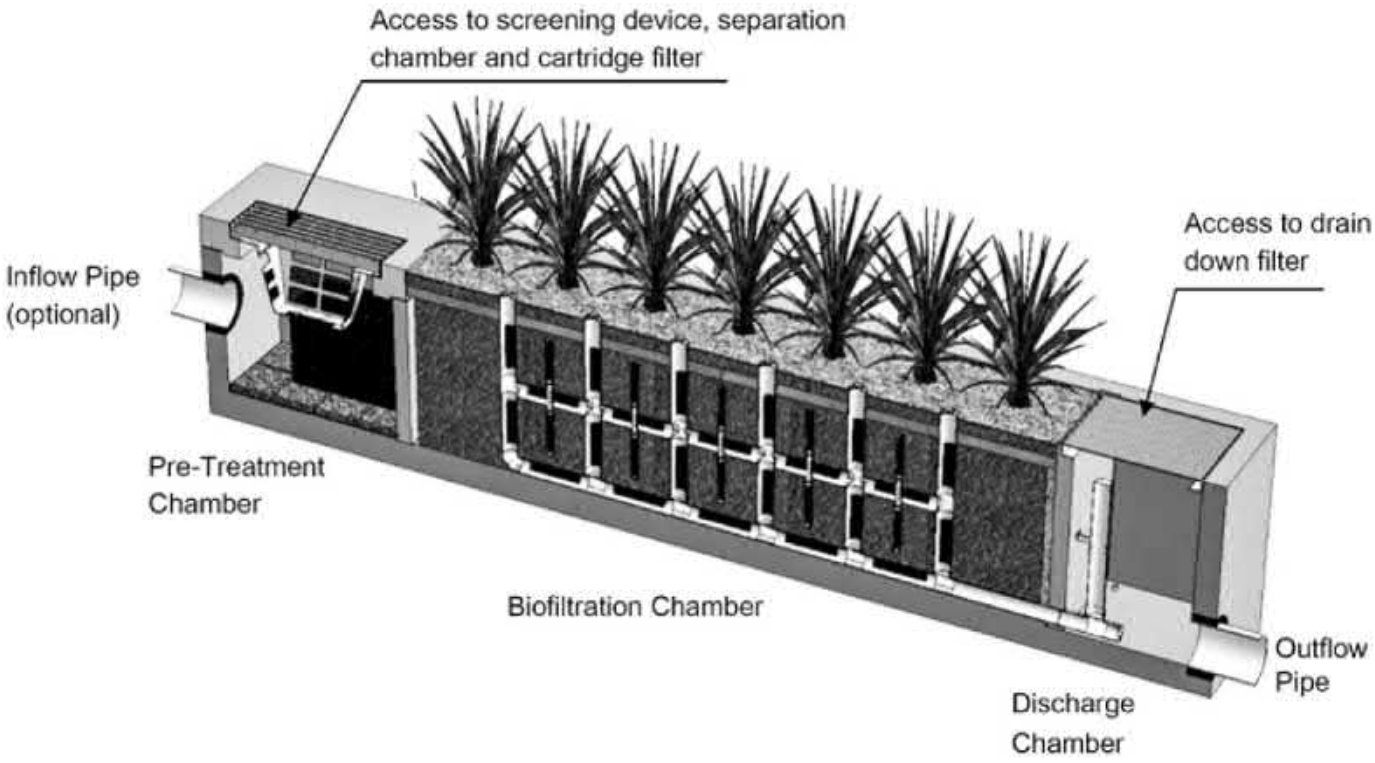
CONTECH®
ENGINEERED SOLUTIONS

Modular Wetlands® Linear
Operation & Maintenance Manual

MODULAR WETLANDS®

Maintenance Summary

- Remove Trash from Screening Device – average maintenance interval is 6 to 12 months.
  - *(5 minute average service time).*
- Remove Sediment from Separation Chamber – average maintenance interval is 12 to 24 months.
  - *(10 minute average service time).*
- Replace Cartridge Filter Media – average maintenance interval 12 to 24 months.
  - *(10-15 minute per cartridge average service time).*
- Replace Drain Down Filter Media – average maintenance interval is 12 to 24 months.
  - *(5 minute average service time).*
- Trim Vegetation – average maintenance interval is 6 to 12 months.
  - *(Service time varies).*



System Diagram

Maintenance Procedures

Screening Device

1. Remove grate or manhole cover to gain access to the screening device in the Pre- Treatment Chamber. Vault type units do not have screening device. Maintenance can be performed without entry.
2. Remove all pollutants collected by the screening device. Removal can be done manually or with the use of a vacuum truck.
3. Screening device can easily be removed from the Pre-Treatment Chamber to gain access to separation chamber and media filters below. Replace grate or manhole cover when completed.

Separation Chamber

1. Perform maintenance procedures of screening device listed above before maintaining the separation chamber.
2. With a pressure washer, spray down pollutants accumulated on walls and cartridge filters.
3. Vacuum out Separation Chamber and remove all accumulated pollutants. Replace screening device, grate or manhole cover when completed.

Cartridge Filters

1. Perform maintenance procedures on screening device and separation chamber before maintaining cartridge filters.
2. Enter separation chamber.
3. Unscrew the two bolts holding the lid on each cartridge filter and remove lid.
4. Remove each of 4 to 8 media cages holding the media in place.
5. Spray down the cartridge filter to remove any accumulated pollutants.
6. Vacuum out old media and accumulated pollutants.
7. Reinstall media cages and fill with new media from manufacturer or outside supplier. Manufacturer will provide specification of media and sources to purchase.
8. Replace the lid and tighten down bolts. Replace screening device, grate or manhole cover when completed.

Drain Down Filter

1. Remove hatch or manhole cover over discharge chamber and enter chamber. Entry into chambers may require confined space training based on state and local regulations.
2. Unlock and lift drain down filter housing and remove old media block. Replace with new media block. Lower drain down filter housing and lock into place.
3. Exit chamber and replace hatch or manhole cover.

Maintenance Notes

1. Following maintenance and/or inspection, it is recommended the maintenance operator prepare a maintenance/ inspection record. The record should include any maintenance activities performed, amount and description of debris collected, and condition of the system and its various filter mechanisms.
2. The owner should keep maintenance/inspection record(s) for a minimum of five years from the date of maintenance. These records should be made available to the governing municipality for inspection upon request at any time.
3. Transport all debris, trash, organics and sediments to approved facility for disposal in accordance with local and state requirements.
4. Entry into chambers may require confined space training based on state and local regulations.
5. No fertilizer shall be used in the Biofiltration Chamber.
6. Irrigation should be provided as recommended by manufacturer and/or landscape architect. Amount of irrigation required is dependent on plant species. Some plants may require irrigation.

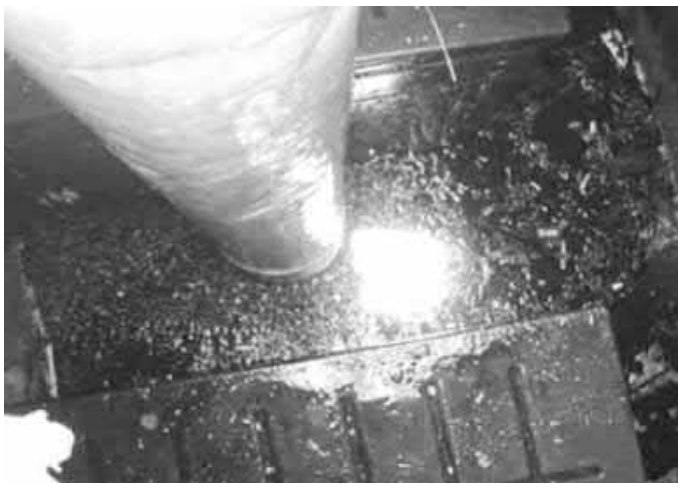
Maintenance Procedure Illustration

Screening Device

The screening device is located directly under the manhole or grate over the Pre-Treatment Chamber. It's mounted directly underneath for easy access and cleaning. Device can be cleaned by hand or with a vacuum truck.

Separation Chamber

The separation chamber is located directly beneath the screening device. It can be quickly cleaned using a vacuum truck or by hand. A pressure washer is useful to assist in the cleaning process.



Cartridge Filters

The cartridge filters are located in the Pre-Treatment chamber connected to the wall adjacent to the biofiltration chamber. The cartridges have removable tops to access the individual media filters. Once the cartridge is open media can be easily removed and replaced by hand or a vacuum truck.

Drain Down Filter

The drain down filter is located in the Discharge Chamber. The drain filter unlocks from the wall mount and hinges up. Remove filter block and replace with new block.

Trim Vegetation

Vegetation should be maintained in the same manner as surrounding vegetation and trimmed as needed. No fertilizer shall be used on the plants. Irrigation per the recommendation of the manufacturer and or landscape architect. Different types of vegetation requires different amounts of irrigation.

CONTECH® ENGINEERED SOLUTIONS

Inspection Report
Modular Wetlands Linear

Project Name _____

Project Address _____
(city) (Zip Code)

Owner / Management Company _____

Contact _____ Phone ( ) –

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

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

Weather Condition _____ Additional Notes _____

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

Inspection Checklist

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

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

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

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

Plant Information	
Damage to Plants	
Plant Replacement	
Plant Trimming	

Additional Notes: _____

CONTECH® ENGINEERED SOLUTIONS

Cleaning and Maintenance Report
Modular Wetlands Linear

Project Name _____

Project Address _____ (city) (Zip Code)

