

Priority Development Project (PDP) Storm Water Quality Management Plan (SWQMP)

Cielo Mar Subdivision

PRJ-1085883

[Insert Drawing Number (if applicable) and Internal Order Number (if applicable)]

☐ **Check if electing for offsite alternative compliance**

Engineer of Work:



Douglas E. Logan RCE 39726
Provide Wet Signature and Stamp Above Line

Prepared For:

Cielo Mar La Jolla, LLC
1298 Prospect Street, #2S
La Jolla, CA 92037
661-979-0244
Prepared By:

Rancho Coastal Engineering & Surveying
310 Via Vera Cruz, #205
San Marcos, CA 92078
760-510-3152
Date:
10/23/24

Approved by: City of San Diego

Date



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Project Name: Cielo Mar Subdivision

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Acronyms

APN	Assessor's Parcel Number
ASBS	Area of Special Biological Significance
BMP	Best Management Practice
CEQA	California Environmental Quality Act
CGP	Construction General Permit
DCV	Design Capture Volume
DMA	Drainage Management Areas
ESA	Environmentally Sensitive Area
GLU	Geomorphic Landscape Unit
GW	Ground Water
HMP	Hydromodification Management Plan
HSG	Hydrologic Soil Group
HU	Harvest and Use
INF	Infiltration
LID	Low Impact Development
LUP	Linear Underground/Overhead Projects
MS4	Municipal Separate Storm Sewer System
N/A	Not Applicable
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
PDP	Priority Development Project
PE	Professional Engineer
POC	Pollutant of Concern
SC	Source Control
SD	Site Design
SDRWQCB	San Diego Regional Water Quality Control Board
SIC	Standard Industrial Classification
SWPPP	Stormwater Pollutant Protection Plan
SWQMP	Storm Water Quality Management Plan
TMDL	Total Maximum Daily Load
WMAA	Watershed Management Area Analysis
WPCP	Water Pollution Control Program
WQIP	Water Quality Improvement Plan

Project Name: Cielo Mar Subdivision

Certification Page

Project Name: Permit Application

I hereby declare that I am the Engineer in Responsible Charge of design of storm water BMPs for this project, and that I have exercised responsible charge over the design of the project as defined in Section 6703 of the Business and Professions Code, and that the design is consistent with the requirements of the Storm Water Standards, which is based on the requirements of SDRWQCB 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 Storm Water Standards. 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 source control and site design 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.

Engineer of Work's Signature

39726

PE#

Expiration Date

Douglas E. Logan

Print Name

Rancho Coastal Engineering & Surveying

Company

08/07/24

Date



Engineer's Stamp

Submittal Record

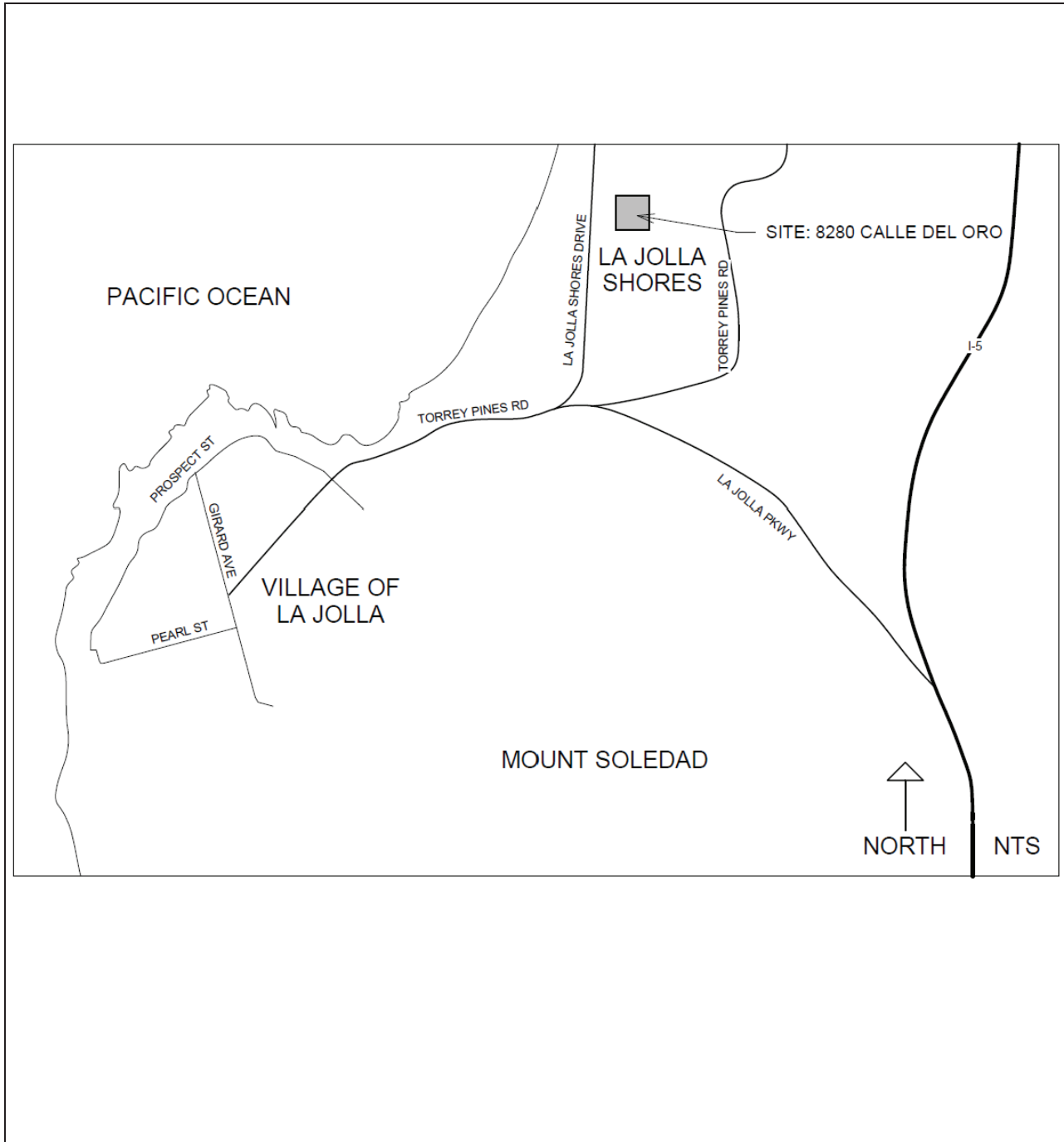
Use this Table to keep a record of submittals of this PDP SWQMP. Each time the PDP SWQMP is re-submitted, provide the date and status of the project. In last column indicate changes that have been made or indicate if response to plancheck comments is included. When applicable, insert response to plancheck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

Submittal Number	Date	Project Status	Changes
1	02/20/23 +	<input checked="" type="checkbox"/> Preliminary Design/Planning/CEQA <input type="checkbox"/> Final Design	Initial Submittal
2	08/07/24	<input checked="" type="checkbox"/> Preliminary Design/Planning/CEQA <input type="checkbox"/> Final Design	Second Submittal
3		<input type="checkbox"/> Preliminary Design/Planning/CEQA <input type="checkbox"/> Final Design	
4		<input type="checkbox"/> Preliminary Design/Planning/CEQA <input type="checkbox"/> Final Design	

Project Name: Cielo Mar Subdivision

Project Vicinity Map

Project Name: Cielo Mar Subdivision
Permit Application



Project Name: Cielo Mar Subdivision

City of San Diego Form DS-560 Storm Water Requirements Applicability Checklist

Attach DS-560 form.

FORM
DS-560
September 2021

Stormwater Requirements Applicability Checklist

Project Address: 8280 Calle Del Cielo

Project Number: PRJ-1085883

SECTION 1: Construction Stormwater Best Management Practices (BMP) Requirements

All construction sites are required to implement construction BMPs per the performance standards in the [Stormwater Standards Manual](#). Some sites are also required to obtain coverage under the State Construction General Permit (CGP)¹, administered by the [California State Water Resources Control Board](#).

For all projects, complete Part A - If the project is required to submit a Stormwater Pollution Prevention Plan (SWPPP) or Water Pollution Control Plan (WPCP), continue to Part B.

PART A – Determine Construction Phase Stormwater Requirements

1. Is the project subject to California's statewide General National Pollutant Discharge Elimination System (NPDES) permit for Stormwater Discharges Associated with Construction Activities, also known as the State Construction General Permit (CGP)? (Typically projects with land disturbance greater than or equal to 1 acre.)

☐ Yes, SWPPP is required; skip questions 2-4.
☒ No; proceed to the next question.
2. Does the project propose construction or demolition activity, including but not limited to, clearing, grading, grubbing, excavation, or any other activity resulting in ground disturbance and/or contact with stormwater?

☒ Yes, WPCP is required; skip questions 3-4.
☐ No; proceed to the next question.
3. Does the project propose routine maintenance to maintain the original line and grade, hydraulic capacity, or original purpose of the facility? (Projects such as pipeline/utility replacement)

☐ Yes, WPCP is required; skip question 4.
☒ No; proceed to the next question.
4. Does the project only include the following Permit types listed below?
 - Electrical Permit, Fire Alarm Permit, Fire Sprinkler Permit, Plumbing Permit, Sign Permit, Mechanical Permit, Spa Permit.
 - Individual Right of Way Permits that exclusively include only ONE of the following activities: water service, sewer lateral, or utility service.
 - Right of Way Permits with a project footprint less than 150 linear feet that exclusively include only ONE of the following activities: curb ramp, sidewalk and driveway apron replacement, potholing, curb and gutter replacement, and retaining wall encroachments.

☐ Yes, no document is required.

Check one of the boxes below and continue to Part B

- ☐ If you checked "Yes" for question 1, an SWPPP is REQUIRED – continue to Part B

☒ If you checked "No" for question 1 and checked "Yes" for question 2 or 3, a WPCP is REQUIRED. If the project proposes less than 5,000 square feet of ground disturbance AND has less than a 5-foot elevation change over the entire project area, a Minor WPCP may be required instead. **Continue to Part B**

☐ If you check "No" for all questions 1-3 and checked "Yes" for question 4, Part B does not apply, and no document is required. **Continue to Section 2.**

¹ More information on the City's construction BMP requirements as well as CGP requirements can be found at <http://www.sandiego.gov/stormwater/regulations/index.shtml>

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PART B – Determine Construction Site Priority

This prioritization must be completed within this form, noted on the plans, and included in the SWPPP or WPCP. The city reserves the right to adjust the priority of projects both before and after construction. Construction projects are assigned an inspection frequency based on if the project has a “high threat to water quality.” The City has aligned the local definition of “high threat to water quality” to the risk determination approach of the State Construction General Permit (CGP). The CGP determines risk level based on project specific sediment risk and receiving water risk. Additional inspection is required for projects within the Areas of Special Biological Significance (ASBS) watershed. **NOTE:** The construction priority does **NOT** change construction BMP requirements that apply to projects; rather, it determines the frequency of inspections that will be conducted by city staff.

Complete Part B and continue to Section 2☒ **1. ASBS**

- A. Projects located in the ASBS watershed.

☐ **2. High Priority**

- A. Projects that qualify as Risk Level 2 or Risk Level 3 per the Construction General Permit (CGP) and are not located in the ASBS watershed.
B. Projects that qualify as LUP Type 2 or LUP Type 3 per the CGP and are not located in the ASBS watershed.

☐ **3. Medium Priority**

- A. Projects that are not located in an ASBS watershed or designated as a High priority site.
B. Projects that qualify as Risk Level 1 or LUP Type 1 per the CGP and are not located in an ASBS watershed.
C. WPCP projects (>5,000 square feet of ground disturbance) located within the Los Peñasquitos watershed management area.

☐ **4. Low Priority**

- A. Projects not subject to a Medium or High site priority designation and are not located in an ASBS watershed.