Owner / Management Company _____

Contact _____ Phone ( ) –

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

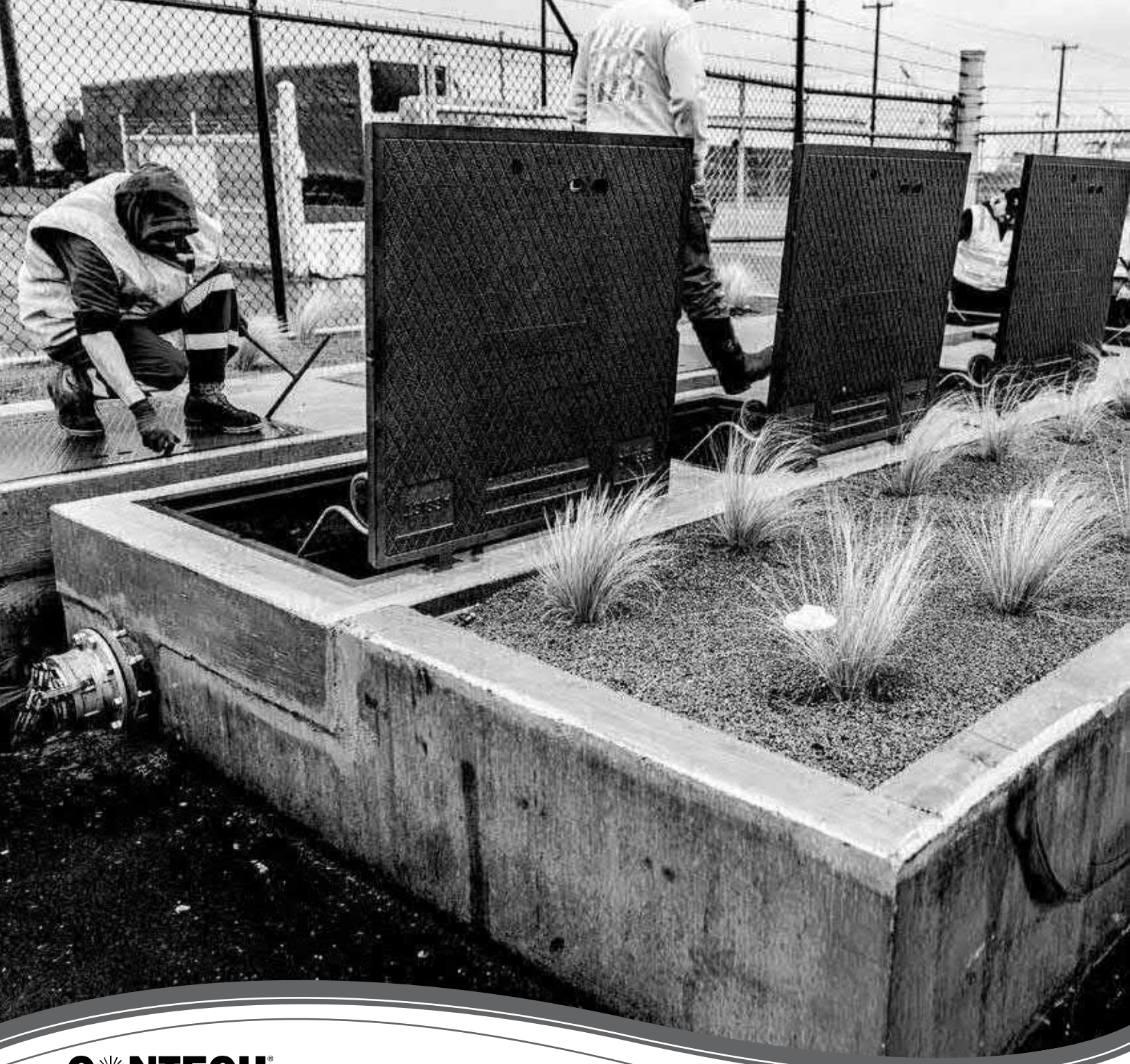
For Office Use Only
(Reviewed By)
(Date)
Office personnel to complete section to the left.

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

Weather Condition _____ Additional Notes _____

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

Comments:



CONTECH®
ENGINEERED SOLUTIONS

800-338-1122

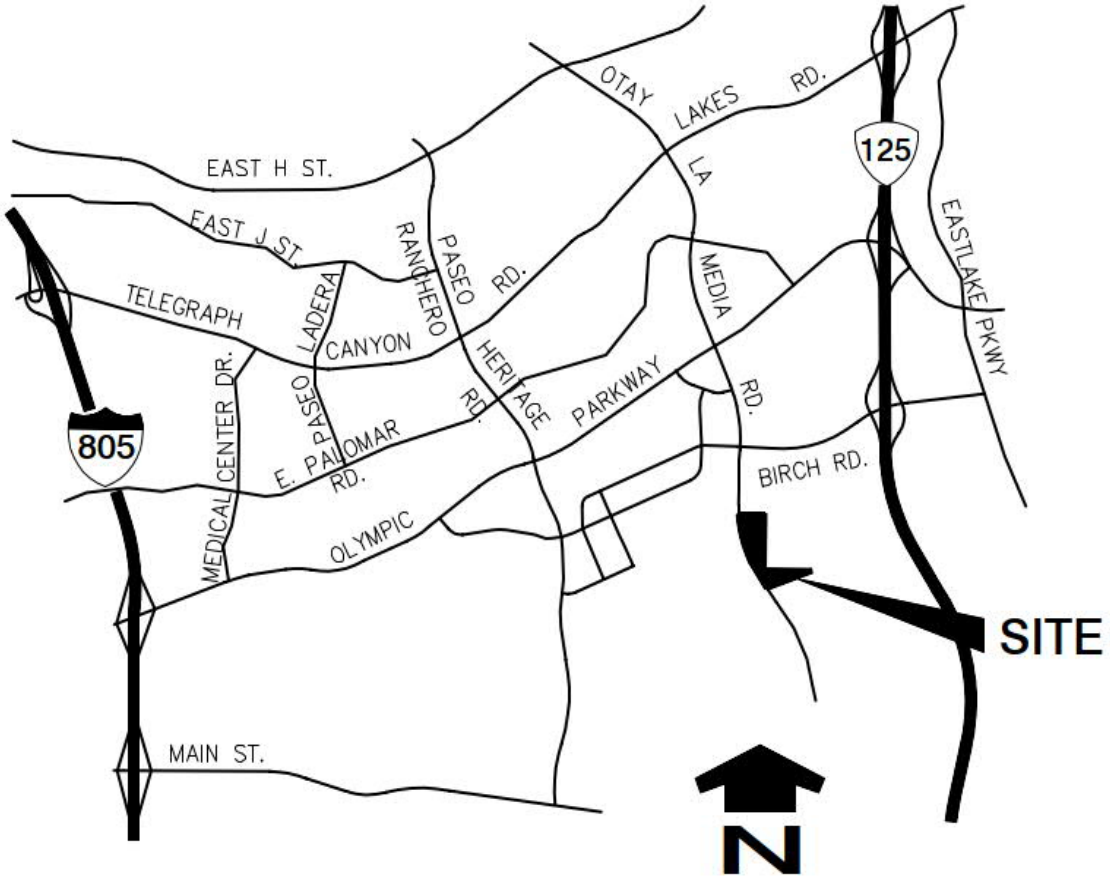
WWW.CONTECHES.COM

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

SUPPORT

DRAWINGS AND SPECIFICATIONS ARE AVAILABLE AT WWW.CONTECHES.COM

EXHIBIT "A"



VICINITY MAP

NOT TO SCALE

EXHIBIT "B"

Maintenance Recommendations and Frequency Inspection Operation and Maintenance Plan (IOMP)

SITE DESIGN, SOURCE CONTROL AND POLLUTANT CONTROL BMP OPERATION + MAINTENANCE PROCEDURE							
STORM WATER MANAGEMENT AND DISCHARGE CONTROL MAINTENANCE AGREEMENT APPROVAL NO.:							
O&M RESPONSIBLE PARTY DESIGNEE: PROPERTY OWNDER:							
BMP DESCRIPTION	**INSPECTION FREQUENCY**	**MAINTENANCE FREQUENCY**	**MAINTENANCE METHOD**	**QUANTITY**	**INCLUDED IN O&M MANUAL**		**SHEET NUMBERS**
SITE DESIGN ELEMENTS						NO	
DESCRIPTION:LANDSCAPE	WEEKLY	AS-NEEDED	MOW AS NECESSARY	223278 sf			
DESCRIPTION:RUNOFF COLLECTION	ANNUAL	AS-NEEDED	MAINTAIN DRIVEWAYS, CLEAN UP AREA DRAINS	1			
SOURCE CONTROL ELEMENTS						NO	
DESCRIPTION: STORM DRAIN STENCILING	ANNUAL	BI-ANNUAL	REPAINT AS NECESSARY	1			
POLLUTANT CONTROL BMP(S)					YES		
DESCRIPTION:PROPRIETARY BIOFILTRATION UNIT	BI-ANNUAL	6-12 MONTHS AS NEEDED	REPLCMNT OF SOIL MATERIAL REMOVE DEBRIS AS NEEDED	3			

Project Name/_____

ATTACHMENT 4

Copy of Plan Sheets Showing Permanent Storm Water BMPs

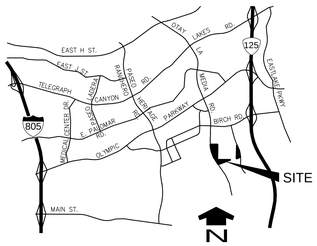
Project Name/_____

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

The plans must identify:

- ☒ Structural BMP(s) with ID numbers matching Form I-6 Summary of PDP Structural BMPs
- ☒ The grading and drainage design shown on the plans must be consistent with the delineation of DMAs shown on the DMA exhibit
- ☒ Details and specifications for construction of structural BMP(s)
- ☒ Signage indicating the location and boundary of structural BMP(s) as required by the City Engineer
- ☒ How to access the structural BMP(s) to inspect and perform maintenance
- ☒ Features that are provided to facilitate inspection (e.g., observation ports, cleanouts, silt posts, or other features that allow the inspector to view necessary components of the structural BMP and compare to maintenance thresholds)
- ☒ Manufacturer and part number for proprietary parts of structural BMP(s) when applicable
- ☒ Maintenance thresholds specific to the structural BMP(s), with a location-specific frame of reference (e.g., level of accumulated materials that triggers removal of the materials, to be identified based on viewing marks on silt posts or measured with a survey rod with respect to a fixed benchmark within the BMP)
- ☒ Recommended equipment to perform maintenance
- ☒ When applicable, necessary special training or certification requirements for inspection and maintenance personnel such as confined space entry or hazardous waste management
- ☒ Include landscaping plan sheets showing vegetation requirements for vegetated structural BMP(s)
- ☒ All BMPs must be fully dimensioned on the plans
- ☒ When proprietary BMPs are used, site specific cross section with outflow, inflow and model number shall be provided. Broucher photocopies are not allowed.