Section 2: Construction Stormwater BMP Requirements

Additional information for determining the requirements is found in the [Stormwater Standards Manual](#).

PART C – Determine if Not Subject to Permanent Stormwater Requirements

Projects that are considered maintenance or otherwise not categorized as “new development projects” or “redevelopment projects” according to the [Stormwater Standards Manual](#) are not subject to Permanent Stormwater BMPs.

- If “yes” is checked for any number in Part C: Proceed to Part F and check “Not Subject to Permanent Stormwater BMP Requirements.”
- If “no” is checked for all the numbers in Part C: Continue to Part D.

1. Does the project only include interior remodels and/or is the project entirely within an existing enclosed structure and does not have the potential to contact stormwater?
☐ Yes ☒ No
2. Does the project only include the construction of overhead or underground utilities without creating new impervious surfaces?
☐ Yes ☒ No
3. Does the project fall under routine maintenance? Examples include but are not limited to roof or exterior structure surface replacement, resurfacing or reconfiguring surface parking lots or existing roadways without expanding the impervious footprint, and routine replacement of damaged pavement (grinding, overlay and pothole repair).
☐ Yes ☒ No

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PART D – PDP Exempt Requirements

PDP Exempt projects are required to implement site design and source control BMPs.

- If “yes” is checked for any questions in Part D, continue to Part F and check the box labeled “PDP Exempt.”
- If “no” is checked for all questions in Part D, continue to Part E.

1. Does the project ONLY include new or retrofit sidewalks, bicycle lanes, or trails that:

- Are designed and constructed to direct stormwater runoff to adjacent vegetated areas, or other non-erodible permeable areas? Or;
- Are designed and constructed to be hydraulically disconnected from paved streets and roads? Or;
- Are designed and constructed with permeable pavements or surfaces in accordance with the Green Streets guidance in the City's Stormwater Standards manual?

☐ Yes, PDP exempt requirements apply ☒ No, proceed to next question

2. Does the project ONLY include retrofitting or redeveloping existing paved alleys, streets or roads designed and constructed in accordance with the Green Streets guidance in the [City's Stormwater Standards Manual](#)?

☐ Yes, PDP exempt requirements apply ☒ No, proceed to next question

PART E – Determine if Project is a Priority Development Project (PDP)

Projects that match one of the definitions below are subject to additional requirements, including preparation of a Stormwater Quality Management Plan (SWQMP).

- If “yes” is checked for any number in Part E, continue to Part F and check the box labeled “Priority Development Project.”
- If “no” is checked for every number in Part E, continue to Part F and check the box labeled “Standard Development Project.”

1. **New development that creates 10,000 square feet or more of impervious surfaces collectively over the project site.** This includes commercial, industrial, residential, mixed-use, and public development projects on public or private land. ☐ Yes ☒ No
2. **Redevelopment project that creates and/or replaces 5,000 square feet or more of impervious surfaces 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
3. **New development or redevelopment of a restaurant.** Facilities that sell prepared foods and beverages for consumption, including stationary lunch counters and refreshment stands selling prepared foods and drinks for immediate consumption (Standard Industrial Classification ([SIC 5812](#)), and where the land development creates and/or replaces 5,000 square feet or more of impervious surface. ☐ Yes ☒ No
4. **New development or redevelopment on a hillside.** The project creates and/or replaces 5,000 square feet or more of impervious surface (collectively over the project site) and where the development will grade on any natural slope that is twenty-five percent or greater. ☒ Yes ☐ No
5. **New development or redevelopment of a parking lot that creates and/or replaces 5,000 square feet or more of impervious surface (collectively over the project site).** ☐ Yes ☒ No
6. **New development or redevelopment of streets, roads, highways, freeways, and driveways.** The project creates and/or replaces 5,000 square feet or more of impervious surface (collectively over the project site). ☒ Yes ☐ No

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7. **New development or redevelopment discharging directly to an environmentally sensitive area.** The project creates and/or replaces 2,500 square feet of impervious surface (collectively over the project site), and discharges 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
8. **New development or redevelopment projects of retail gasoline outlet (RGO) that create and/or replaces 5,000 square feet of impervious surface.** The development project meets the following criteria: (a) 5,000 square feet or more or (b) has a projected Average Daily Traffic (ADT) of 100 or more vehicles per day. ☐ Yes ☒ No
9. **New development or redevelopment projects of an automotive repair shop that creates and/or replaces 5,000 square feet or more of impervious surfaces.** Development projects categorized in any one of Standard Industrial Classification (SIC) codes [5013](#), [5014](#), [5541](#), [7532-7534](#) or [7536-7539](#). ☐ Yes ☒ No
10. **Other Pollutant Generating Project.** These projects are not covered in any of the categories above but involve the disturbance of one or more acres of land and are expected to generate post-construction phase pollutants, including fertilizers and pesticides. This category does not include projects creating less than 5,000 square feet of impervious area and projects containing landscaping without a requirement for the regular use of fertilizers and pesticides (such as a slope stabilization project using native plants). Impervious area calculations need not include linear pathways for infrequent vehicle use, such as emergency maintenance access or bicycle and pedestrian paths if the linear pathways are built with pervious surfaces or if runoff from the pathway sheet flows to adjacent pervious areas. ☐ Yes ☒ No

PART F – Select the appropriate category based on the outcomes of Part C through Part E

1. The project is **NOT SUBJECT TO PERMANENT STORMWATER REQUIREMENTS** ☐ Yes ☐ No
2. The project is a **STANDARD DEVELOPMENT PROJECT**. Site design and source control BMP requirements apply. See the [Stormwater Standards Manual](#) for guidance. ☐ Yes ☐ No
3. The Project is **PDP EXEMPT**. Site design and source control BMP requirements apply. Refer to the [Stormwater Standards Manual](#) for guidance. ☐ Yes ☐ No
4. The project is a **PRIORITY DEVELOPMENT PROJECT**. Site design, source control and structural pollutant control BMP requirements apply. Refer to the [Stormwater Standards Manual](#) for guidance on determining if the project requires hydromodification plan management. ☒ Yes ☐ No

Alex Parra

Name of Owner or Agent

Signature

Alejandro Parra

Principal

Title

06/18/24

Date

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P4

Project Name: Cielo Mar Subdivision

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Applicability of Permanent, Post-Construction Storm Water BMP Requirements		Form I-1
Project Identification		
Project Name: Cielo Subdivision		
Permit Application Number:		Date: 02/15/2023
Determination of Requirements		
<p>The purpose of this form is to identify permanent, post-construction requirements that apply to the project. This form serves as a short <u>summary</u> of applicable requirements, in some cases referencing separate forms that will serve as the backup for the determination of requirements.</p> <p>Answer each step below, starting with Step 1 and progressing through each step until reaching "Stop". Refer to the manual sections and/or separate forms referenced in each step below.</p>		
Step	Answer	Progression
Step 1: Is the project a "development project"? See Section 1.3 of the manual (Part 1 of Storm Water Standards) for guidance.	<input checked="" type="checkbox"/> Yes	Go to Step 2 .
	<input type="checkbox"/> No	Stop. Permanent BMP requirements do not apply. No SWQMP will be required. Provide discussion below.
<p>Discussion / justification if the project is <u>not</u> a "development project" (e.g., the project includes <i>only</i> interior remodels within an existing building):</p>		
Step 2: Is the project a Standard Project, PDP, or PDP Exempt? To answer this item, see Section 1.4 of the manual in its entirety for guidance AND complete Form DS-560, Storm Water Requirements Applicability Checklist.	<input type="checkbox"/> Standard Project	Stop. Standard Project requirements apply
	<input checked="" type="checkbox"/> PDP	PDP requirements apply, including PDP SWQMP. Go to Step 3 .
	<input type="checkbox"/> PDP Exempt	Stop. Standard Project requirements apply. Provide discussion and list any additional requirements below.
<p>Discussion / justification, and additional requirements for exceptions to PDP definitions, if applicable:</p>		

Form I-1 Page 2 of 2		
Step	Answer	Progression
Step 3. Is the project subject to earlier PDP requirements due to a prior lawful approval? See Section 1.10 of the manual (Part 1 of Storm Water Standards) for guidance.	<input type="checkbox"/> Yes	Consult the City Engineer to determine requirements. Provide discussion and identify requirements below. Go to Step 4.
	<input checked="" type="checkbox"/> No	BMP Design Manual PDP requirements apply. Go to Step 4.
Discussion / justification of prior lawful approval, and identify requirements (<u>not required if prior lawful approval does not apply</u>):		
Step 4. Do hydromodification control requirements apply? See Section 1.6 of the manual (Part 1 of Storm Water Standards) for guidance.	<input type="checkbox"/> Yes	PDP structural BMPs required for pollutant control (Chapter 5) and hydromodification control (Chapter 6). Go to Step 5.
	<input checked="" type="checkbox"/> No	Stop. PDP structural BMPs required for pollutant control (Chapter 5) only. Provide brief discussion of exemption to hydromodification control below.
Discussion / justification if hydromodification control requirements do <u>not</u> apply: Direct storm water runoff discharge from the project site to HMP exempt area. Runoff flows to La Jolla Drive, then southerly along it to a curb inlet at Calle Vallecitos (4599-D) and then in the public storm drain to the Pacific Ocean. The other outlet is to a curb inlet in Calle Cielo (7775-D) and then down Calle del Oro in a 24" drain (7775-D) then to a 30" drain in Camino Cielo (11394-L) and then to a 1.5' x 4' box culvert (11394-L) to the Pacific Ocean		
Step 5. Does protection of critical coarse sediment yield areas apply? See Section 6.2 of the manual (Part 1 of Storm Water Standards) for guidance.	<input type="checkbox"/> Yes	Management measures required for protection of critical coarse sediment yield areas (Chapter 6.2). Stop.
	<input checked="" type="checkbox"/> No	Management measures not required for protection of critical coarse sediment yield areas. Provide brief discussion below. Stop.
Discussion / justification if protection of critical coarse sediment yield areas does <u>not</u> apply: There are no PCCYSAs, Verified using Google Earth KMZ file from Project Clean Water.		

HMP Exemption Exhibit

Attach a HMP Exemption Exhibit that shows direct storm water runoff discharge from the project site to HMP exempt area. Include project area, applicable underground storm drain 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.