TENTATIVE MAP CVT 23-0001
CONCEPTUAL GRADING PLAN
OTAY RANCH VILLAGE 7 R-3, R-4 & R-8
CITY OF CHULA VISTA, CALIFORNIA

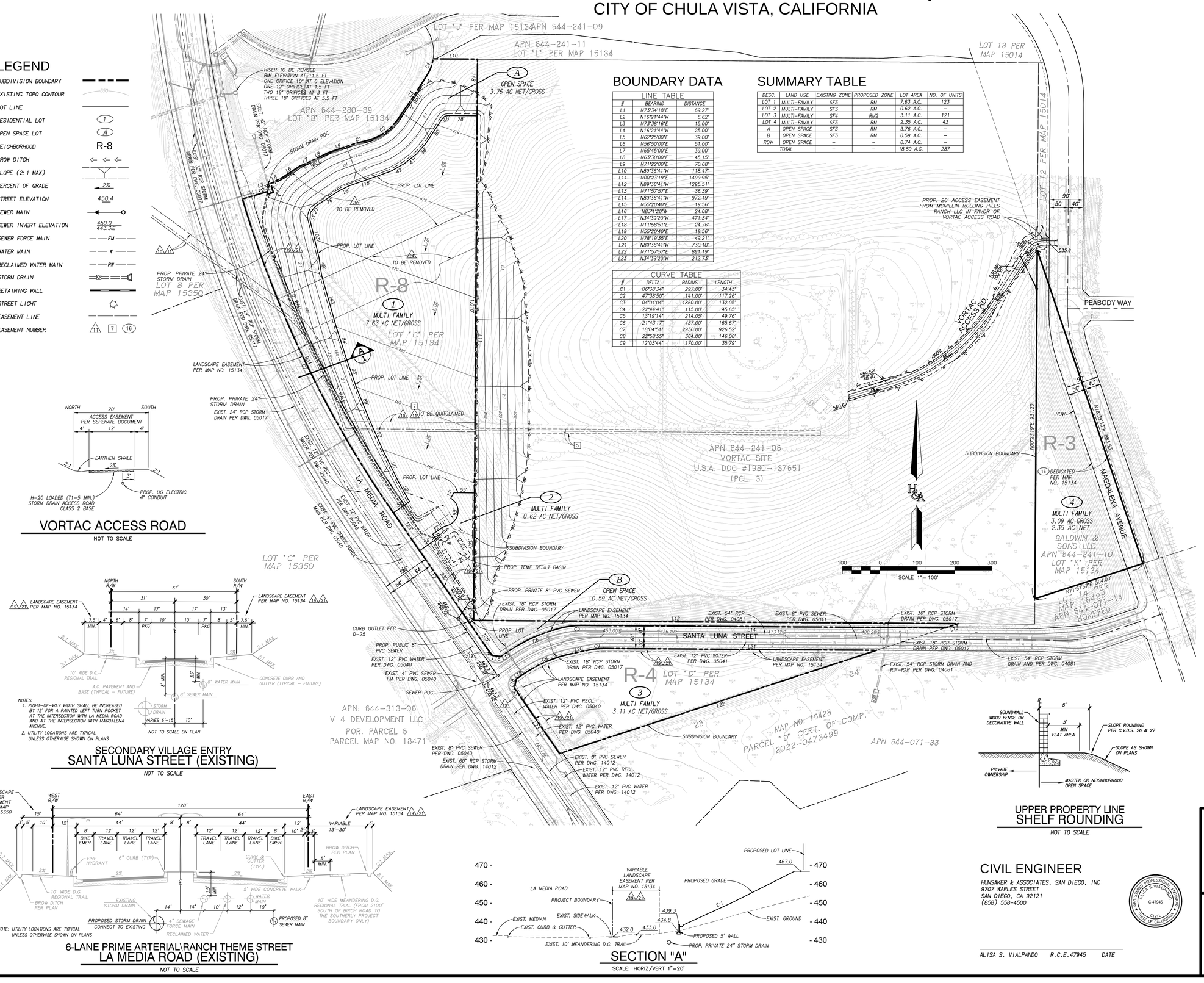


VICINITY MAP

NOT TO SCALE

LEGEND

- SUBDIVISION BOUNDARY
- EXISTING TOPO CONTOUR (150)
- LOT LINE
- RESIDENTIAL LOT (1)
- OPEN SPACE LOT (A)
- NEIGHBORHOOD R-8
- BROW DITCH
- SLOPE (2:1 MAX)
- PERCENT OF GRADE 2%
- STREET ELEVATION 450.4
- SEWER MAIN
- SEWER INVERT ELEVATION 450.0 / 443.5Ø
- SEWER FORCE MAIN — FM —
- WATER MAIN — W —
- RECLAIMED WATER MAIN — RW —
- STORM DRAIN
- RETAINING WALL
- STREET LIGHT
- EASEMENT LINE
- EASEMENT NUMBER (11) (7) (16)



BOUNDARY DATA

LINE TABLE

#	BEARING	DISTANCE
L1	N73°34'18"E	69.27'
L2	N16°21'44"W	6.62'
L3	N73°38'16"E	15.00'
L4	N16°21'44"W	25.00'
L5	N62°25'00"E	39.00'
L6	N56°50'00"E	51.00'
L7	N65°45'00"E	39.00'
L8	N63°30'00"E	45.15'
L9	N71°22'00"E	70.68'
L10	N89°36'41"W	118.47'
L11	N00°23'19"E	1499.95'
L12	N89°36'41"W	1295.51'
L13	N71°57'57"E	36.39'
L14	N89°36'41"W	972.19'
L15	N55°20'40"E	19.56'
L16	N83°12'20"W	24.08'
L17	N34°39'20"W	471.34'
L18	N11°58'51"E	24.76'
L19	N55°20'40"E	19.56'
L20	N78°19'35"E	49.21'
L21	N89°36'41"W	730.10'
L22	N71°57'57"E	891.19'
L23	N34°39'20"W	212.73'

CURVE TABLE

#	DELTA	RADIUS	LENGTH
C1	06°38'34"	297.00'	34.43'
C2	47°38'50"	141.00'	117.26'
C3	04°04'04"	1860.00'	132.05'
C4	22°44'41"	115.00'	45.65'
C5	13°19'14"	214.05'	49.76'
C6	21°43'17"	437.00'	165.67'
C7	18°04'51"	2936.00'	926.52'
C8	22°58'55"	364.00'	146.00'
C9	12°03'44"	170.00'	35.79'

SUMMARY TABLE

DESC.	LAND USE	EXISTING ZONE	PROPOSED ZONE	LOT AREA	NO. OF UNITS
LOT 1	MULTI-FAMILY	SF3	RM	7.63 A.C.	123
LOT 2	MULTI-FAMILY	SF3	RM	0.62 A.C.	–
LOT 3	MULTI-FAMILY	SF4	RM2	3.11 A.C.	121
LOT 4	MULTI-FAMILY	SF3	RM	2.35 A.C.	43
A	OPEN SPACE	SF3	RM	3.76 A.C.	–
B	OPEN SPACE	SF3	RM	0.59 A.C.	–
ROW	OPEN SPACE	–	–	0.74 A.C.	–
	TOTAL	–	–	18.80 A.C.	287

GENERAL NOTES

1. GROSS PROJECT AREA: 18.8 AC
2. TOTAL NUMBER OF EXISTING LOTS: 3
3. TOTAL NUMBER OF PROPOSED LOTS: 6 (4 MULTI-FAMILY RESIDENTIAL, 2 OPEN SPACE)
4. TOTAL NUMBER OF UNITS: 287 (123 UNITS ON LOT 1, 121 UNITS ON LOT 3 & 43 UNITS ON LOT 4)
5. ASSESSOR PARCEL NUMBERS: 644-241-07, 644-241-08 & 644-241-10
6. EXISTING ZONING: SF3/SF4 (R-3 SF3, R-4 SF4, R-8 SF3)
7. PROPOSED ZONING: RM1/RM2 (R-3 RM1, R-4 RM2 & R-8 RM1)
8. EXISTING GP DESIGNATION: LM (R-3, R-4 & R-8)
9. PROPOSED GP DESIGNATION: M,MH & TC (R-3 MH, R-4 TC & R-8 MH)
10. DENSITY: R-3 17.9 DU/AC, R-4 38.9 DU/AC & R-8 15.0 DU/AC
11. PRESENT LAND USE: VACANT
12. PROPOSED LAND USE: MULTI-FAMILY, OPEN SPACE
13. SPECIFIC METHODS OF HANDLING STORM WATER ARE SUBJECT TO DETAILED APPROVAL BY THE CITY ENGINEER AT THE TIME OF SUBMISSION OF IMPROVEMENT AND GRADING PLANS. DESIGN SHALL BE ACCOMPLISHED ON THE BASIS OF THE REQUIREMENTS OF THE SUBDIVISION MANUAL. DRAINAGE EASEMENTS SHALL BE PROVIDED AS REQUIRED BY THE CITY ENGINEER.
14. ALL SEWER MAINS ARE PUBLIC AND SHALL BE MAINTAINED BY THE CITY OF CHULA VISTA. PUBLIC SEWER EASEMENTS SHALL BE DEDICATED ON THE FINAL MAP.
15. STREET TREE DEPOSITS SHALL BE PAID IN ACCORDANCE WITH ORDINANCE NUMBER 1369 AND NO. 1687 OF THE CITY OF CHULA VISTA.
16. UTILITIES SHALL BE UNDERGROUND AND EASEMENTS PROVIDED AS NECESSARY.
17. GRADING SHALL BE CONSTRUCTED IN ACCORDANCE WITH ORDINANCE NO. 1797 (AS AMENDED BY ORDINANCE NO. 1877) OF THE CITY OF CHULA VISTA.
18. ALL WORK IN THE PUBLIC RIGHT-OF-WAY SHALL BE DONE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, THE SAN DIEGO AREA REGIONAL STANDARD DRAWINGS AND THE DESIGN AND CONSTRUCTION STANDARDS OF THE CITY OF CHULA VISTA.
19. FIRE HYDRANTS TO BE INSTALLED IN ACCORDANCE WITH THE CITY OF CHULA VISTA DESIGN STANDARD NO. 8. FIRE HYDRANTS AS SHOWN ON THIS MAP SHALL BE USED AS A GUIDE ONLY.
20. GRADING SHOWN HEREON IS PRELIMINARY AND SUBJECT TO MODIFICATION IN FINAL DESIGN SUBJECT TO SUBSTANTIAL CONFORMANCE APPROVAL BY THE CITY OF CHULA VISTA ENGINEERING DEPARTMENT.
21. STORM DRAIN, WATER AND SEWER SHOWN HEREON IS PRELIMINARY AND SUBJECT TO MODIFICATION IN FINAL DESIGN.
22. PRELIMINARY GEOTECHNICAL REPORT PREPARED BY: GEOCON INCORPORATED
23. SOURCE OF TOPOGRAPHY: R.J. LUNG & ROUGH GRADING PLANS BY HUNSAKER & ASSOCIATES
24. TEMPORARY AND PERMANENT STRUCTURAL BEST MANAGEMENT PRACTICES WILL BE INCORPORATED IN THE DESIGN AND IMPLEMENTATION OF THE DEVELOPMENT.
25. REFER TO THE "WATER QUALITY TECHNICAL REPORT" PREPARED BY HUNSAKER & ASSOCIATES FOR COMPLIANCE WITH THE REGIONAL WATER QUALITY CONTROL BOARD JURISDICTIONAL PERMIT.
26. EARTHWORK QUANTITIES: CUT 307,700 C.Y., FILL 102,278 C.Y.

OWNERS/ APPLICANTS

LOT "D"
OTAY PROJECT, L.P.
A CALIFORNIA LIMITED PARTNERSHIP
20 CORPORATE PLAZA DR
NEWPORT BEACH, CA 92660
(949) 640-8300
BY: ORIOLE MANAGEMENT, LLC
A DELAWARE LIMITED LIABILITY CO.
ITS: GENERAL PARTNER

LOT "C" & "K"
BALDWIN & SONS LLC
A CALIFORNIA LIMITED LIABILITY CO.
20 CORPORATE PLAZA DR
NEWPORT BEACH, CA 92660
(949) 640-8300

DATE DATE

CONDOMINIUM NOTE

THIS IS A MAP OF A CONDOMINIUM PROJECT AS DEFINED IN SECTION 4125 OF THE CIVIL CODE OF THE STATE OF CALIFORNIA AND IS FILED PURSUANT TO THE SUBDIVISION MAP ACT. THE TOTAL NUMBER OF RESIDENTIAL CONDOMINIUM DWELLING UNITS IS 287 (123 UNITS ON LOT 1, 121 UNITS ON LOT 3 & 43 UNITS ON LOT 4).