Hydromodification Exemption - Path of Travel



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Project Name: Cielo Mar Subdivision

Site Information Checklist For PDPs		Form I-3B
Project Summary Information		
Project Name	Cielo Subdivision	
Project Address	8280 Calle del Cielo La Jolla, CA 9203 7	
Assessor's Parcel Number(s) (APN(s))	346-250-08-00, 346-250-09-00, 246-250-10-00	
Permit Application Number		
Project Watershed	Select One: <input type="checkbox"/> San Dieguito River <input checked="" type="checkbox"/> Penasquitos <input type="checkbox"/> Mission Bay <input type="checkbox"/> San Diego River <input type="checkbox"/> San Diego Bay <input type="checkbox"/> Tijuana River	
Hydrologic subarea name with Numeric Identifier up to two decimal places (9XX.XX)	906.30	
Project Area (total area of Assessor's Parcel(s) associated with the project or total area of the right-of-way)	4.40 Acres (191664 Square Feet)	
Area to be disturbed by the project (Project Footprint)	4.38 Acres (190970 Square Feet)	
Project Proposed Impervious Area (subset of Project Footprint)	2.02 Acres (88125 Square Feet)	
Project Proposed Pervious Area (subset of Project Footprint)	2.36 Acres (102845 Square Feet)	
Note: Proposed Impervious Area + Proposed Pervious Area = Area to be Disturbed by the Project. This may be less than the Project Area.		
The proposed increase or decrease in impervious area in the proposed condition as compared to the pre-project condition	400 %	

Form I-3B Page 2 of 11
Description of Existing Site Condition and Drainage Patterns
<p>Current Status of the Site (select all that apply):</p> <p><input checked="" type="checkbox"/> Existing development</p> <p><input type="checkbox"/> Previously graded but not built out</p> <p><input type="checkbox"/> Agricultural or other non-impervious use</p> <p><input checked="" type="checkbox"/> Vacant, undeveloped/natural</p> <p>Description / Additional Information:</p> <p>Portions of the property is improved with paving for the private road and a single family residence and appurtenances.</p>
<p>Existing Land Cover Includes (select all that apply):</p> <p><input checked="" type="checkbox"/> Vegetative Cover</p> <p><input type="checkbox"/> Non-Vegetated Pervious Areas</p> <p><input checked="" type="checkbox"/> Impervious Areas</p> <p>Description / Additional Information:</p>
<p>Underlying Soil belongs to Hydrologic Soil Group (select all that apply):</p> <p><input type="checkbox"/> NRCS Type A</p> <p><input type="checkbox"/> NRCS Type B</p> <p><input type="checkbox"/> NRCS Type C</p> <p><input checked="" type="checkbox"/> NRCS Type D</p>
<p>Approximate Depth to Groundwater:</p> <p><input type="checkbox"/> Groundwater Depth < 5 feet</p> <p><input type="checkbox"/> 5 feet < Groundwater Depth < 10 feet</p> <p><input type="checkbox"/> 10 feet < Groundwater Depth < 20 feet</p> <p><input checked="" type="checkbox"/> Groundwater Depth > 20 feet</p>
<p>Existing Natural Hydrologic Features (select all that apply):</p> <p><input type="checkbox"/> Watercourses</p> <p><input type="checkbox"/> Seeps</p> <p><input type="checkbox"/> Springs</p> <p><input type="checkbox"/> Wetlands</p> <p><input checked="" type="checkbox"/> None</p> <p>Description / Additional Information:</p>

Form I-3B Page 3 of 11	
Description of Existing Site Topography and Drainage	
<p>How is storm water runoff conveyed from the site? At a minimum, this description should answer:</p> <ol style="list-style-type: none">1. Whether existing drainage conveyance is natural or urban;2. If runoff from offsite is conveyed through the site? If yes, quantification of 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 storm drains, concrete channels, swales, detention facilities, storm water treatment facilities, and natural and constructed channels;4. Identify all discharge locations from the existing project along with a summary of the 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.	
Descriptions/Additional Information	
<p>The site conveys all urban runoff overland to the west, then continuous overland off-site further west within the existing developed 60' wide easement and then to La Jolla Shores Drive street gutters, then further south into an existing public inlet and underground system. From there the runoff flows to the Pacific Ocean.</p> <p>A small portion of the site runoff flows to the neighboring properties westerly of the site.</p>	

Form I-3B Page 4 of 11
Description of Proposed Site Development and Drainage Patterns
<p>Project Description / Proposed Land Use and/or Activities:</p> <p>This project involves the removal of the existing single-family residence and subdivision of the property into 6 lots for single-family residences.</p>
<p>List/describe proposed impervious features of the project (e.g., buildings, roadways, parking lots, courtyards, athletic courts, other impervious features):</p> <p>Impervious surfaces will include the new buildings and hardscape patio and wallways and driveway.</p>
<p>List/describe proposed pervious features of the project (e.g., landscape areas):</p> <p>Landscaped areas and natural areas</p>
<p>Does the project include grading and changes to site topography?</p> <p><input checked="" type="checkbox"/> Yes</p> <p><input type="checkbox"/> No</p> <p>Description / Additional Information:</p> <p>Mass grading will be performed for the construction of the proposed development</p>

Form I-3B Page 5 of 11

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 and 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.

Description / Additional Information:

The project proposes the installation of a drainage conveyance network that included concrete channels, trench drains and PVC pipes, these facilities will capture runoff and will conveyed it to the proposed treatment facilities, BMP 1 and BMP 2.

There are two distinctive Drainage Management areas (DMAs) DMA 1 & DMA 2. Runoff from DMA 1 travels into a to a proposed bio-basin (BMP 1) for water quality and peak flow attenuation.

Runoff from DMA 2 travels into a to a proposed bio-basin (BMP 2) for water quality and peak flow attenuation. Due to topography elevation constrains a proposed pump will collect runoff and discharge into the proposed basin (BMP 2). A rip-rap energy dissipater mat will be installed at the proposed pump discharge outlet.

Both bio-retention facilities will install a peak flow control riser to attenuate peak flows to pre-development conditions.

Fully permeable paver to be installed as self treating for proposed for DMA 3, runoff will exit the site as sheet flow.

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

- ☒ Onsite storm drain inlets
- ☐ Interior floor drains and elevator shaft sump pumps
- ☐ Interior parking garages
- ☐ Need for future indoor & structural pest control
- ☒ Landscape/outdoor pesticide use
- ☒ 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
- ☐ Fire sprinkler test water
- ☐ Miscellaneous drain or wash water
- ☒ Plazas, sidewalks, and parking lots

Description/Additional Information:

Form I-3B Page 7 of 11
Identification and Narrative of Receiving Water
<p>Narrative describing flow path from discharge location(s), through urban storm conveyance system, to receiving creeks, rivers, and lagoons and ultimate discharge location to Pacific Ocean (or bay, lagoon, lake or reservoir, as applicable)</p> <p>All treated development flows will be discharged overland which will then be captured by street gutters and inlets located in La Jolla Shores Drive, the existing public underground system then discharges on-site and off-site flows further west to the nearby Pacific Ocean.</p>
<p>Provide a summary of all beneficial uses of receiving waters downstream of the project discharge locations</p> <p>For Coastal Water uses include Industrial service supply, Navigation, Contact Water Recreation, on-Contact Water Recreation, Commercial and Sport fishing, Biologic Habitats, Estuarine, Wildlife, Rare and Marine habitats Migration, Aquaculture, Shellfish Harvesting, Spawning. Ground Water uses include Municipal, Domestic and Industrial supply.</p>
<p>Identify all ASBS (areas of special biological significance) receiving waters downstream of the project discharge locations</p> <p>La Jolla Shores ASBS area.</p>
<p>Provide distance from project outfall location to impaired or sensitive receiving waters</p> <p>Approximately 0.2 mile westerly to the Pacific Ocean.</p>
<p>Summarize information regarding the proximity of the permanent, post-construction storm water BMPs to the City's Multi-Habitat Planning Area and environmentally sensitive lands</p> <p>There are no MHPA or ESL areas near the project site</p>

Form I-3B Page 8 of 11			
Identification of Receiving Water Pollutants of Concern			
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)/stressors(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 (Refer to Appendix K)	Pollutant(s)/Stressor(s) (Refer to Appendix K)	TMDLs/WQIP Highest Priority Pollutant (Refer to Table 1-4 in Chapter 1)	
Pacific Ocean	Bacteria	Indicator Bacteria	
Identification of Project Site Pollutants*			
*Identification of project site pollutants is only required if flow-thru treatment BMPs are implemented onsite in lieu of retention or biofiltration BMPs (note the project must also participate in an alternative compliance program unless prior lawful approval to meet earlier PDP requirements is demonstrated)			
Identify pollutants anticipated from the project site based on all proposed use(s) of the site (see Appendix B.6):			
Pollutant	Not Applicable to the Project Site	Anticipated from the Project Site	Also a Receiving Water Pollutant of Concern
Sediment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Nutrients	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Heavy Metals	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Organic Compounds	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Trash & Debris	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Oxygen Demanding Substances	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Oil & Grease	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bacteria & Viruses	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Pesticides	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Form I-3B Page 9 of 11

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

Discussion / Additional Information:

Potential CCSYAs do not occur onsite or areas upstream and tributary to the site.

Form I-3B Page 10 of 11
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's HMP Exhibit.
Has a geomorphic assessment been performed for the receiving channel(s)? <input type="checkbox"/> No, the low flow threshold is $0.1Q_2$ (default low flow threshold) <input type="checkbox"/> Yes, the result is the low flow threshold is $0.1Q_2$ <input type="checkbox"/> Yes, the result is the low flow threshold is $0.3Q_2$ <input type="checkbox"/> Yes, the result is the low flow threshold is $0.5Q_2$ If a geomorphic assessment has been performed, provide title, date, and preparer:
Discussion / Additional Information: (optional)

Form I-3B Page 11 of 11

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.

None

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.

Source Control BMP Checklist for PDPs		Form I-4B	
Source Control BMPs			
All development projects must implement source control BMPs where applicable and feasible. See Chapter 4 and Appendix E of the BMP Design Manual (Part 1 of the Storm Water Standards) for information to implement source control BMPs shown in this checklist.			
Answer each category below pursuant to the following.			
<ul style="list-style-type: none"> • "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	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Discussion / justification if 4.2.1 not implemented:			
4.2.2 Storm Drain Stenciling or Signage	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> 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	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A
Discussion / justification if 4.2.3 not implemented:			
Will not occur on-site.			
4.2.4 Protect Materials Stored in Outdoor Work Areas from Rainfall, Run-On, Runoff, and Wind Dispersal	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A
Discussion / justification if 4.2.4 not implemented:			
Will not occur on-site.			
4.2.5 Protect Trash Storage Areas from Rainfall, Run-On, Runoff, and Wind Dispersal	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Discussion / justification if 4.2.5 not implemented:			
Refuse containers will be stored within the proposed garage.			

Form I-4B Page 2 of 2			
Source Control Requirement	Applied?		
4.2.6 Additional BMPs Based on Potential Sources of Runoff Pollutants (must answer for each source listed below)			
On-site storm drain inlets	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Interior floor drains and elevator shaft sump pumps	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A
Interior parking garages	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A
Need for future indoor & structural pest control	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Landscape/Outdoor Pesticide Use	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Pools, spas, ponds, decorative fountains, and other water features	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Food service	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Refuse areas	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Industrial processes	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A
Outdoor storage of equipment or materials	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A
Vehicle/Equipment Repair and Maintenance	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A
Fuel Dispensing Areas	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A
Loading Docks	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A
Fire Sprinkler Test Water	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A
Miscellaneous Drain or Wash Water	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A
Plazas, sidewalks, and parking lots	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
SC-6A: Large Trash Generating Facilities	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A
SC-6B: Animal Facilities	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A
SC-6C: Plant Nurseries and Garden Centers	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A
SC-6D: Automotive Facilities	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A
Discussion / justification if 4.2.6 not implemented. Clearly identify which sources of runoff pollutants are discussed. Justification must be provided for <u>all</u> "No" answers shown above.			