LEGAL DESCRIPTION

SEE SHEET C2

EASEMENTS

SEE SHEET C2

PUBLIC UTILITIES

SEWER	CITY OF CHULA VISTA
WATER	OTAY WATER DISTRICT
STORM DRAIN	CITY OF CHULA VISTA
TELEPHONE	AT&T
GAS AND ELECTRIC	SDG&E
CABLE T.V.	COX COMMUNICATIONS
POLICE & FIRE	CITY OF CHULA VISTA
SCHOOLS	CHULA VISTA ELEMENTARY SCHOOL DIST.
	SWEETWATER UNION HIGH SCHOOL DIST.

SHEET INDEX

SHEET C1 TENTATIVE MAP/ CONCEPTUAL GRADING PLAN
SHEET C2 BOUNDARY & ENCUMBRANCES
SHEET C3 BOUNDARY & ENCUMBRANCES

VORTAC ACCESS ROAD

NOT TO SCALE

SECONDARY VILLAGE ENTRY
SANTA LUNA STREET (EXISTING)

NOT TO SCALE

6-LANE PRIME ARTERIAL\RANCH THEME STREET
LA MEDIA ROAD (EXISTING)

NOT TO SCALE

SECTION "A"

SCALE: HORIZ/VERT 1"=20'

UPPER PROPERTY LINE
SHELF ROUNDING

NOT TO SCALE

CIVIL ENGINEER

HUNSAKER & ASSOCIATES, SAN DIEGO, INC
9707 WAPLES STREET
SAN DIEGO, CA 92121
(858) 558-4500

REGISTERED PROFESSIONAL ENGINEER ALISA S. VIALPANDO C 47945 CIVIL STATE OF CALIFORNIA

ALISA S. VIALPANDO R.C.E.47945 DATE

PREPARED BY:
HUNSAKER & ASSOCIATES SAN DIEGO, INC
PLANNING ENGINEERING SURVEYING
9707 Waples Street
San Diego, Ca 92121
PH(858)558-4500 · FX(858)558-1414

NO.	REVISIONS	DATE	BY
1	ORIGINAL	4-07-23	H&A
2	REVISED FOR 2ND SUB	12-07-23	H&A
3	REVISED FOR 3RD SUB	05-24-24	H&A
4	REVISED FOR 4TH SUB	07-30-24	H&A
5			
6			
7			
8			

TENTATIVE MAP
CONCEPTUAL GRADING PLAN
VILLAGE 7
R-3, R-4 & R-8
CITY OF CHULA VISTA, CALIFORNIA

SHEET C1

WO NO. 2807-0121

R:\1601\&Pln\Village 7 South TM\V7 South TM Sht 1.dwg[]Jul-29-2024:15:43

ON SITE
OWNERS: BALDWIN & SONS AS TO LOT C OTAY PROJECT AS TO LOT D
APNS: 644-241-07-00 (LOT C) AND 644-241-08-00 (LOT D)

LEGAL DESCRIPTION

REAL PROPERTY IN THE CITY OF CHULA VISTA, COUNTY OF SAN DIEGO, STATE OF CALIFORNIA, DESCRIBED AS FOLLOWS:

LOTS C AND D OF CHULA VISTA TRACT NO. 05–09, OTAY RANCH VILLAGE 7 "A" MAP NO. 1, IN THE CITY OF CHULA VISTA, COUNTY OF SAN DIEGO, STATE OF CALIFORNIA ACCORDING TO MAP THEREOF NO. 15134, FILED IN THE OFFICE OF COUNTY RECORDER OF SAN DIEGO COUNTY ON SEPTEMBER 27, 2005, AMENDED PURSUANT TO THAT CERTAIN CERTIFICATE OF CORRECTION RECORDED JUNE 6, 2008 AS INSTRUMENT NO. 2008–0305167 OF OFFICIAL RECORDS.

TITLE REFERENCE

THE INFORMATION SHOWN HEREON IS BASED ON THE PRELIMINARY TITLE REPORT ISSUED BY FIRST AMERICAN TITLE COMPANY AS ORDER NO. NHSC–6908105 (JD) DATED FEBRUARY 21, 2023 AND AMENDED FEBRUARY 28, 2023.

ASSESSOR'S PARCEL NUMBERS

644–241–07–00 (LOT C) AND 644–241–08–00 (LOT D)

TITLE EXCEPTIONS

1. GENERAL AND SPECIAL TAXES AND ASSESSMENTS FOR THE FISCAL YEAR 2023–2024, A LIEN NOT YET DUE OR PAYABLE.

2. GENERAL AND SPECIAL TAXES AND ASSESSMENTS FOR THE FISCAL YEAR 2022–2023.
FIRST INSTALLMENT: $1,327.12, PAID
PENALTY: $0.00
SECOND INSTALLMENT: $1,327.12, OPEN
PENALTY: $0.00
TAX RATE AREA: 01265
A. P. NO.: 644–241–07–00

(AFFECTS LOT C)

3. GENERAL AND SPECIAL TAXES AND ASSESSMENTS FOR THE FISCAL YEAR 2022–2023.
FIRST INSTALLMENT: $334.08, PAID
PENALTY: $0.00
SECOND INSTALLMENT: $334.08, OPEN
PENALTY: $0.00
TAX RATE AREA: 01265
A. P. NO.: 644–241–08–00

(AFFECTS LOT D)

4. THE LIEN OF SPECIAL TAX ASSESSED PURSUANT TO CHAPTER 2.5 COMMENCING WITH SECTION 53311 OF THE CALIFORNIA GOVERNMENT CODE FOR COMMUNITY FACILITIES DISTRICT NO. 6 OF THE CHULA VISTA ELEMENTARY SCHOOL, AS DISCLOSED BY NOTICE OF SPECIAL TAX LIEN RECORDED SEPTEMBER 15, 1998 AS INSTRUMENT NO. 1998–0584273 OF OFFICIAL RECORDS.

DOCUMENT(S) DECLARING MODIFICATIONS THEREOF RECORDED MARCH 7, 2001 AS INSTRUMENT NO. 2001–0130147 OF OFFICIAL RECORDS.

5. THE LIEN OF SPECIAL TAX ASSESSED PURSUANT TO CHAPTER 2.5 COMMENCING WITH SECTION 53311 OF THE CALIFORNIA GOVERNMENT CODE FOR COMMUNITY FACILITIES DISTRICT NO. CHULA VISTA ELEMENTARY SCHOOL DISTRICT COMMUNITY FACILITIES DISTRICT NO. 11, AS DISCLOSED BY NOTICE OF SPECIAL TAX LIEN RECORDED OCTOBER 29, 1998 AS INSTRUMENT NO. 1998–0703797 OF OFFICIAL RECORDS.

6. THE LIEN OF SPECIAL TAX ASSESSED PURSUANT TO CHAPTER 2.5 COMMENCING WITH SECTION 53311 OF THE CALIFORNIA GOVERNMENT CODE FOR COMMUNITY FACILITIES DISTRICT NO. 11, AS DISCLOSED BY NOTICE OF SPECIAL TAX LIEN RECORDED DECEMBER 29, 1998 AS INSTRUMENT NO. 1998–0854904 OF OFFICIAL RECORDS.

7. THE LIEN OF SPECIAL TAX ASSESSED PURSUANT TO CHAPTER 2.5 COMMENCING WITH SECTION 53311 OF THE CALIFORNIA GOVERNMENT CODE FOR COMMUNITY FACILITIES DISTRICT NO. 6 SWEETWATER UNION HIGH SCHOOL DISTRICT, AS DISCLOSED BY NOTICE OF SPECIAL TAX LIEN RECORDED DECEMBER 29, 1998 AS INSTRUMENT NO. 1998–0854905 OF OFFICIAL RECORDS.

DOCUMENT(S) DECLARING MODIFICATIONS THEREOF RECORDED MARCH 13, 2001 AS INSTRUMENT NO. 2001–0144243 OF OFFICIAL RECORDS.

(AFFECTS LOT D)

8. THE LIEN OF SPECIAL TAX ASSESSED PURSUANT TO CHAPTER 2.5 COMMENCING WITH SECTION 53311 OF THE CALIFORNIA GOVERNMENT CODE FOR COMMUNITY FACILITIES DISTRICT NO. 97–2 (PRESERVE MAINTENANCE DISTRICT), AS DISCLOSED BY NOTICE OF SPECIAL TAX LIEN RECORDED AUGUST 21, 2001 AS INSTRUMENT NO. 2001–0594092 OF OFFICIAL RECORDS.

(AFFECTS LOT D)

9. THE LIEN OF SUPPLEMENTAL TAXES, IF ANY, ASSESSED PURSUANT TO CHAPTER 3.5 COMMENCING WITH SECTION 75 OF THE CALIFORNIA REVENUE AND TAXATION CODE.

△10 AN EASEMENT FOR ROADWAY AND UTILITY LINES AND INCIDENTAL PURPOSES, RECORDED APRIL 23, 1980 AS INSTRUMENT NO. 80–137651 OF OFFICIAL RECORDS.
IN FAVOR OF: UNITED STATES OF AMERICA **TO BE QUITCLAIMED**

AFFECTS: LOT C

△11 AN EASEMENT FOR PUBLIC UTILITIES, INGRESS AND EGRESS AND INCIDENTAL PURPOSES, RECORDED JUNE 14, 1982 AS INSTRUMENT NO. 82–181896 OF OFFICIAL RECORDS.
IN FAVOR OF: THE PACIFIC TELEPHONE AND TELEGRAPH COMPANY

AFFECTS: LOT C **TO BE QUITCLAIMED**

12. AN EASEMENT FOR INGRESS AND EGRESS AND INCIDENTAL PURPOSES, RECORDED NOVEMBER 4, 1988 AS INSTRUMENT NO. 88–567316 OF OFFICIAL RECORDS.
IN FAVOR OF: UNITED ENTERPRISES, LTD., A CALIFORNIA LIMITED PARTNERSHIP
AFFECTS: AS DESCRIBED THEREIN

THE LOCATION OF THE EASEMENT CANNOT BE DETERMINED FROM RECORD INFORMATION.

13. THE TERMS AND PROVISIONS CONTAINED IN THE DOCUMENT ENTITLED "AGREEMENT INDEMNIFICATION, IMPLEMENTATION OF MITIGATION MEASURES, AND PAYMENT OF CERTAIN FEES IN CONNECTION WITH THE APPROVAL OF THE GENERAL PLAN AMENDMENT, GENERAL AND OTHER DEVELOPMENT PLANS FOR THE OTAY RANCH" RECORDED FEBRUARY 7, 1994 AS INSTRUMENT NO. 1994–0084743 OF OFFICIAL RECORDS.

14. THE TERMS AND PROVISIONS CONTAINED IN THE DOCUMENT ENTITLED "RESTATED AND AMENDED PRE–ANNEXATION DEVELOPMENT AGREEMENT WITH OTAY RANCH, L.P." RECORDED MAY 12, 1997 AS INSTRUMENT NO. 1997–0219970 OF OFFICIAL RECORDS.