Site Design BMP Checklist for PDPs		Form I-5B	
Site Design BMPs			
<p>All development projects must implement site design BMPs where applicable and feasible. See Chapter 4 and Appendix E of the BMP Design Manual (Part 1 of Storm Water Standards) for information to implement site design BMPs shown in this checklist.</p> <p>Answer each category below pursuant to the following.</p> <ul style="list-style-type: none"> • "Yes" means the project will implement the site design 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 site has no existing natural areas to conserve). Discussion / justification may be provided. <p>A site map with implemented site design BMPs must be included at the end of this checklist.</p>			
Site Design Requirement	Applied?		
4.3.1 Maintain Natural Drainage Pathways and Hydrologic Features	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A
<p>Discussion / justification if 4.3.1 not implemented:</p> <p>None exist onsite</p>			
1-1 Are existing natural drainage pathways and hydrologic features mapped on the site map?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A
1-2 Are trees implemented? If yes, are they shown on the site map?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> N/A
1-3 Implemented trees meet the design criteria in 4.3.1 Fact Sheet (e.g. soil volume, maximum credit, etc.)?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> N/A
1-4 Is tree credit volume calculated using Appendix B.2.2.1 and SD-1 Fact Sheet in Appendix E?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> N/A
4.3.2 Have natural areas, soils and vegetation been conserved?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A
<p>Discussion / justification if 4.3.2 not implemented:</p>			

Form I-5B Page 2 of 4			
Site Design Requirement	Applied?		
4.3.3 Minimize Impervious Area	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Discussion / justification if 4.3.3 not implemented:			
4.3.4 Minimize Soil Compaction	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Discussion / justification if 4.3.4 not implemented:			
4.3.5 Impervious Area Dispersion	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Discussion / justification if 4.3.5 not implemented:			
5-1 Is the pervious area receiving runoff from impervious area identified on the site map?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
5-2 Does the pervious area satisfy the design criteria in 4.3.5 Fact Sheet in Appendix E (e.g. maximum slope, minimum length, etc.)	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
5-3 Is impervious area dispersion credit volume calculated using Appendix B.2.1.1 and 4.3.5 Fact Sheet in Appendix E?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> N/A

Form I-5B Page 3 of 4			
Site Design Requirement	Applied?		
4.3.6 Runoff Collection	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A
Discussion / justification if 4.3.6 not implemented: Runoff is collected from the impervious areas and directed to the bio planter basin			
6a-1 Are green roofs implemented in accordance with design criteria in 4.3.6A Fact Sheet? If yes, are they shown on the site map?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> N/A
6a-2 Is the green roof credit volume calculated using Appendix B.2.1.2 and 4.3.6A Fact Sheet in Appendix E?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> N/A
6b-1 Are permeable pavements implemented in accordance with design criteria in 4.3.6B Fact Sheet? If yes, are they shown on the site map?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> N/A
6b-2 Is the permeable pavement credit volume calculated using Appendix B.2.1.3 and 4.3.6B Fact Sheet in Appendix	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> N/A
4.3.7 Landscaping with Native or Drought Tolerant Species	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Discussion / justification if 4.3.7 not implemented:			
4.3.8 Harvest and Use Precipitation	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> N/A
Discussion / justification if 4.3.8 not implemented: The water demand in the 36 hour limit is exceeded by the DCV.			
8-1 Are rain barrels implemented in accordance with design criteria in 4.3.8 Fact Sheet? If yes, are they shown on the site map?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> N/A
8-2 Is the rain barrel credit volume calculated using Appendix B.2.2.2 and 4.3.8 Fact Sheet in Appendix E?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> N/A

Form I-5B Page 4 of 4
Insert Site Map with all site design BMPs identified:
<div></div>



Summary of PDP Structural BMPs	Form I-6
PDP Structural BMPs	
<p>All PDPs must implement structural BMPs for storm water pollutant control (see Chapter 5 of the BMP Design Manual, Part 1 of Storm Water Standards). 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 BMP Design Manual). Both storm water pollutant control and flow control for hydromodification management can be achieved within the same structural BMP(s).</p> <p>PDP structural BMPs must be verified by the City at the completion of construction. This includes requiring the project owner or project owner's representative to certify construction of the structural BMPs (complete Form DS-563). PDP structural BMPs must be maintained into perpetuity (see Chapter 7 of the BMP Design Manual).</p> <p>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).</p> <p>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 BMP Design 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.</p> <p>Step 1A: Evaluated drainage management areas within site (DMAs #1, #2 & #3) Step 1B: Estimated DCV for DMA #1 & DMA #2. Step 2: Harvest and Use was determined not to be feasible. Step 3A/B: Determination of infiltration feasibility has been provided in Step 4: Biofiltration basin (BMP #1 & BMP #2) was sized to meet combined treatment water pollution control and peak flow control requirements, in</p> <p>(Continue on page 2 as necessary.)</p>	

(Continued from page 1)

Form I-6 Page 3 of 3 (Copy as many as needed)	
Structural BMP Summary Information	
Structural BMP ID No. BMP 1	
Construction Plan Sheet No.	
<p>Type of Structural BMP:</p> <p><input type="checkbox"/> Retention by harvest and use (e.g. HU-1, cistern)</p> <p><input type="checkbox"/> Retention by infiltration basin (INF-1)</p> <p><input type="checkbox"/> Retention by bioretention (INF-2)</p> <p><input type="checkbox"/> Retention by permeable pavement (INF-3)</p> <p><input type="checkbox"/> Partial retention by biofiltration with partial retention (PR-1)</p> <p><input checked="" type="checkbox"/> Biofiltration (BF-1)</p> <p><input type="checkbox"/> Flow-thru treatment control with prior lawful approval to meet earlier PDP requirements (provide BMP type/description in discussion section below)</p> <p><input type="checkbox"/> 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)</p> <p><input type="checkbox"/> Flow-thru treatment control with alternative compliance (provide BMP type/description in discussion section below)</p> <p><input type="checkbox"/> Detention pond or vault for hydromodification management</p> <p><input type="checkbox"/> Other (describe in discussion section below)</p>	
<p>Purpose:</p> <p><input checked="" type="checkbox"/> Pollutant control only</p> <p><input type="checkbox"/> Hydromodification control only</p> <p><input type="checkbox"/> Combined pollutant control and hydromodification control</p> <p><input type="checkbox"/> Pre-treatment/forebay for another structural BMP</p> <p><input type="checkbox"/> Other (describe in discussion section below)</p>	
Who will certify construction of this BMP? Provide name and contact information for the party responsible to sign BMP verification form DS-563	Douglas E. Logan RCE 39726
Who will be the final owner of this BMP?	HOA
Who will maintain this BMP into perpetuity?	HOA
What is the funding mechanism for maintenance?	A storm water agreement with the City of San Diego with the HOA

Form I-6 Page 3 of 3 (Copy as many as needed)	
Structural BMP Summary Information	
Structural BMP ID No. BMP 2	
Construction Plan Sheet No.	
<p>Type of Structural BMP:</p> <p><input type="checkbox"/> Retention by harvest and use (e.g. HU-1, cistern)</p> <p><input type="checkbox"/> Retention by infiltration basin (INF-1)</p> <p><input type="checkbox"/> Retention by bioretention (INF-2)</p> <p><input type="checkbox"/> Retention by permeable pavement (INF-3)</p> <p><input type="checkbox"/> Partial retention by biofiltration with partial retention (PR-1)</p> <p><input checked="" type="checkbox"/> Biofiltration (BF-1)</p> <p><input type="checkbox"/> Flow-thru treatment control with prior lawful approval to meet earlier PDP requirements (provide BMP type/description in discussion section below)</p> <p><input type="checkbox"/> 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)</p> <p><input type="checkbox"/> Flow-thru treatment control with alternative compliance (provide BMP type/description in discussion section below)</p> <p><input type="checkbox"/> Detention pond or vault for hydromodification management</p> <p><input type="checkbox"/> Other (describe in discussion section below)</p>	
<p>Purpose:</p> <p><input checked="" type="checkbox"/> Pollutant control only</p> <p><input type="checkbox"/> Hydromodification control only</p> <p><input type="checkbox"/> Combined pollutant control and hydromodification control</p> <p><input type="checkbox"/> Pre-treatment/forebay for another structural BMP</p> <p><input type="checkbox"/> Other (describe in discussion section below)</p>	
Who will certify construction of this BMP? Provide name and contact information for the party responsible to sign BMP verification form DS-563	Douglas E. Logan RCE 39726
Who will be the final owner of this BMP?	HOA
Who will maintain this BMP into perpetuity?	HOA
What is the funding mechanism for maintenance?	A storm water agreement with the City of San Diego with the HOA

Project Name: Cielo Mar Subdivision

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Attachment 1

Backup For PDP Pollutant Control BMPs

This is the cover sheet for Attachment 1.

Project Name: Cielo Mar Subdivision

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Project Name: Cielo Mar Subdivision

Indicate which Items are Included:

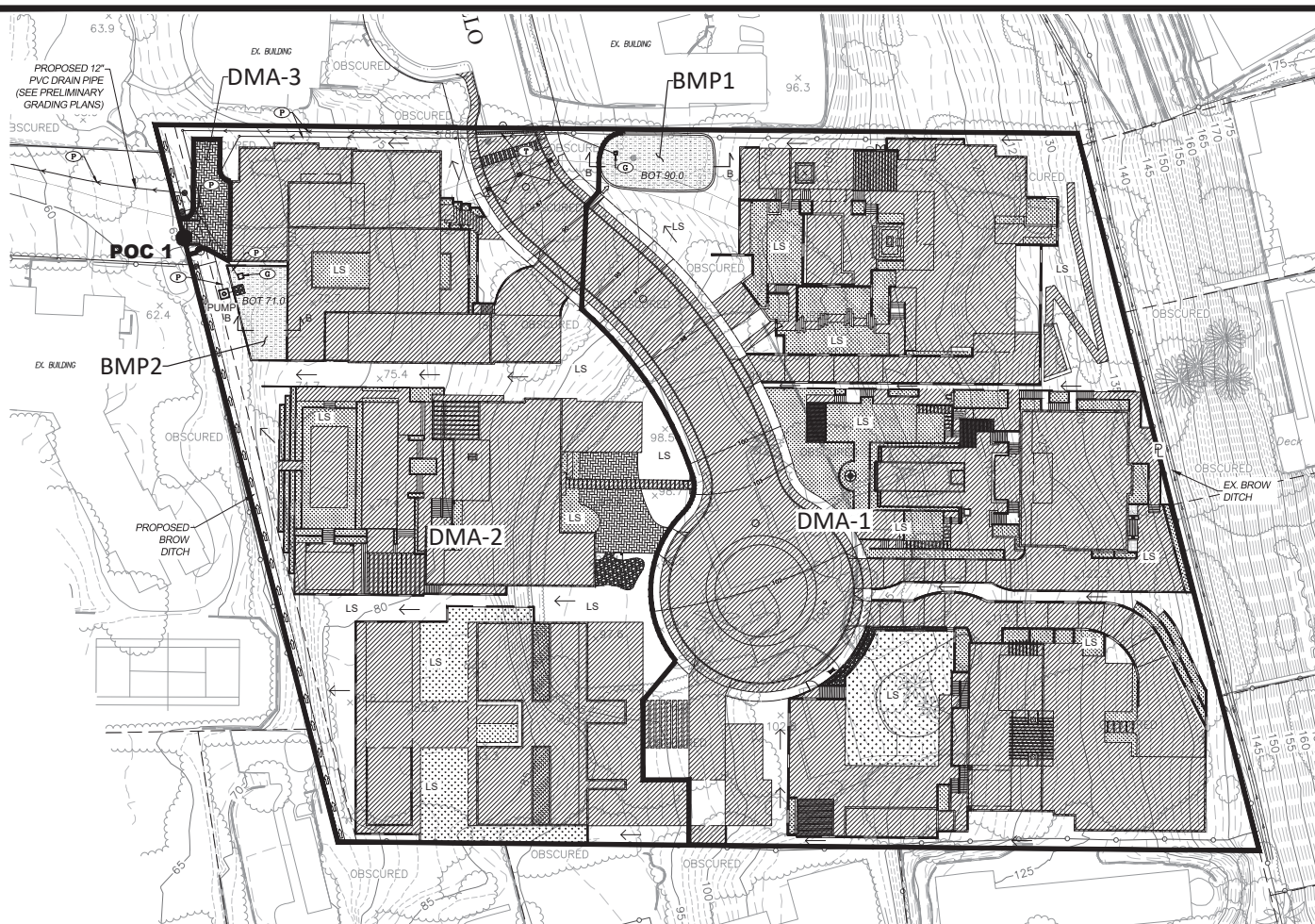
Attachment Sequence	Contents	Checklist
Attachment 1a	DMA Exhibit (Required) See DMA Exhibit Checklist.	<input type="checkbox"/> Included
Attachment 1b	Tabular Summary of DMAs Showing DMA ID matching DMA Exhibit, DMA Area, and DMA Type (Required)* *Provide table in this Attachment OR on DMA Exhibit in Attachment 1a	<input checked="" type="checkbox"/> Included on DMA Exhibit in Attachment 1a <input type="checkbox"/> 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.	<input type="checkbox"/> Included <input checked="" type="checkbox"/> Not included because the entire project will use infiltration BMPs
Attachment 1d	Infiltration Feasibility Information. Contents of Attachment 1d depend on the infiltration condition: <ul style="list-style-type: none">• No Infiltration Condition:<ul style="list-style-type: none">◦ Infiltration Feasibility Condition Letter (<i>Note: must be stamped and signed by licensed geotechnical engineer</i>)◦ Form I-8A (optional)◦ Form I-8B (optional)• Partial Infiltration Condition:<ul style="list-style-type: none">◦ Infiltration Feasibility Condition Letter (<i>Note: must be stamped and signed by licensed geotechnical engineer</i>)◦ Form I-8A◦ Form I-8B• Full Infiltration Condition:<ul style="list-style-type: none">◦ 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.	<input type="checkbox"/> Included <input type="checkbox"/> 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 and site design credit calculations	<input checked="" type="checkbox"/> Included