(AFFECTS LOT D)

15. THE TERMS AND PROVISIONS CONTAINED IN THE DOCUMENT ENTITLED "DETENTION BASIN AND SILTATION AGREEMENT" RECORDED SEPTEMBER 26, 1997 AS INSTRUMENT NO. 1997–0477304 OF OFFICIAL RECORDS.

DOCUMENT(S) DECLARING MODIFICATIONS THEREOF RECORDED FEBRUARY 17, 1998 AS INSTRUMENT NO. 1998–0079314 OF OFFICIAL RECORDS.

16. THE TERMS AND PROVISIONS CONTAINED IN THE DOCUMENT ENTITLED "DESILTATION AND MAINTENANCE AGREEMENT WITH OTAY PROJECT, L.P. (POGGI CANYON DRAINAGE IMPROVEMENTS)" RECORDED JUNE 28, 2000 AS INSTRUMENT NO. 2000–0341829 OF OFFICIAL RECORDS.

(AFFECTS LOT D)

17. THE TERMS AND PROVISIONS CONTAINED IN THE DOCUMENT ENTITLED "DRAINAGE MAINTENANCE AND INDEMNIFICATION AGREEMENT (OTAY RANCH VILLAGE 7 MASS GRADING)" RECORDED FEBRUARY 2, 2005 AS INSTRUMENT NO. 2005–0089011 OF OFFICIAL RECORDS.

TITLE EXCEPTIONS (CONT.)

18. THE TERMS AND PROVISIONS CONTAINED IN THE DOCUMENT ENTITLED "SUPPLEMENTAL SUBDIVISION IMPROVEMENT AGREEMENT FOR THE OTAY RANCH VILLAGE SEVEN "A" MAP" RECORDED SEPTEMBER 27, 2005 AS INSTRUMENT NO. 2005–0835113 OF OFFICIAL RECORDS.

DOCUMENT(S) DECLARING MODIFICATIONS THEREOF RECORDED FEBRUARY 13, 2007 AS INSTRUMENT NO. 2007–0099449 OF OFFICIAL RECORDS.

△19 AN EASEMENT SHOWN OR DEDICATED ON THE MAP AS REFERRED TO IN THE LEGAL DESCRIPTION

FOR: LANDSCAPE BUFFER, SIGHT VISIBILITY AND INCIDENTAL PURPOSES.

20. COVENANTS, CONDITIONS, RESTRICTIONS, EASEMENTS, ASSESSMENTS, LIENS, CHARGES, TERMS AND PROVISIONS IN THE DOCUMENT RECORDED OCTOBER 4, 2005 AS INSTRUMENT NO. 2005–0856104 OF OFFICIAL RECORDS, WHICH PROVIDE THAT A VIOLATION THEREOF SHALL NOT DEFEAT OR RENDER INVALID THE LIEN OF ANY FIRST MORTGAGE OR DEED OF TRUST MADE IN GOOD FAITH AND FOR VALUE, BUT DELETING ANY COVENANT, CONDITION, OR RESTRICTION, IF ANY, INDICATING A PREFERENCE, LIMITATION, OR DISCRIMINATION BASED ON RACE, COLOR, RELIGION, SEX, GENDER, GENDER IDENTITY, GENDER EXPRESSION, SEXUAL ORIENTATION, FAMILIAL STATUS, MARITAL STATUS, DISABILITY, HANDICAP, VETERAN OR MILITARY STATUS, GENETIC INFORMATION, NATIONAL ORIGIN, SOURCE OF INCOME AS DEFINED IN SUBDIVISION (P) OF SECTION 12955, OR ANCESTRY, TO THE EXTENT THAT SUCH COVENANTS, CONDITIONS OR RESTRICTIONS VIOLATE APPLICABLE STATE OR FEDERAL LAWS. LAWFUL RESTRICTIONS UNDER STATE AND FEDERAL LAW ON THE AGE OF OCCUPANTS IN SENIOR HOUSING OR HOUSING FOR OLDER PERSONS SHALL NOT BE CONSTRUED AS RESTRICTIONS BASED ON FAMILIAL STATUS.

DOCUMENT(S) DECLARING MODIFICATIONS THEREOF RECORDED JUNE 1, 2006 AS INSTRUMENT NO. 2006–0389164 OF OFFICIAL RECORDS.

DOCUMENT RE–RECORDED JULY 11, 2006 AS INSTRUMENT NO. 2006–0487654 OF OFFICIAL RECORDS.

DOCUMENT(S) DECLARING MODIFICATIONS THEREOF RECORDED AUGUST 30, 2006 AS INSTRUMENT NO. 2006–0619008 OF OFFICIAL RECORDS.

THE TERMS AND PROVISIONS CONTAINED IN THE DOCUMENT ENTITLED "SUPPLEMENTARY DECLARATION OF MONTECITO AT OTAY RANCH" RECORDED JUNE 20, 2007 AS INSTRUMENT NO. 2007–0415537 OF OFFICIAL RECORDS.

△21 AN EASEMENT FOR UNDERGROUND FACILITIES AND APPURTENANCES FOR THE TRANSMISSION AND DISTRIBUTION OF ELECTRICITY, COMMUNICATION FACILITIES, AND APPURTENANCES AND INCIDENTAL PURPOSES, RECORDED APRIL 5, 2006 AS INSTRUMENT NO. 2006–0235031 OF OFFICIAL RECORDS.
IN FAVOR OF: SAN DIEGO GAS & ELECTRIC COMPANY, A CORPORATION
AFFECTS: AS DESCRIBED THEREIN

22. THE TERMS AND PROVISIONS CONTAINED IN THE DOCUMENT ENTITLED "SCHOOL FACILITIES FUNDING AND MITIGATION AGREEMENT" RECORDED JUNE 19, 2006 AS INSTRUMENT NO. 2006–0433349 OF OFFICIAL RECORDS.

23 AN EASEMENT FOR PUBLIC UTILITIES AND INCIDENTAL PURPOSES, RECORDED NOVEMBER 29, 2006 AS INSTRUMENT NO. 2006–0847384 OF OFFICIAL RECORDS.
IN FAVOR OF: PACIFIC BELL TELEPHONE COMPANY, A CALIFORNIA CORPORATION DBA AT&T CALIFORNIA, ITS ASSOCIATED AND AFFILIATED COMPANIES, ITS AND THEIR SUCCESSORS, ASSIGNS, LESSEES AND AGENTS

AFFECTS: LOT C

△24 THE TERMS AND PROVISIONS CONTAINED IN THE DOCUMENT ENTITLED "AGREEMENT FOR THE PROVISION OF COMMUNITY PURPOSE FACILITY ACREAGE FOR OTAY RANCH VILLAGE TWO JPB SPA AMENDMENT" RECORDED NOVEMBER 19, 2012 AS INSTRUMENT NO. 2012–0722468 OF OFFICIAL RECORDS.

(AFFECTS LOT C) **TO BE REMOVED**

△25 THE TERMS AND PROVISIONS CONTAINED IN THE DOCUMENT ENTITLED "AGREEMENT FOR THE PROVISION OF COMMUNITY PURPOSE FACILITY ACREAGE FOR OTAY RANCH VILLAGE TWO" RECORDED NOVEMBER 19, 2012 AS INSTRUMENT NO. 2012–0722469 OF OFFICIAL RECORDS.

(AFFECTS LOT C) **TO BE REMOVED**

26. RIGHTS OF THE PUBLIC IN AND TO THAT PORTION OF THE LAND LYING WITHIN ANY ROAD, STREET, ALLEY OR HIGHWAY.

27. WATER RIGHTS, CLAIMS OR TITLE TO WATER, WHETHER OR NOT SHOWN BY THE PUBLIC RECORDS.

28. RIGHTS OF PARTIES IN POSSESSION.

PRIOR TO THE ISSUANCE OF ANY POLICY OF TITLE INSURANCE, THE COMPANY WILL REQUIRE:

29. WITH RESPECT TO BALDWIN & SONS, LLC, A CALIFORNIA LIMITED LIABILITY COMPANY:
A. A COPY OF ITS OPERATING AGREEMENT OR SIMILAR DOCUMENT AND ANY AMENDMENTS THERETO;
B. A OFFICIAL COPY OF ITS ARTICLES OF ORGANIZATION OR SIMILAR INCORPORATION DOCUMENT AND ANY CORRECTIONS, AMENDMENTS OR RESTATEMENTS THERETO;
C. EVIDENCE THAT THE LIMITED LIABILITY COMPANY IS PROPERLY FORMED AND IS IN GOOD STANDING IN THE STATE OF ITS DOMICILE;
D. OTHER REQUIREMENTS WHICH THE COMPANY MAY IMPOSE FOLLOWING ITS REVIEW OF THE MATERIAL REQUIRED HEREIN AND OTHER INFORMATION WHICH THE COMPANY MAY REQUIRE.

(AFFECTS LOT C)

30. WITH RESPECT TO OTAY PROJECT L.P., A CALIFORNIA LIMITED PARTNERSHIP:
A. THAT A CERTIFIED COPY OF THE CERTIFICATE OF LIMITED PARTNERSHIP (FORM LP–1) AND ANY AMENDMENTS THERETO (FORM LP–2) BE RECORDED IN THE PUBLIC RECORDS;
B. A FULL COPY OF THE PARTNERSHIP AGREEMENT AND ANY AMENDMENTS;
C. SATISFACTORY EVIDENCE OF THE CONSENT OF A MAJORITY IN INTEREST OF THE LIMITED PARTNERS TO THE CONTEMPLATED TRANSACTION;
D. OTHER REQUIREMENTS WHICH THE COMPANY MAY IMPOSE FOLLOWING ITS REVIEW OF THE MATERIAL REQUIRED HEREIN AND OTHER INFORMATION WHICH THE COMPANY MAY REQUIRE.

(AFFECTS LOT D)

ONSITE
OWNER: BALDWIN & SONS, LOT "K" MAP NO. 15134
APN: 644-241-10-00

LEGAL DESCRIPTION

REAL PROPERTY IN THE CITY OF CHULA VISTA, COUNTY OF SAN DIEGO, STATE OF CALIFORNIA, DESCRIBED AS FOLLOWS:

LOT K OF CHULA VISTA TRACT NO. 05–09, OTAY RANCH VILLAGE 7 "A" MAP NO. 1, IN THE CITY OF CHULA VISTA, COUNTY OF SAN DIEGO, STATE OF CALIFORNIA ACCORDING TO MAP THEREOF NO. 15134, FILED IN THE OFFICE OF THE COUNTY RECORDER OF SAN DIEGO COUNTY ON SEPTEMBER 27, 2005.

TITLE REFERENCE

THE INFORMATION SHOWN HEREON IS BASED ON THE PRELIMINARY TITLE REPORT ISSUED BY FIRST AMERICAN TITLE COMPANY AS ORDER NO. NHSC–6985319 DATED JUNE 18, 2024.