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

The DMA 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 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, size/detail, and include cross-section)

ATTACHMENT 1a
DMA Exhibit

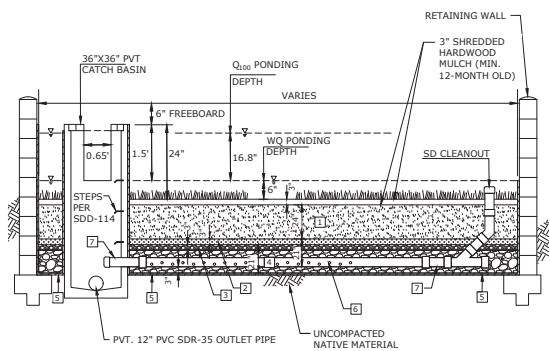


LEGEND

- DRAINAGE MANAGEMENT AREA (DMA)
- FLOW DIRECTION
- BIO-FILTRATION FACILITY
- STORM DRAIN COLLECTOR
- 36" X 36" GRATED INLET
- 12" X 12" TRENCH (NDS OR SIMILAR)
- POINT OF COMPLIANCE
- NEW IMPERVIOUS

NOTES:

- THE UNDERLYING SOIL TYPE GROUPS IS A & C FOR THE ENTIRE PROPERTY AND SURROUNDING PARCELS
- THE APPROXIMATE DEPTH TO GROUND WATER IS EXPECTED TO BE MORE THAN 20 FEET
- THERE ARE NO CRITICAL COARSE SEDIMENT YIELD AREAS
- THE SITE DOES NOT CONTAIN ANY EXISTING NATURAL HYDROLOGIC FEATURES (WATERCOURSES, SEEPS, SPRINGS, WETLANDS)



B SECTION

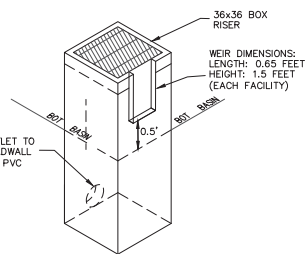
A BIO-FILTRATION FACILITY (each)

NOT TO SCALE

BSM MIXTURE ¹			
BMP COMPOSITION	ASTM C33 SAND	15% - 30%	
VOLUME	70% - 85% COMPOST ²		

- ORGANIC MATERIAL CONTENT SHALL BE 35% - 75% BY DRY WEIGHT.
- FOR BSM SPECIFICATIONS, SEE APPENDIX F-3 OF THE CITY OF SAN DIEGO 2018 STORM WATER STANDARDS.

- KEY NOTES**
- BIORETENTION SOIL MEDIA (BSM) (5-INCH/HR MIN. PERCOLATION RATE) PER BSM MIXTURE RIGHT
 - 3" CLEAN & WASHED ASTM 33 FINE AGGREGATE SAND
 - 3" LAYER OF ASTM 8 STONE
 - ASTM 57 OPEN GRADED STONE (3/4" WASHED CRUSHED ROCK)
 - IMPERMEABLE LINER (30 MIL PVC GEOMEMBRANE BY EPT OR APPROVED EQUAL) PER MANUFACTURER'S SPECIFICATIONS
 - PVT. 8" PVC PERFORATED PIPE @ 0.5% SLOPE.
 - PVT. 8" PVC SDR-35 @ 0.5% SLOPE.



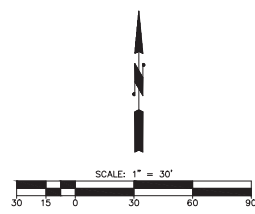
B BIO-FILTRATION OUTLET DETAIL

NOT TO SCALE

BMP INFORMATION					
BMP	BMP SIZE (SF)	AMENDED SOIL (IN)	GRAVEL OFFSET (IN)	RISER DEPTH (IN)	TOTAL SURFACE DEPTH (IN)
1	2,190	24	21	3	6
2	1,410	24	21	3	6

DMA AREA SUMMARY						
DMA ID	DMA SURFACE TYPE	DMA TOTAL AREA (SF)	TOTAL IMPERVIOUS AREA	DMA TYPE ¹	STRUCTURAL BMP ID	PROPOSED STRUCTURAL BMP TYPE ²
1	LS / ROOF TOP / ROAD/CONCRETE	110,743	67,398	DRAINS TO BMP	BMP1	BIOFILTRATION BASIN
2	LS / ROOF TOP / ROAD/CONCRETE	82,056	47,822	DRAINS TO BMP	BMP2	BIOFILTRATION BASIN
3	PERM. PAVERS	1,224	NA	SELF MIT.	NA	NA

¹ DMA Type can only be: 1) Drains to BMP, 2) Self-mitigating, 3) De Minimis, or 4) Self-retaining
² BMP Type must be consistent with terminology in the BMP Design Manual and/or CSDG Field Sheets
³ Structural BMP Size is typically presented as an area (sq. ft.) or size (e.g., proprietary devices)



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ENGINEERING & SURVEYING
SINGLE SOURCE DEVELOPMENT CONSULTANT
310 VIA VERA CRUZ, #205
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DMA MAP & BIO-FILTRATION DETAILS

C-11

ATTACHMENT 1b
DMA Summary Table

Project Name: Cielo Mar Subdivision

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	2.54	1.55	60.8	A/C	0.59	2777	BMP 1	Biofiltration(BF)	POC #1
DMA 2	1.88	1.10	58.3	A/C	0.57	1988	BMP 2	Biofiltration(BF)	POC #1
DMA 3	0.03	0	0	A/C	0	0	NA		POC #1
Summary of DMA Information (Must match project description and SWQMP Narrative)									
No. of DMAs	Total DMA Area (acres)	Total Impervious Area (acres)	% Imp		Area Weighted Runoff Coefficient	Total DCV (cubic feet)	Total Area Treated (acres)		No. of POCs
1	4.45	2.65	59.3		0.58	4765	4.45		1

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

DMA#1

Design Capture Volume		Worksheet B.2-1		
1	85 th percentile 24-hr storm depth from Figure B.1-1	d=	0.51	inches
2	Area tributary to BMP (s)	A=	2.54	acres
3	Area weighted runoff factor (estimate using Appendix B.1.1 and B.2.1)	C=	0.59	unitless
4	Trees Credit Volume Note: In the SWQMP list the number of trees, size of each tree, amount of soil volume installed for each tree, contributing area to each tree and the inlet opening dimension for each tree.	TCV=	0	cubic-feet
5	Rain barrels Credit Volume Note: In the SWQMP list the number of rain barrels, size of each rain barrel and the use of the captured storm water runoff.	RCV=	0	cubic-feet
6	Calculate DCV = (3630 x C x d x A) – TCV – RCV	DCV=	2777	cubic-feet

DMA 1	AREA (SF)	AREA (AC)	C - RUNOFF	C X A
ROOF/PAVEMENT/POOL	67,398	1.547	0.9	1.393
LANDSCAPE/PER PAVERS	43,345	0.995	0.1	0.100
TOTAL	110743	2.542		1.492
			COMPOSITE C	0.59

Table B.1-1: Runoff factors for surfaces draining to BMPs – Pollutant Control BMPs

Surface	Runoff Factor
Roofs ¹	0.90
Concrete or Asphalt ¹	0.90
Unit Pavers (grouted) ¹	0.90
Decomposed Granite	0.30
Cobbles or Crushed Aggregate	0.30
Amended, Mulched Soils or Landscape ²	0.10
Compacted Soil (e.g., unpaved parking)	0.30
Natural (A Soil)	0.10
Natural (B Soil)	0.14
Natural (C Soil)	0.23
Natural (D Soil)	0.30

DMA#2

Design Capture Volume		Worksheet B.2-1		
1	85 th percentile 24-hr storm depth from Figure B.1-1	d=	0.51	inches
2	Area tributary to BMP (s)	A=	1.10	acres
3	Area weighted runoff factor (estimate using Appendix B.1.1 and B.2.1)	C=	0.57	unitless
4	Trees Credit Volume Note: In the SWQMP list the number of trees, size of each tree, amount of soil volume installed for each tree, contributing area to each tree and the inlet opening dimension for each tree.	TCV=	0	cubic-feet
5	Rain barrels Credit Volume Note: In the SWQMP list the number of rain barrels, size of each rain barrel and the use of the captured storm water runoff.	RCV=	0	cubic-feet
6	Calculate DCV = (3630 x C x d x A) – TCV – RCV	DCV=	1988	cubic-feet

DMA 2				
	AREA (SF)	AREA (AC)	C - RUNOFF	C X A
ROOF/PAVEMENT/POOL	47,822	1.098	0.9	0.988
LANDSCAPE/PER PAVERS	34,234	0.786	0.1	0.079
TOTAL	82056	1.884		1.067
			COMPOSITE C	0.57

Table B.1-1: Runoff factors for surfaces draining to BMPs – Pollutant Control BMPs


Surface	Runoff Factor
Roofs ¹	0.90
Concrete or Asphalt ¹	0.90
Unit Pavers (grouted) ¹	0.90
Decomposed Granite	0.30
Cobbles or Crushed Aggregate	0.30
Amended, Mulched Soils or Landscape ²	0.10
Compacted Soil (e.g., unpaved parking)	0.30
Natural (A Soil)	0.10
Natural (B Soil)	0.14
Natural (C Soil)	0.23
Natural (D Soil)	0.30


ATTACHMENT 1c
Harvest & Use Feasibility


Harvest and Use Feasibility Checklist		Worksheet B.3-1 : Form I-7
<p>1. Is there a demand for harvested water (check all that apply) at the project site that is reliably present during the wet season?</p> <p><input type="checkbox"/> Toilet and urinal flushing</p> <p><input type="checkbox"/> Landscape irrigation</p> <p><input checked="" type="checkbox"/> Other: _____</p>		
<p>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.</p> <p>[Provide a summary of calculations here]</p> <p>36-Hour Toilet Use = 9.3 gal./resident/day (per Table B.3-1) x 1 CF/7.48 gal. x 1.5 day x 24 residents</p> <p style="text-align: center;">= 45 cf</p> <p>36-Hour Landscape Use = 1470 gal./ac. (per Table B.3-3) / 7.48 gal./CF x 0.17 ac of landscape</p> <p style="text-align: center;">= 400 cf</p>		
<p>3. Calculate the DCV using worksheet B-2.1.</p> <p>DCV = <u>445</u> (cubic feet)</p> <p>[Provide a summary of calculations here]</p> <p>See Worksheets B.2-1</p> <p>0.25 DCV = 954 CF > 445 CF</p>		
<p>3a. Is the 36-hour demand greater than or equal to the DCV?</p> <p><input type="checkbox"/> Yes ↓ / <input checked="" type="checkbox"/> No ⇒</p>	<p>3b. Is the 36-hour demand greater than 0.25DCV but less than the full DCV?</p> <p><input type="checkbox"/> Yes ↓ / <input checked="" type="checkbox"/> No ⇒</p>	<p>3c. Is the 36-hour demand less than 0.25DCV?</p> <p><input checked="" type="checkbox"/> Yes ↓</p>
<p>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.</p>	<p>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.</p>	<p>Harvest and use is considered to be infeasible.</p>
<p>Is harvest and use feasible based on further evaluation?</p> <p><input type="checkbox"/> Yes, refer to Appendix E to select and size harvest and use BMPs.</p> <p><input checked="" type="checkbox"/> No, select alternate BMPs.</p>		


ATTACHMENT 1d
Infiltration Feasibility
TBD


ATTACHMENT 1e
Pollutant Control BMP Design Calculations


		Project Name	CIELO MAR SUBDIVISION
		BMP ID	BMP 1
Sizing Method for Pollutant Removal Criteria		Worksheet B.5-1	
1	Area draining to the BMP	110743	sq. ft.
2	Adjusted runoff factor for drainage area (Refer to Appendix B.1 and B.2)	0.59	
3	85 th percentile 24-hour rainfall depth	0.51	inches
4	Design capture volume [Line 1 x Line 2 x (Line 3/12)]	2777	cu. ft.
BMP Parameters			
5	Surface ponding [6 inch minimum, 12 inch maximum]	6	inches
6	Media thickness [18 inches minimum], also add mulch layer and washed ASTM 33 fine aggregate sand thickness to this line for sizing calculations	24	inches
7	Aggregate storage (also add ASTM No 8 stone) above underdrain invert (12 inches typical) – use 0 inches if the aggregate is not over the entire bottom surface area	21	inches
8	Aggregate storage below underdrain invert (3 inches minimum) – use 0 inches if the aggregate is not over the entire bottom surface area	3	inches
9	Freely drained pore storage of the media	0.2	in/in
10	Porosity of aggregate storage	0.4	in/in
11	Media filtration rate to be used for sizing (maximum filtration rate of 5 in/hr. with no outlet control; if the filtration rate is controlled by the outlet use the outlet controlled rate (includes infiltration into the soil and flow rate through the outlet structure) which will be less than 5 in/hr.)	0.606	in/hr.
Baseline Calculations			
12	Allowable routing time for sizing	6	hours
13	Depth filtered during storm [Line 11 x Line 12]	3.636	inches
14	Depth of Detention Storage [Line 5 + (Line 6 x Line 9) + (Line 7 x Line 10) + (Line 8 x Line 10)]	20.4	inches
15	Total Depth Treated [Line 13 + Line 14]	24.036	inches
Option 1 – Biofilter 1.5 times the DCV			
16	Required biofiltered volume [1.5 x Line 4]	4165	cu. ft.
17	Required Footprint [Line 16/ Line 15] x 12	2080	sq. ft.
Option 2 – Store 0.75 of remaining DCV in pores and ponding			
18	Required Storage (surface + pores) Volume [0.75 x Line 4]	2083	cu. ft.
19	Required Footprint [Line 18/ Line 14] x 12	1225	sq. ft.
Footprint of the BMP			
20	BMP Footprint Sizing Factor (Default 0.03 or an alternative minimum footprint sizing factor from Line 11 in Worksheet B.5-4)	0.03	
21	Minimum BMP Footprint [Line 1 x Line 2 x Line 20]	1960	sq. ft.
22	Footprint of the BMP = Maximum(Minimum(Line 17, Line 19), Line 21)	1960	sq. ft.
23	Provided BMP Footprint	2190	sq. ft.
24	Is Line 23 ≥ Line 22?	Yes, Performance Standard is Met	

		Project Name	CIELO MAR SUBDIVISION	
		BMP ID	BMP 1	
Sizing Method for Volume Retention Criteria			Worksheet B.5-2	
1	Area draining to the BMP		110743	sq. ft.
2	Adjusted runoff factor for drainage area (Refer to Appendix B.1 and B.2)		0.59	
3	85 th percentile 24-hour rainfall depth		0.51	inches
4	Design capture volume [Line 1 x Line 2 x (Line 3/12)]		2777	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 C		0.1	in/hr.
6	Factor of safety		2	
7	Reliable infiltration rate, for biofiltration BMP sizing [Line 5 / Line 6]		0.05	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%		15.0	%
9	Fraction of DCV to be retained (Figure B.5-3) When Line 8 > 8% = $0.0000013 \times \text{Line } 8^3 - 0.000057 \times \text{Line } 8^2 + 0.0086 \times \text{Line } 8 - 0.014$ When Line 8 ≤ 8% = 0.023		0.106	
10	Target volume retention [Line 9 x Line 4]		294	cu. ft.

		Project Name CIELO MAR SUBDIVISION				
		BMP ID BMP 1				
Volume Retention for No Infiltration Condition				Worksheet B.5-6		
1	Area draining to the biofiltration BMP				110743	sq. ft.
2	Adjusted runoff factor for drainage area (Refer to Appendix B.1 and B.2)				0.59	
3	Effective impervious area draining to the BMP [Line 1 x Line 2]				65338	sq. ft.
4	Required area for Evapotranspiration [Line 3 x 0.03]				1960	sq. ft.
5	Biofiltration BMP Footprint				2190	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]	2190				sq. ft.
Volume Retention Performance Standard						
12	Is Line 11 ≥ Line 4?	Volume Retention Performance Standard is Met				
13	Fraction of the performance standard met through the BMP footprint and/or landscaping [Line 11/Line 4]	1.12				
14	Target Volume Retention [Line 10 from Worksheet B.5.2]	404				cu. ft.
15	Volume retention required from other site design BMPs [(1-Line 13) x Line 14]	-48.48				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?	Volume Retention Performance Standard is Met				

		Project Name	CIELO MAR SUBDIVISION
		BMP ID	BMP 2
Sizing Method for Pollutant Removal Criteria		Worksheet B.5-1	
1	Area draining to the BMP	82056	sq. ft.
2	Adjusted runoff factor for drainage area (Refer to Appendix B.1 and B.2)	0.57	
3	85 th percentile 24-hour rainfall depth	0.51	inches
4	Design capture volume [Line 1 x Line 2 x (Line 3/12)]	1988	cu. ft.
BMP Parameters			
5	Surface ponding [6 inch minimum, 12 inch maximum]	6	inches
6	Media thickness [18 inches minimum], also add mulch layer and washed ASTM 33 fine aggregate sand thickness to this line for sizing calculations	24	inches
7	Aggregate storage (also add ASTM No 8 stone) above underdrain invert (12 inches typical) – use 0 inches if the aggregate is not over the entire bottom surface area	21	inches
8	Aggregate storage below underdrain invert (3 inches minimum) – use 0 inches if the aggregate is not over the entire bottom surface area	3	inches
9	Freely drained pore storage of the media	0.2	in/in
10	Porosity of aggregate storage	0.4	in/in
11	Media filtration rate to be used for sizing (maximum filtration rate of 5 in/hr. with no outlet control; if the filtration rate is controlled by the outlet use the outlet controlled rate (includes infiltration into the soil and flow rate through the outlet structure) which will be less than 5 in/hr.)	0.606	in/hr.
Baseline Calculations			
12	Allowable routing time for sizing	6	hours
13	Depth filtered during storm [Line 11 x Line 12]	3.636	inches
14	Depth of Detention Storage [Line 5 + (Line 6 x Line 9) + (Line 7 x Line 10) + (Line 8 x Line 10)]	20.4	inches
15	Total Depth Treated [Line 13 + Line 14]	24.036	inches
Option 1 – Biofilter 1.5 times the DCV			
16	Required biofiltered volume [1.5 x Line 4]	2982	cu. ft.
17	Required Footprint [Line 16/ Line 15] x 12	1489	sq. ft.
Option 2 – Store 0.75 of remaining DCV in pores and ponding			
18	Required Storage (surface + pores) Volume [0.75 x Line 4]	1491	cu. ft.
19	Required Footprint [Line 18/ Line 14] x 12	877	sq. ft.
Footprint of the BMP			
20	BMP Footprint Sizing Factor (Default 0.03 or an alternative minimum footprint sizing factor from Line 11 in Worksheet B.5-4)	0.03	
21	Minimum BMP Footprint [Line 1 x Line 2 x Line 20]	1403	sq. ft.
22	Footprint of the BMP = Maximum(Minimum(Line 17, Line 19), Line 21)	1403	sq. ft.
23	Provided BMP Footprint	1410	sq. ft.
24	Is Line 23 ≥ Line 22?	Yes, Performance Standard is Met	

		Project Name	CIELO MAR SUBDIVISION	
		BMP ID	BMP 2	
Sizing Method for Volume Retention Criteria			Worksheet B.5-2	
1	Area draining to the BMP		82056	sq. ft.
2	Adjusted runoff factor for drainage area (Refer to Appendix B.1 and B.2)		0.57	
3	85 th percentile 24-hour rainfall depth		0.51	inches
4	Design capture volume [Line 1 x Line 2 x (Line 3/12)]		1988	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 C or		0.1	in/hr.
6	Factor of safety		2	
7	Reliable infiltration rate, for biofiltration BMP sizing [Line 5 / Line 6]		0.05	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%		15.0	%
9	Fraction of DCV to be retained (Figure B.5-3) When Line 8 > 8% = $0.0000013 \times \text{Line } 8^3 - 0.000057 \times \text{Line } 8^2 + 0.0086 \times \text{Line } 8 - 0.014$ When Line 8 ≤ 8% = 0.023		0.106	
10	Target volume retention [Line 9 x Line 4]		211	cu. ft.

		Project Name CIELO MAR SUBDIVISION				
		BMP ID BMP 2				
Volume Retention for No Infiltration Condition				Worksheet B.5-6		
1	Area draining to the biofiltration BMP				82056	sq. ft.
2	Adjusted runoff factor for drainage area (Refer to Appendix B.1 and B.2)				0.57	
3	Effective impervious area draining to the BMP [Line 1 x Line 2]				46772	sq. ft.
4	Required area for Evapotranspiration [Line 3 x 0.03]				1403	sq. ft.
5	Biofiltration BMP Footprint				1410	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]	1410				sq. ft.
Volume Retention Performance Standard						
12	Is Line 11 ≥ Line 4?	Volume Retention Performance Standard is Met				
13	Fraction of the performance standard met through the BMP footprint and/or landscaping [Line 11/Line 4]	1				
14	Target Volume Retention [Line 10 from Worksheet B.5.2]	404				cu. ft.
15	Volume retention required from other site design BMPs [(1-Line 13) x Line 14]	0				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?	Volume Retention Performance Standard is Met				