ASSESSOR'S PARCEL NUMBER

644–241–10–00

TITLE EXCEPTIONS

1. GENERAL AND SPECIAL TAXES AND ASSESSMENTS FOR THE FISCAL YEAR 2024–2025, A LIEN NOT YET DUE OR PAYABLE.

2. THE LIEN OF SPECIAL TAX ASSESSED PURSUANT TO CHAPTER 2.5 COMMENCING WITH SECTION 53311 OF THE CALIFORNIA GOVERNMENT CODE FOR COMMUNITY FACILITIES DISTRICT NO. 6 OF THE CHULA VISTA ELEMENTARY SCHOOL, AS DISCLOSED BY NOTICE OF SPECIAL TAX LIEN RECORDED SEPTEMBER 15, 1998 AS INSTRUMENT NO. 1998–0584273 OF OFFICIAL RECORDS.

DOCUMENT(S) DECLARING MODIFICATIONS THEREOF RECORDED MARCH 7, 2001 AS INSTRUMENT NO. 2001–0130147 OF OFFICIAL RECORDS.

3. THE LIEN OF SPECIAL TAX ASSESSED PURSUANT TO CHAPTER 2.5 COMMENCING WITH SECTION 53311 OF THE CALIFORNIA GOVERNMENT CODE FOR COMMUNITY FACILITIES DISTRICT NO. CHULA VISTA ELEMENTARY SCHOOL DISTRICT COMMUNITY FACILITIES DISTRICT NO. 11, AS DISCLOSED BY NOTICE OF SPECIAL TAX LIEN RECORDED OCTOBER 29, 1998 AS INSTRUMENT NO. 1998–0703797 OF OFFICIAL RECORDS.

4. THE LIEN OF SPECIAL TAX ASSESSED PURSUANT TO CHAPTER 2.5 COMMENCING WITH SECTION 53311 OF THE CALIFORNIA GOVERNMENT CODE FOR COMMUNITY FACILITIES DISTRICT NO. 11, AS DISCLOSED BY NOTICE OF SPECIAL TAX LIEN RECORDED DECEMBER 29, 1998 AS INSTRUMENT NO. 1998–0854904 OF OFFICIAL RECORDS.

5. THE LIEN OF SPECIAL TAX ASSESSED PURSUANT TO CHAPTER 2.5 COMMENCING WITH SECTION 53311 OF THE CALIFORNIA GOVERNMENT CODE FOR COMMUNITY FACILITIES DISTRICT NO. 6 SWEETWATER UNION HIGH SCHOOL DISTRICT, AS DISCLOSED BY NOTICE OF SPECIAL TAX LIEN RECORDED DECEMBER 29, 1998 AS INSTRUMENT NO. 1998–0854905 OF OFFICIAL RECORDS.

DOCUMENT(S) DECLARING MODIFICATIONS THEREOF RECORDED MARCH 13, 2001 AS INSTRUMENT NO. 2001–0144243 OF OFFICIAL RECORDS.

6. THE LIEN OF SPECIAL TAX ASSESSED PURSUANT TO CHAPTER 2.5 COMMENCING WITH SECTION 53311 OF THE CALIFORNIA GOVERNMENT CODE FOR COMMUNITY FACILITIES DISTRICT NO. 97–2 (PRESERVE MAINTENANCE DISTRICT), AS DISCLOSED BY NOTICE OF SPECIAL TAX LIEN RECORDED AUGUST 21, 2001 AS INSTRUMENT NO. 2001–0594092 OF OFFICIAL RECORDS.

7. THE LIEN OF SUPPLEMENTAL TAXES, IF ANY, ASSESSED PURSUANT TO CHAPTER 3.5 COMMENCING WITH SECTION 75 OF THE CALIFORNIA REVENUE AND TAXATION CODE.

8. INTENTIONALLY DELETED

9. INTENTIONALLY DELETED

10. INTENTIONALLY DELETED

11. THE TERMS AND PROVISIONS CONTAINED IN THE DOCUMENT ENTITLED "AGREEMENT INDEMNIFICATION, IMPLEMENTATION OF MITIGATION MEASURES, AND PAYMENT OF CERTAIN FEES IN CONNECTION WITH THE APPROVAL OF THE GENERAL PLAN AMENDMENT, GENERAL AND OTHER DEVELOPMENT PLANS FOR THE OTAY RANCH" RECORDED FEBRUARY 7, 1994 AS INSTRUMENT NO. 1994–0084743 OF OFFICIAL RECORDS.

12. THE TERMS AND PROVISIONS CONTAINED IN THE DOCUMENT ENTITLED RESTATED AND AMENDED PRE–ANNEXATION DEVELOPMENT AGREEMENT WITH OTAY RANCH, L.P. RECORDED MAY 12, 1997 AS INSTRUMENT NO. 1997–0219970 OF OFFICIAL RECORDS.

13. INTENTIONALLY DELETED

14. INTENTIONALLY DELETED

15. THE TERMS AND PROVISIONS CONTAINED IN THE DOCUMENT ENTITLED "DRAINAGE MAINTENANCE AND INDEMNIFICATION AGREEMENT (OTAY RANCH VILLAGE 7 MASS GRADING)" RECORDED FEBRUARY 2, 2005 AS INSTRUMENT NO. 2005–0089011 OF OFFICIAL RECORDS.

(16) AN EASEMENT SHOWN OR DEDICATED ON THE MAP AS REFERRED TO IN THE LEGAL DESCRIPTION

FOR: ROAD AND INCIDENTAL PURPOSES.

17. THE TERMS AND PROVISIONS CONTAINED IN THE DOCUMENT ENTITLED "SUPPLEMENTAL SUBDIVISION IMPROVEMENT AGREEMENT FOR THE OTAY RANCH VILLAGE SEVEN "A" MAP" RECORDED SEPTEMBER 27, 2005 AS INSTRUMENT NO. 2005–0835113 OF OFFICIAL RECORDS.

DOCUMENT(S) DECLARING MODIFICATIONS THEREOF RECORDED FEBRUARY 13, 2007 AS INSTRUMENT NO. 2007–0099449 OF OFFICIAL RECORDS.

18. COVENANTS, CONDITIONS, RESTRICTIONS, EASEMENTS, ASSESSMENTS, LIENS, CHARGES, TERMS AND PROVISIONS IN THE DOCUMENT RECORDED OCTOBER 4, 2005 AS INSTRUMENT NO. 2005–0856104 OF OFFICIAL RECORDS, WHICH PROVIDE THAT A VIOLATION THEREOF SHALL NOT DEFEAT OR RENDER INVALID THE LIEN OF ANY FIRST MORTGAGE OR DEED OF TRUST MADE IN GOOD FAITH AND FOR VALUE, BUT DELETING ANY COVENANT, CONDITION OR RESTRICTION INDICATING A PREFERENCE, LIMITATION OR DISCRIMINATION BASED ON RACE, COLOR, RELIGION, SEX, SEXUAL ORIENTATION, MARITAL STATUS, ANCESTRY, DISABILITY, HANDICAP, FAMILIAL STATUS, NATIONAL ORIGIN OR SOURCE OF INCOME (AS DEFINED IN CALIFORNIA GOVERNMENT CODE §12955(P)), TO THE EXTENT SUCH COVENANTS, CONDITIONS OR RESTRICTIONS VIOLATE 42 U.S.C. §3604(C) OR CALIFORNIA GOVERNMENT CODE §12955. LAWFUL RESTRICTIONS UNDER STATE AND FEDERAL LAW ON THE AGE OF OCCUPANTS IN SENIOR HOUSING OR HOUSING FOR OLDER PERSONS SHALL NOT BE CONSTRUED AS RESTRICTIONS BASED ON FAMILIAL STATUS.

NOTE: YOU MAY WISH TO CONTACT THE HOMEOWNERS ASSOCIATION REFERRED TO IN THE ABOVE DOCUMENT FOR INFORMATION REGARDING ASSESSMENTS, TRANSFER REQUIREMENTS OR OTHER MATTERS.

DOCUMENT(S) DECLARING MODIFICATIONS THEREOF RECORDED JUNE 1, 2006 AS INSTRUMENT NO. 2006–0389164 OF OFFICIAL RECORDS.

DOCUMENT RE–RECORDED JULY 11, 2006 AS INSTRUMENT NO. 2006–0487654 OF OFFICIAL RECORDS.

DOCUMENT(S) DECLARING MODIFICATIONS THEREOF RECORDED AUGUST 30, 2006 AS INSTRUMENT NO. 2006–0619008 OF OFFICIAL RECORDS.

A DECLARATION OF ANNEXATION RECORDED JUNE 20, 2007 AS INSTRUMENT NO. 2007–0415537 OF OFFICIAL RECORDS.

DOCUMENT(S) DECLARING MODIFICATIONS THEREOF RECORDED MARCH 02, 2023 AS INSTRUMENT NO. 2023–0053648 OF OFFICIAL RECORDS.

A DECLARATION OF ANNEXATION RECORDED MARCH 02, 2023 AS INSTRUMENT NO. 2023–0053648 OF OFFICIAL RECORDS.

TITLE EXCEPTIONS (CONT.)

19. RIGHTS OF THE PUBLIC IN AND TO THAT PORTION OF THE LAND LYING WITHIN ANY ROAD, STREET, ALLEY OR HIGHWAY.

20. WATER RIGHTS, CLAIMS OR TITLE TO WATER, WHETHER OR NOT SHOWN BY THE PUBLIC RECORDS.

21. RIGHTS OF PARTIES IN POSSESSION.

PRIOR TO THE ISSUANCE OF ANY POLICY OF TITLE INSURANCE, THE COMPANY WILL REQUIRE:

22. WITH RESPECT TO BALDWIN & SONS, LLC, A CALIFORNIA LIMITED LIABILITY COMPANY:
A. A COPY OF ITS OPERATING AGREEMENT OR SIMILAR DOCUMENT AND ANY AMENDMENTS THERETO;
B. A OFFICIAL COPY OF ITS ARTICLES OF ORGANIZATION OR SIMILAR INCORPORATION DOCUMENT AND ANY CORRECTIONS, AMENDMENTS OR RESTATEMENTS THERETO;
C. EVIDENCE THAT THE LIMITED LIABILITY COMPANY IS PROPERLY FORMED AND IS IN GOOD STANDING IN THE STATE OF ITS DOMICILE;
D. OTHER REQUIREMENTS WHICH THE COMPANY MAY IMPOSE FOLLOWING ITS REVIEW OF THE MATERIAL REQUIRED HEREIN AND OTHER INFORMATION WHICH THE COMPANY MAY REQUIRE.