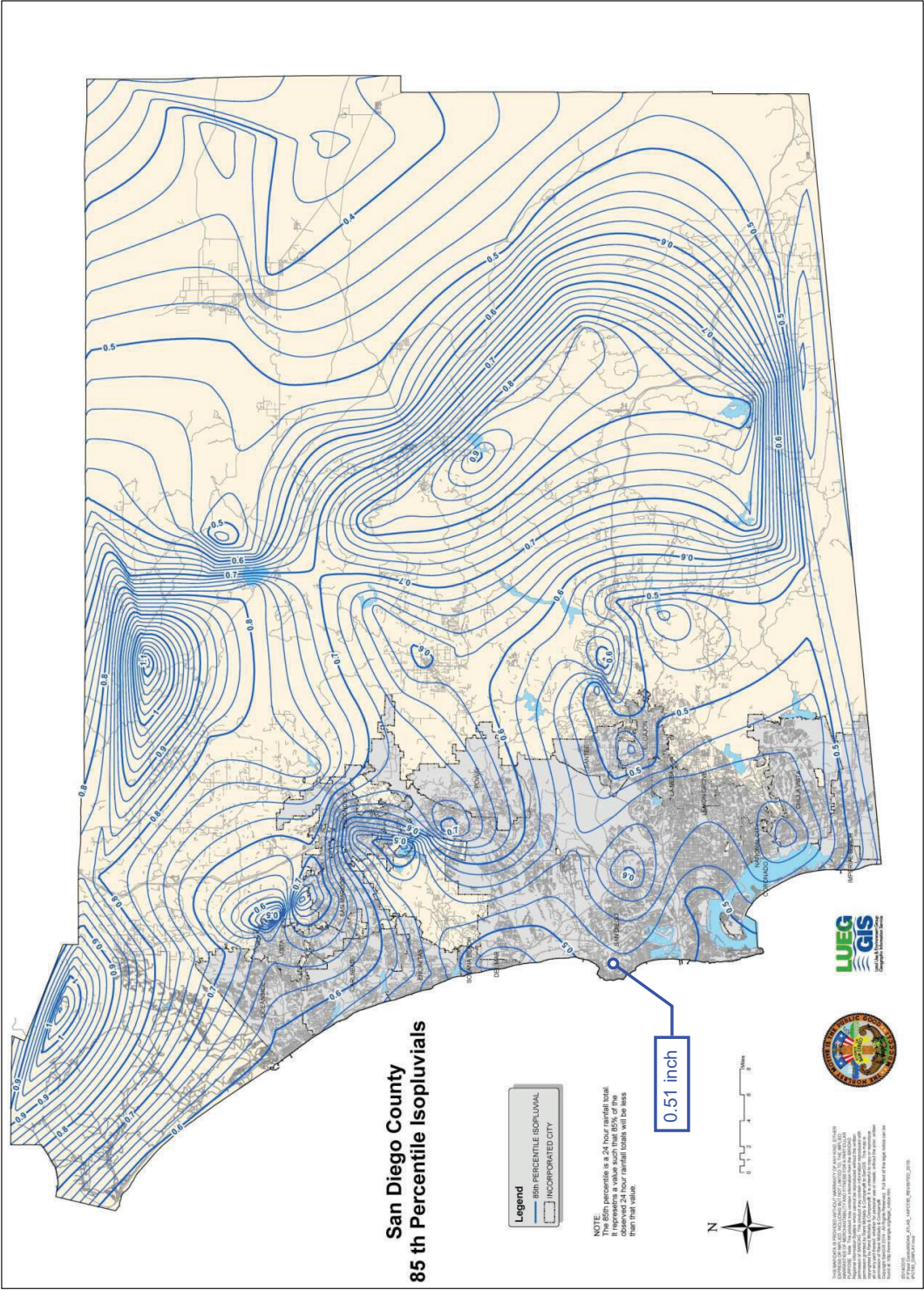


Figure B.1-1: 85th Percentile 24-hour Isopluvial Map





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Attachment 2

Backup for PDP Hydromodification Control Measures

This is the cover sheet for Attachment 2.

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

Project Name: Cielo Mar Subdivision

Indicate which Items are Included:

Attachment Sequence	Contents	Checklist
Attachment 2a	Hydromodification Management Exhibit (Required)	<input type="checkbox"/> 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.	<input type="checkbox"/> Exhibit showing project drainage boundaries marked on WMAA Critical Coarse Sediment Yield Area Map (Required) Optional analyses for Critical Coarse Sediment Yield Area Determination <input type="checkbox"/> 6.2.1 Verification of Geomorphic Landscape Units Onsite <input type="checkbox"/> 6.2.2 Downstream Systems Sensitivity to Coarse Sediment <input type="checkbox"/> 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.	<input type="checkbox"/> Not Performed <input type="checkbox"/> Included <input type="checkbox"/> 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	<input type="checkbox"/> Included <input type="checkbox"/> Submitted as separate stand-alone document

Project Name: Cielo Mar Subdivision

**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 OR provide a separate map showing that the project site is outside of any critical coarse sediment yield areas
- ☐ 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
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, and size/detail).

Project Name: Cielo Mar Subdivision

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Attachment 3 Structural BMP Maintenance Information

This is the cover sheet for Attachment 3.

Project Name: Cielo Mar Subdivision

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Project Name: Cielo Mar Subdivision

Indicate which Items are Included:

Attachment Sequence	Contents	Checklist
Attachment 3	Maintenance Agreement (Form DS-3247) (when applicable)	<input checked="" type="checkbox"/> Included <input type="checkbox"/> Not applicable

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 and Discharge Control Maintenance Agreement (Form DS-3247). The following information must be included in the exhibits attached to the maintenance agreement:

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

THE CITY OF SAN DIEGO



RECORDING REQUESTED BY:
THE CITY OF SAN DIEGO
AND WHEN RECORDED MAIL TO:

(THIS SPACE IS FOR RECORDERS USE ONLY)

NOTICE OF TERMINATION OF STORM WATER
MANAGEMENT AND DISCHARGE CONTROL MAINTENANCE AGREEMENT

APPROVAL NUMBER: _____

ASSESSOR'S PARCEL NUMBER: _____

PROJECT NUMBER: _____

Notice is hereby given this _____ day of _____, _____ (MONTH) _____ (YEAR), of the termination of that certain Storm Water Management and Discharge Control Maintenance Agreement between the City of San Diego and _____ which agreement was recorded in the San Diego County Recorder's Office on the _____ day of _____, _____ (MONTH) _____ (YEAR), in Document No. _____ 400 of Official Records.

Said Agreement affected _____ (LEGAL DESCRIPTION OF PROPERTY) located at _____ which document is no longer of any force or effect. _____ (PROPERTY ADDRESS)

(PROPERTY OWNER SIGNATURE)

(PRINT NAME AND TITLE)

(COMPANY/ORGANIZATION NAME)

(DATE)

THE CITY OF SAN DIEGO
APPROVED:

(DEPUTY CITY ENGINEER SIGNATURE)

(PRINT NAME)

(DATE)

NOTE: ALL SIGNATURES MUST INCLUDE NOTARY ACKNOWLEDGEMENT PER CIVIL CODE SEC. 1180 ET SEQ.

Reset Button



THE CITY OF SAN DIEGO

RECORDING REQUESTED BY:
THE CITY OF SAN DIEGO
AND WHEN RECORDED MAIL TO:

(THIS SPACE IS FOR RECORDER'S USE ONLY)

STORM WATER MANAGEMENT AND DISCHARGE CONTROL MAINTENANCE AGREEMENT

APPROVAL NUMBER:

ASSESSOR'S PARCEL NUMBER:

PROJECT NUMBER:

This agreement is made by and between the City of San Diego, a municipal corporation [City] and

_____;

the owner or duly authorized representative of the owner [Property Owner] of property located at

(PROPERTY ADDRESS)

and more particularly described as:

6

(LEGAL DESCRIPTION OF PROPERTY)

in the City of San Diego, County of San Diego, State of California.

Property Owner is required pursuant to the City of San Diego Municipal Code, Chapter 4, Article 3, Division 3, Chapter 14, Article 2, Division 2, and the Land Development Manual, Storm Water Standards, to enter into a Storm Water Management and Discharge Control Maintenance Agreement [Maintenance Agreement] for the installation and maintenance of Permanent Storm Water Best Management Practices [Permanent Storm Water BMPs] prior to the issuance of construction/grading permits. The Maintenance Agreement is intended to ensure the establishment and maintenance of Permanent Storm Water BMPs on site, as described in the attached exhibit(s), the project's Storm Water Quality Management Plan [SWQMP] and Grading and/or Improvement Plan Drawing No(s), or Building Plan Project No(s): _____.

Property Owner wishes to obtain a building/engineering/grading permit according to the Grading and/or Improvement Plan Drawing No(s) or Building Plan Project No(s): _____.

Continued on Page 2

NOW, THEREFORE, the parties agree as follows:

1. Property Owner shall have prepared, or if qualified, shall prepare an Operation and Maintenance Procedure [OMP] for Permanent Storm Water BMPs, satisfactory to the City, according to the attached exhibit(s), consistent with the Grading and/or Improvement Plan Drawing No(s), or Building Plan Project No(s):
400.
2. Property Owner shall install, maintain, and repair or replace all Permanent Storm Water BMPs within the property, according to the OMP guidelines as described in the attached exhibit(s), the project's SWQMP, and Grading and/or Improvement Plan Drawing No(s), or Building Plan Project No(s) _____.
3. Property Owner shall maintain operation and maintenance records for at least five (5) years. These records shall be made available to the City for inspection upon request at any time.

This Maintenance Agreement shall commence upon execution of this document by all parties named hereon, and shall run with the land.

Executed by the City of San Diego and by Property Owner in San Diego, California.

See Attached Exhibit(s): _____

THE CITY OF SAN DIEGO

APPROVED:

(PROPERTY OWNER SIGNATURE)

(PRINT NAME AND TITLE)

(COMPANY/ORGANIZATION NAME)

(DATE)

(DEPUTY CITY ENGINEER SIGNATURE)

(PRINT NAME)

(DATE)

NOTE: ALL SIGNATURES MUST INCLUDE NOTARY ACKNOWLEDGEMENT PER CIVIL CODE SEC. 1180 ET.SEQ.

BF-1

Biofiltration

BMP MAINTENANCE FACT SHEET FOR STRUCTURAL BMP BF-1 BIOFILTRATION

Biofiltration facilities are vegetated surface water systems that filter water through vegetation, and soil or engineered media prior to discharge via underdrain or overflow to the downstream conveyance system. Biofiltration facilities have limited or no infiltration. They are typically designed to provide enough hydraulic head to move flows through the underdrain connection to the storm drain system. Typical biofiltration components include:

- Inflow distribution mechanisms (e.g., perimeter flow spreader or filter strips)
- Energy dissipation mechanism for concentrated inflows (e.g., splash blocks or riprap)
- Shallow surface ponding for captured flows
- Side slope and basin bottom vegetation selected based on climate and ponding depth
- Non-floating mulch layer
- Media layer (planting mix or engineered media) capable of supporting vegetation growth
- Filter course layer consisting of aggregate to prevent the migration of fines into uncompacted native soils or the aggregate storage layer
- Aggregate storage layer with underdrain(s)
- Impermeable liner or uncompacted native soils at the bottom of the facility
- Overflow structure

Normal Expected Maintenance

Biofiltration requires routine maintenance to: remove accumulated materials such as sediment, trash or debris; maintain vegetation health; maintain infiltration capacity of the media layer; replenish mulch; and maintain integrity of side slopes, inlets, energy dissipators, and outlets. A summary table of standard inspection and maintenance indicators is provided within this Fact Sheet.

Non-Standard Maintenance or BMP Failure

If any of the following scenarios are observed, the BMP is not performing as intended to protect downstream waterways from pollution and/or erosion. Corrective maintenance, increased inspection and maintenance, BMP replacement, or a different BMP type will be required.

- The BMP is not drained between storm events. Surface ponding longer than approximately 24 hours following a storm event may be detrimental to vegetation health, and surface ponding longer than approximately 96 hours following a storm event poses a risk of vector (mosquito) breeding. Poor drainage can result from clogging of the media layer, filter course, aggregate storage layer, underdrain, or outlet structure. The specific cause of the drainage issue must be determined and corrected.
- Sediment, trash, or debris accumulation greater than 25% of the surface ponding volume within one month. This means the load from the tributary drainage area is too high, reducing BMP function or clogging the BMP. This would require pretreatment measures within the tributary area draining to the BMP to intercept the materials. Pretreatment components, especially for sediment, will extend the life of components that are more expensive to replace such as media, filter course, and aggregate layers.
- Erosion due to concentrated storm water runoff flow that is not readily corrected by adding erosion control blankets, adding stone at flow entry points, or minor re-grading to restore proper drainage according to the original plan. If the issue is not corrected by restoring the BMP to the original plan and grade, the [City Engineer] shall be contacted prior to any additional repairs or reconstruction.