VORTAC - OFFSITE
OWNER: UNITED STATES OF AMERICA
APN:644-241-06-00

LEGAL DESCRIPTION

REAL PROPERTY IN THE CITY OF CHULA VISTA, COUNTY OF SAN DIEGO, STATE OF CALIFORNIA, DESCRIBED AS FOLLOWS:

PORTIONS OF LOTS 22, 28 AND 29 OF OTAY RANCH, IN THE CITY OF CHULA VISTA, COUNTY OF SAN DIEGO, STATE OF CALIFORNIA, ACCORDING TO MAP THEREOF NO. 862, FILED IN THE OFFICE OF THE COUNTY RECORDER OF SAN DIEGO COUNTY, FEBRUARY 7, 1900, BEING A 1500–FOOT BY 1500–FOOT SQUARE PARCEL, DESCRIBED AS FOLLOWS:

COMMENCING AT THE SAN DIEGO CITY HORIZONTAL AND VERTICAL CONTROL POINT "38F948" HAVING ZONE VI LAMBERT COORDINATES OF 156973.960 NORTH, 1774887.290 EAST; THENCE NORTH 9°15'16.4" EAST A DISTANCE OF 5,283.79 FEET TO A POINT ABOUT THE COORDINATE LATITUDE 32°36'37.006" NORTH, LONGITUDE 116°58'41.568" WEST, SAID POINT HEREIN AFTER REFERRED TO AS POINT "A"; THENCE SOUTH 00°24'00.6" WEST A DISTANCE OF 750.00 FEET TO THE TRUE POINT OF BEGINNING; THENCE NORTH 89°35'59.4" WEST A DISTANCE OF 750.00 FEET; THENCE NORTH 00°24'00.6" EAST A DISTANCE OF 1500.00 FEET; THENCE SOUTH 89°35'59.4" EAST A DISTANCE OF 1500.00 FEET; THENCE SOUTH 00°24'00.6" WEST A DISTANCE OF 1500.00 FEET; THENCE NORTH 89°35'59.4" WEST A DISTANCE OF 750.00 FEET TO THE TRUE POINT OF BEGINNING.

EXCEPTING THEREFROM ALL OIL AND GAS IN AND UNDER SAID LAND AND ALL APPURTENANT RIGHTS FOR THE EXPLORATION, DEVELOPMENT, PRODUCTION, AND REMOVAL OF SAID OIL AND GAS, BUT WITHOUT THE RIGHT TO ENTER UPON OR OVER THE SURFACE OF SAID LAND FOR THE PURPOSE OF DRILLING AND EXTRACTING THEREFROM SAID OIL AND GAS; PROVIDED, HOWEVER, THAT SAID OIL AND GAS, AND APPURTENANT RIGHTS SO EXCEPTED AND EXCLUDED ARE SUBORDINATED TO THE PRIOR RIGHT OF THE UNITED STATES OF AMERICA TO UTILIZE THE LAND IN CONNECTION WITH THE OPERATION AND MAINTENANCE OF THE VORTAC FACILITY, AS EXCEPTED IN THE AMENDED COMPLAINT IN CONDEMNATION CIVIL NO. 79–0907–N, RECORDED APRIL 23, 1980 AS INSTRUMENT NO. 80–137651, OF OFFICIAL RECORDS.

TITLE REFERENCE

THE INFORMATION SHOWN HEREON IS BASED ON THE PRELIMINARY TITLE REPORT ISSUED BY FIRST AMERICAN TITLE COMPANY AS ORDER NO. NHSC–6968467 (JD) DATED MARCH 22, 2023.

ASSESSOR'S PARCEL NUMBER

644–241–06–00

TITLE EXCEPTIONS

1. GENERAL AND SPECIAL TAXES AND ASSESSMENTS FOR THE FISCAL YEAR 2023–2024, A LIEN NOT YET DUE OR PAYABLE.

2. GENERAL AND SPECIAL TAXES AND ASSESSMENTS FOR THE FISCAL YEAR 2022–2023 ARE EXEMPT.

3. THE LIEN OF SUPPLEMENTAL TAXES, IF ANY, ASSESSED PURSUANT TO CHAPTER 3.5 COMMENCING WITH SECTION 75 OF THE CALIFORNIA REVENUE AND TAXATION CODE.

4. THE TERMS AND PROVISIONS CONTAINED IN THE DOCUMENT ENTITLED "AMENDED COMPLAINT IN CONDEMNATION CIVIL NO. 79–0907–N" RECORDED APRIL 23, 1980 AS INSTRUMENT NO. 80–137651 OF OFFICIAL RECORDS.

SUPPLEMENTAL DECLARATION OF TAKING CIVIL NO. 79–0907–N RECORDED ON APRIL 27, 1982 AS INSTRUMENT NO. 82–120168, OF OFFICIAL RECORDS.

[5] AN EASEMENT FOR THE TRANSMISSION AND DISTRIBUTION OF ELECTRICITY AND INCIDENTAL PURPOSES, RECORDED AUGUST 21, 1980 AS INSTRUMENT NO. 80–267891 OF OFFICIAL RECORDS.
IN FAVOR OF: SAN DIEGO GAS & ELECTRIC COMPANY, A CORPORATION
AFFECTS: AS DESCRIBED THEREIN

6. THE EFFECT OF A MAP PURPORTING TO SHOW THE LAND AND OTHER PROPERTY, FILED IN SURVEY MAP NO. 8723 OF RECORD OF SURVEYS.

7. AN EASEMENT TO CONSTRUCT AND MAINTAIN (PLACE, OPERATE, INSPECT, REPAIR, REPLACE AND REMOVE) SUCH AERIAL AND UNDERGROUND COMMUNICATION FACILITIES AND INCIDENTAL PURPOSES, RECORDED JUNE 14, 1982 AS INSTRUMENT NO. 82–181896 OF OFFICIAL RECORDS.
IN FAVOR OF: THE PACIFIC TELEPHONE AND TELEGRAPH COMPANY
AFFECTS: AS DESCRIBED THEREIN

8. THE EFFECT OF A MAP PURPORTING TO SHOW THE LAND AND OTHER PROPERTY, FILED IN SURVEY MAP NO. 12371 OF RECORD OF SURVEYS.

9. WATER RIGHTS, CLAIMS OR TITLE TO WATER, WHETHER OR NOT SHOWN BY THE PUBLIC RECORDS.

10. RIGHTS OF PARTIES IN POSSESSION.

LOT 12 MAP NO. 15014 - OFFSITE
OWNER: MCMILLIN ROLLING HILLS RANCH, LLC
APN: 644-241-05-00

LEGAL DESCRIPTION

REAL PROPERTY IN THE CITY OF CHULA VISTA, COUNTY OF SAN DIEGO, STATE OF CALIFORNIA, DESCRIBED AS FOLLOWS:

LOT 12 OF CHULA VISTA TRACT NO. 05–07, MCMILLIN OTAY RANCH VILLAGE 7, "A" MAP, IN THE CITY OF CHULA VISTA, COUNTY OF SAN DIEGO, STATE OF CALIFORNIA, ACCORDING TO MAP THEREOF NO. 15014, FILED IN THE OFFICE OF THE COUNTY RECORDER OF SAN DIEGO COUNTY, MAY 6, 2005.

TITLE REFERENCE

THE INFORMATION SHOWN HEREON IS BASED ON THE PRELIMINARY TITLE REPORT ISSUED BY FIRST AMERICAN TITLE COMPANY AS ORDER NO. NHSC–7097025 (MK) DATED MARCH 6, 2024.

ASSESSOR'S PARCEL NUMBER

644–241–05–00

TITLE EXCEPTIONS

1. GENERAL AND SPECIAL TAXES AND ASSESSMENTS FOR THE FISCAL YEAR 2024–2025, A LIEN NOT YET DUE OR PAYABLE.

2. GENERAL AND SPECIAL TAXES AND ASSESSMENTS FOR THE FISCAL YEAR 2023–2024.
FIRST INSTALLMENT: $0.00, NO TAX DUE
PENALTY: $0.00
SECOND INSTALLMENT: $0.00, NO TAX DUE
PENALTY: $0.00
TAX RATE AREA: 01298
A. P. NO.: 644–241–05–00

THE COUNTY TAX COLLECTOR COULD NOT VERIFY THE AMOUNTS SHOWN ABOVE AT THIS TIME. PLEASE VERIFY THE AMOUNTS WITH THE COUNTY TAX COLLECTOR PRIOR TO THE CLOSE OF THE CONTEMPLATED TRANSACTION.

3. THE FACT THAT SAID LAND LIES WITHIN THE COMMUNITY FACILITIES DISTRICT NO. 98–2 INTERIM OPEN SPACE MAINTENANCE DISTRICT OVP–SPA ONE VILLAGES (6 & 7), AS DISCLOSED BY INSTRUMENT RECORDED AUGUST 18, 1998 AS INSTRUMENT NO. 98–0523070 OF OFFICIAL RECORDS.

THAT PORTION OF THE HEREIN DESCRIBED PROPERTY LYING WITHIN SECTION 10 WAS ANNEXED TO THE ABOVE DISTRICT AS EVIDENCED BY DIAGRAM RECORDED NOVEMBER 14, 2000 AS INSTRUMENT NO. 00–0617270 OF OFFICIAL RECORDS.

4. THE LIEN OF SPECIAL TAX ASSESSED PURSUANT TO CHAPTER 2.5 COMMENCING WITH SECTION 53311 OF THE CALIFORNIA GOVERNMENT CODE FOR COMMUNITY FACILITIES DISTRICT NO. 11 (LOMAS VERDE) CHULA VISTA ELEMENTARY SCHOOL DISTRICT, COUNTY OF SAN DIEGO, STATE OF CALIFORNIA, AS DISCLOSED BY NOTICE OF SPECIAL TAX LIEN RECORDED OCTOBER 29, 1998 AS INSTRUMENT NO. 98–0703797 OF OFFICIAL RECORDS.

5. THE LIEN OF SPECIAL TAX ASSESSED PURSUANT TO CHAPTER 2.5 COMMENCING WITH SECTION 53311 OF THE CALIFORNIA GOVERNMENT CODE FOR COMMUNITY FACILITIES DISTRICT NO. 11 (LOMAS VERDE), SWEETWATER UNION HIGH SCHOOL DISTRICT, AS DISCLOSED BY NOTICE OF SPECIAL TAX LIEN RECORDED DECEMBER 29, 1998 AS INSTRUMENT NO. 98–0854904 OF OFFICIAL RECORDS.

DOCUMENT(S) DECLARING MODIFICATIONS THEREOF RECORDED MARCH 13, 2001 AS INSTRUMENT NO. 01–0144246 OF OFFICIAL RECORDS.

6. THE LIEN OF SPECIAL TAX ASSESSED PURSUANT TO CHAPTER 2.5 COMMENCING WITH SECTION 53311 OF THE CALIFORNIA GOVERNMENT CODE FOR COMMUNITY FACILITIES DISTRICT NO. 97–2 (PRESERVE MAINTENANCE DISTRICT) CITY OF CHULA VISTA, AS DISCLOSED BY NOTICE OF SPECIAL TAX LIEN RECORDED AUGUST 21, 2001 AS INSTRUMENT NO. 01–0594092 OF OFFICIAL RECORDS.

DOCUMENT(S) DECLARING MODIFICATIONS THEREOF RECORDED JULY 28, 2005 AS INSTRUMENT NO. 05–0641578 OF OFFICIAL RECORDS.

7. THE FACT THAT SAID LAND LIES WITHIN THE COMMUNITY FACILITIES DISTRICT NO. 12M (VILLAGE 7), AS DISCLOSED BY INSTRUMENT RECORDED JUNE 15, 2005 AS INSTRUMENT NO. 05–0501204 OF OFFICIAL RECORDS.

8. THE LIEN OF SUPPLEMENTAL TAXES, IF ANY, ASSESSED PURSUANT TO CHAPTER 3.5 COMMENCING WITH SECTION 75 OF THE CALIFORNIA REVENUE AND TAXATION CODE.

9. THE TERMS AND PROVISIONS CONTAINED IN THE DOCUMENT ENTITLED INDEMNIFICATION, IMPLEMENTATION OF MITIGATION MEASURES, AND PAYMENT OF CERTAIN FEES IN CONNECTION WITH THE APPROVAL OF THE GENERAL PLAN AMENDMENT, GENERAL AND OTHER DEVELOPMENT PLANS FOR THE OTAY RANCH RECORDED FEBRUARY 7, 1994 AS INSTRUMENT NO. 94–0084743 OF OFFICIAL RECORDS.

10. THE TERMS AND PROVISIONS CONTAINED IN THE DOCUMENT ENTITLED CITY OF CHULA VISTA TOLL ROAD AGREEMENT WITH SAN DIEGO EXPRESSWAY LIMITED PARTNERSHIP AND AGREEMENT AFFECTING REAL PROPERTY RECORDED APRIL 29, 2002 AS INSTRUMENT NO. 02–0358671 OF OFFICIAL RECORDS.

11. THE CONDITION THAT THE PROPERTY SHALL BE USED FOR THE SOLE PURPOSE OF PROVIDING, CONSTRUCTING AND MAINTAINING AFFORDABLE HOUSING, AS MORE FULLY DEFINED THEREIN, AND UPON THE TERMS, COVENANTS AND CONDITIONS IN THAT CERTAIN DOCUMENT RECORDED AUGUST 12, 2002 AS INSTRUMENT NO. 02–0679120 OF OFFICIAL RECORDS.

NOTE: A WRITTEN CONSENT OR WAIVER MAY BE NECESSARY FROM THE PUBLIC AGENCY FOR ANY SALE OR REFINANCE.

12. THE TERMS AND PROVISIONS CONTAINED IN THE DOCUMENT ENTITLED DRAINAGE MAINTENANCE AND INDEMNIFICATION AGREEMENT RECORDED NOVEMBER 3, 2004 AS INSTRUMENT NO. 04–1042418 OF OFFICIAL RECORDS.

13. THE TERMS AND PROVISIONS CONTAINED IN THE DOCUMENT ENTITLED SUPPLEMENTAL SUBDIVISION IMPROVEMENT AGREEMENT FOR THE MCMILLIN OTAY RANCH VILLAGE SEVEN "A" MAP RECORDED MAY 6, 2005 AS INSTRUMENT NO. 05–0383256 OF OFFICIAL RECORDS.

DOCUMENT(S) DECLARING MODIFICATIONS THEREOF RECORDED FEBRUARY 16, 2007 AS INSTRUMENT NO. 2007–0109725 OF OFFICIAL RECORDS.

(14) AN EASEMENT SHOWN OR DEDICATED ON THE MAP AS REFERRED TO IN THE LEGAL DESCRIPTION
FOR: ASSIGNABLE AND IRREVOCABLE GENERAL UTILITY, ACCESS, LANDSCAPE AND INCIDENTAL PURPOSES.

15. WATER RIGHTS, CLAIMS OR TITLE TO WATER, WHETHER OR NOT SHOWN BY THE PUBLIC RECORDS.

16. RIGHTS OF PARTIES IN POSSESSION.

17. ANY FACTS, RIGHTS, INTERESTS OR CLAIMS WHICH WOULD BE DISCLOSED BY A CORRECT ALTA/NSPS SURVEY.

PRIOR TO THE ISSUANCE OF ANY POLICY OF TITLE INSURANCE, THE COMPANY WILL REQUIRE:

18. WITH RESPECT TO MCMILLIN ROLLING HILLS RANCH, LLC, A DELAWARE LIMITED LIABILITY COMPANY:
A. A COPY OF ITS OPERATING AGREEMENT OR SIMILAR DOCUMENT AND ANY AMENDMENTS THERETO;
B. A OFFICIAL COPY OF ITS ARTICLES OF ORGANIZATION OR SIMILAR INCORPORATION DOCUMENT AND ANY CORRECTIONS, AMENDMENTS OR RESTATEMENTS THERETO;
C. EVIDENCE THAT THE LIMITED LIABILITY COMPANY IS PROPERLY FORMED AND IS IN GOOD STANDING IN THE STATE OF ITS DOMICILE;
D. OTHER REQUIREMENTS WHICH THE COMPANY MAY IMPOSE FOLLOWING ITS REVIEW OF THE MATERIAL REQUIRED HEREIN AND OTHER INFORMATION WHICH THE COMPANY MAY REQUIRE.

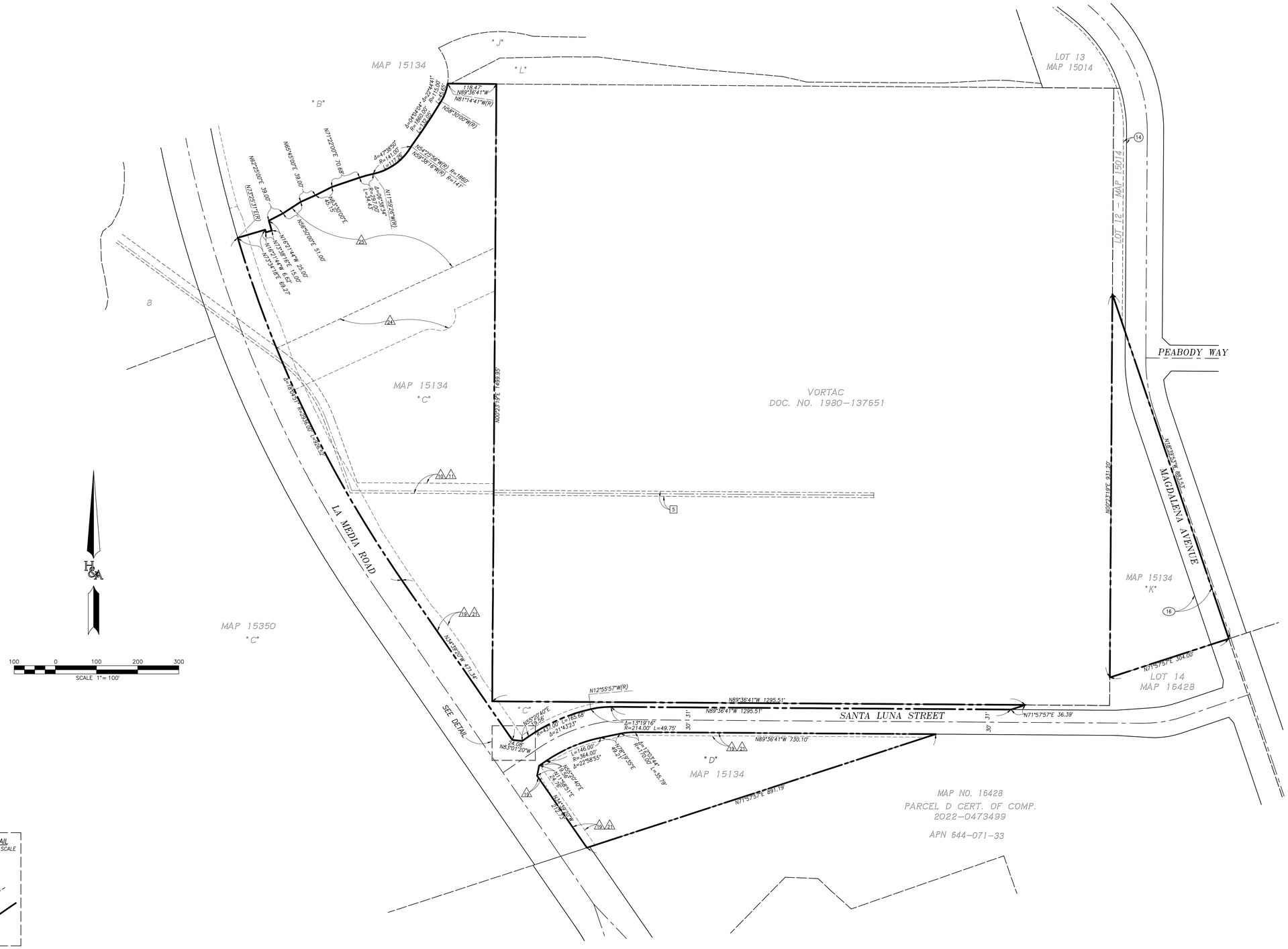
19. WITH RESPECT TO MCMILLIN ROLLING HILLS RANCH, LLC, A DELAWARE LIMITED LIABILITY COMPANY, A CERTIFICATE OF REVIVOR AND A CERTIFICATE OF RELIEF FROM CONTRACT VOIDABILITY ISSUED BY THE FRANCHISE TAX BOARD OF THE STATE OF CALIFORNIA.

20. AN ALTA/NSPS SURVEY OF RECENT DATE WHICH COMPLIES WITH THE CURRENT MINIMUM STANDARD DETAIL REQUIREMENTS FOR ALTA/NSPS LAND TITLE SURVEYS.

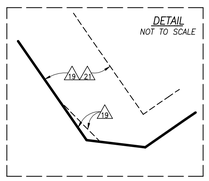
PREPARED BY:
HUNSAKER & ASSOCIATES SAN DIEGO, INC.
PLANNING 9707 Waples Street
ENGINEERING San Diego, Ca 92121
SURVEYING PH(858)558-4500 · FX(858)558-1414

BOUNDARY & ENCUMBRANCES
VILLAGE 7
R-3, R-4 & R-8
CITY OF CHULA VISTA, CALIFORNIA

SHEET C2



DETAIL
NOT TO SCALE



PREPARED BY:

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BOUNDARY & ENCUMBRANCES

VILLAGE 7
R-3, R-4 & R-8

CITY OF CHULA VISTA, CALIFORNIA

SHEET C3

WO NO. 2801-0121

R:\1601\&Pln\Village 7 South TM\V7 South TM Sht 3 B&E.dwg[]Jul-29-2024:14:03

Project Name/_____

ATTACHMENT 5

Drainage Report

Attach project's drainage report. Refer to the Subdivision Manual to determine the reporting requirements.

PRELIMINARY DRAINAGE STUDY
for
TENTATIVE MAP CVT 23-0001
CONCEPTUAL GRADING PLAN
OTAY RANCH VILLAGE 7, R-3, R-4, & R-8

APN: 644-241-06, 644-241-07 & 644-241-08
C.V.T. 23-0001

Prepared for:
Baldwin and Sons LLC
20 Corporate Plaza Dr.
Newport Beach, CA 92660
&
Otay Project, L.P.
20 Corporate Plaza Dr.
Newport Beach, CA 92660
(949) 640-8300

W.O. 2807-0121
May 10, 2024

Alisa S. Vialpando 07/26/2024
Alisa Vialpando, RCE # 47945 Date
Hunsaker & Associates
San Diego, Inc.

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Project Name/_____

ATTACHMENT 6

Project's Geotechnical and Groundwater Investigation Report

Attach project's geotechnical and groundwater investigation report. Refer to Appendix C.4 to determine the reporting requirements.