BF-1

Biofiltration

Other Special Considerations

Biofiltration is a vegetated structural BMP. Vegetated structural BMPs that are constructed in the vicinity of, or connected to, an existing jurisdictional water or wetland could inadvertently result in creation of expanded waters or wetlands. As such, vegetated structural BMPs have the potential to come under the jurisdiction of the United States Army Corps of Engineers, SDRWQCB, California Department of Fish and Wildlife, or the United States Fish and Wildlife Service. This could result in the need for specific resource agency permits and costly mitigation to perform maintenance of the structural BMP. Along with proper placement of a structural BMP, routine maintenance is key to preventing this scenario.

BF-1

Biofiltration

SUMMARY OF STANDARD INSPECTION AND MAINTENANCE FOR BF-1 BIOFILTRATION		
<p>The property owner is responsible to ensure inspection, operation and maintenance of permanent BMPs on their property unless responsibility has been formally transferred to an agency, community facilities district, homeowners association, property owners association, or other special district.</p> <p>Maintenance frequencies listed in this table are average/typical frequencies. Actual maintenance needs are site-specific, and maintenance may be required more frequently. Maintenance must be performed whenever needed, based on maintenance indicators presented in this table. The BMP owner is responsible for conducting regular inspections to see when maintenance is needed based on the maintenance indicators. During the first year of operation of a structural BMP, inspection is recommended at least once prior to August 31 and then monthly from September through May. Inspection during a storm event is also recommended. After the initial period of frequent inspections, the minimum inspection and maintenance frequency can be determined based on the results of the first year inspections.</p>		
Threshold/Indicator	Maintenance Action	Typical Maintenance Frequency
Accumulation of sediment, litter, or debris	Remove and properly dispose of accumulated materials, without damage to the vegetation or compaction of the media layer.	<ul style="list-style-type: none"> Inspect monthly. If the BMP is 25% full* or more in one month, increase inspection frequency to monthly plus after every 0.1-inch or larger storm event. Remove any accumulated materials found at each inspection.
Obstructed inlet or outlet structure	Clear blockage.	<ul style="list-style-type: none"> Inspect monthly and after every 0.5-inch or larger storm event. Remove any accumulated materials found at each inspection.
Damage to structural components such as weirs, inlet or outlet structures	Repair or replace as applicable	<ul style="list-style-type: none"> Inspect annually. Maintenance when needed.
Poor vegetation establishment	Re-seed, re-plant, or re-establish vegetation per original plans.	<ul style="list-style-type: none"> Inspect monthly. Maintenance when needed.
Dead or diseased vegetation	Remove dead or diseased vegetation, re-seed, re-plant, or re-establish vegetation per original plans.	<ul style="list-style-type: none"> Inspect monthly. Maintenance when needed.
Overgrown vegetation	Mow or trim as appropriate.	<ul style="list-style-type: none"> Inspect monthly. Maintenance when needed.
2/3 of mulch has decomposed, or mulch has been removed	Remove decomposed fraction and top off with fresh mulch to a total depth of 3 inches.	<ul style="list-style-type: none"> Inspect monthly. Replenish mulch annually, or more frequently when needed based on inspection.

*"25% full" is defined as ¼ of the depth from the design bottom elevation to the crest of the outflow structure (e.g., if the height to the outflow opening is 12 inches from the bottom elevation, then the materials must be removed when there is 3 inches of accumulation – this should be marked on the outflow structure).

BF-1

Biofiltration

SUMMARY OF STANDARD INSPECTION AND MAINTENANCE FOR BF-1 BIOFILTRATION (Continued from previous page)		
Threshold/Indicator	Maintenance Action	Typical Maintenance Frequency
Erosion due to concentrated irrigation flow	Repair/re-seed/re-plant eroded areas and adjust the irrigation system.	<ul style="list-style-type: none"> Inspect monthly. Maintenance when needed.
Erosion due to concentrated storm water runoff flow	Repair/re-seed/re-plant eroded areas, and make appropriate corrective measures such as adding erosion control blankets, adding stone at flow entry points, or minor re-grading to restore proper drainage according to the original plan. If the issue is not corrected by restoring the BMP to the original plan and grade, the [City Engineer] shall be contacted prior to any additional repairs or reconstruction.	<ul style="list-style-type: none"> Inspect after every 0.5-inch or larger storm event. If erosion due to storm water flow has been observed, increase inspection frequency to after every 0.1-inch or larger storm event. Maintenance when needed. If the issue is not corrected by restoring the BMP to the original plan and grade, the [City Engineer] shall be contacted prior to any additional repairs or reconstruction.
Standing water in BMP for longer than 24 hours following a storm event Surface ponding longer than approximately 24 hours following a storm event may be detrimental to vegetation health	Make appropriate corrective measures such as adjusting irrigation system, removing obstructions of debris or invasive vegetation, clearing underdrains, or repairing/replacing clogged or compacted soils.	<ul style="list-style-type: none"> Inspect monthly and after every 0.5-inch or larger storm event. If standing water is observed, increase inspection frequency to after every 0.1-inch or larger storm event. Maintenance when needed.
Presence of mosquitos/larvae For images of egg rafts, larva, pupa, and adult mosquitos, see http://www.mosquito.org/biology	<p>If mosquitos/larvae are observed: first, immediately remove any standing water by dispersing to nearby landscaping; second, make corrective measures as applicable to restore BMP drainage to prevent standing water.</p> <p>If mosquitos persist following corrective measures to remove standing water, or if the BMP design does not meet the 96-hour drawdown criteria due to release rates controlled by an orifice installed on the underdrain, the [City Engineer] shall be contacted to determine a solution. A different BMP type, or a Vector Management Plan prepared with concurrence from the County of San Diego Department of Environmental Health, may be required.</p>	<ul style="list-style-type: none"> Inspect monthly and after every 0.5-inch or larger storm event. If mosquitos are observed, increase inspection frequency to after every 0.1-inch or larger storm event. Maintenance when needed.
Underdrain clogged	Clear blockage.	<ul style="list-style-type: none"> Inspect if standing water is observed for longer than 24-96 hours following a storm event. Maintenance when needed.

BF-1

Biofiltration

References

- American Mosquito Control Association. <http://www.mosquito.org/>
- California Storm Water Quality Association (CASQA). 2003. Municipal BMP Handbook. <https://www.casqa.org/resources/bmp-handbooks/municipal-bmp-handbook>
- County of San Diego. 2014. Low Impact Development Handbook. <http://www.sandiegocounty.gov/content/sdc/dpw/watersheds/susmp/lid.html>
- San Diego County Copermittees. 2016. Model BMP Design Manual, Appendix E, Fact Sheet BF-1. http://www.projectcleanwater.org/index.php?option=com_content&view=article&id=250&Itemid=220

BF-1

Biofiltration

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BF-1

Biofiltration

Date:	Inspector:	BMP ID No.:
Permit No.:	APN(s):	
Property / Development Name:		Responsible Party Name and Phone Number:
Property Address of BMP:		Responsible Party Address:

INSPECTION AND MAINTENANCE CHECKLIST FOR BF-1 BIOFILTRATION PAGE 1 of 5		
Threshold/Indicator	Maintenance Recommendation	Description of Maintenance Conducted
Accumulation of sediment, litter, or debris Maintenance Needed? <input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A	<input type="checkbox"/> Remove and properly dispose of accumulated materials, without damage to the vegetation <input type="checkbox"/> If sediment, litter, or debris accumulation exceeds 25% of the surface ponding volume within one month (25% full*), add a forebay or other pre-treatment measures within the tributary area draining to the BMP to intercept the materials. <input type="checkbox"/> Other / Comments:	
Poor vegetation establishment Maintenance Needed? <input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A	<input type="checkbox"/> Re-seed, re-plant, or re-establish vegetation per original plans <input type="checkbox"/> Other / Comments:	

*"25% full" is defined as ¼ of the depth from the design bottom elevation to the crest of the outflow structure (e.g., if the height to the outflow opening is 12 inches from the bottom elevation, then the materials must be removed when there is 3 inches of accumulation – this should be marked on the outflow structure).

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Biofiltration

Date:	Inspector:	BMP ID No.:
Permit No.:	APN(s):	

INSPECTION AND MAINTENANCE CHECKLIST FOR BF-1 BIOFILTRATION PAGE 2 of 5			
Threshold/Indicator	Maintenance Recommendation	Date	Description of Maintenance Conducted
Dead or diseased vegetation Maintenance Needed? <input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A	<input type="checkbox"/> Remove dead or diseased vegetation, re-seed, re-plant, or re-establish vegetation per original plans <input type="checkbox"/> Other / Comments:		
Overgrown vegetation Maintenance Needed? <input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A	<input type="checkbox"/> Mow or trim as appropriate <input type="checkbox"/> Other / Comments:		
2/3 of mulch has decomposed, or mulch has been removed Maintenance Needed? <input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A	<input type="checkbox"/> Remove decomposed fraction and top off with fresh mulch to a total depth of 3 inches <input type="checkbox"/> Other / Comments:		

BF-1

Biofiltration

Date:	Inspector:	BMP ID No.:
Permit No.:	APN(s):	

INSPECTION AND MAINTENANCE CHECKLIST FOR BF-1 BIOFILTRATION PAGE 3 of 5			
Threshold/Indicator	Maintenance Recommendation	Date	Description of Maintenance Conducted
Erosion due to concentrated irrigation flow Maintenance Needed? <input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A	<input type="checkbox"/> Repair/re-seed/re-plant eroded areas and adjust the irrigation system <input type="checkbox"/> Other / Comments:		
Erosion due to concentrated storm water runoff flow Maintenance Needed? <input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A	<input type="checkbox"/> Repair/re-seed/re-plant eroded areas, and make appropriate corrective measures such as adding erosion control blankets, adding stone at flow entry points, or minor re-grading to restore proper drainage according to the original plan <input type="checkbox"/> If the issue is not corrected by restoring the BMP to the original plan and grade, the [City Engineer] shall be contacted prior to any additional repairs or reconstruction <input type="checkbox"/> Other / Comments:		

BF-1

Biofiltration

Date:	Inspector:	BMP ID No.:
Permit No.:	APN(s):	

INSPECTION AND MAINTENANCE CHECKLIST FOR BF-1 BIOFILTRATION PAGE 4 of 5			
Threshold/Indicator	Maintenance Recommendation	Date	Description of Maintenance Conducted
Obstructed inlet or outlet structure Maintenance Needed? <input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A	<input type="checkbox"/> Clear blockage <input type="checkbox"/> Other / Comments:		
Underdrain clogged (inspect underdrain if standing water is observed for longer than 24-96 hours following a storm event) Maintenance Needed? <input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A	<input type="checkbox"/> Clear blockage <input type="checkbox"/> Other / Comments:		
Damage to structural components such as weirs, inlet or outlet structures Maintenance Needed? <input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A	<input type="checkbox"/> Repair or replace as applicable <input type="checkbox"/> Other / Comments:		

BF-1

Biofiltration

Date:	Inspector:	BMP ID No.:
Permit No.:	APN(s):	

INSPECTION AND MAINTENANCE CHECKLIST FOR BF-1 BIOFILTRATION PAGE 5 of 5			
Threshold/Indicator	Maintenance Recommendation	Date	Description of Maintenance Conducted
<p>Standing water in BMP for longer than 24-96 hours following a storm event*</p> <p>Surface ponding longer than approximately 24 hours following a storm event may be detrimental to vegetation health</p> <p>Maintenance Needed?</p> <p><input type="checkbox"/> YES</p> <p><input type="checkbox"/> NO</p> <p><input type="checkbox"/> N/A</p>	<p><input type="checkbox"/> Make appropriate corrective measures such as adjusting irrigation system, removing obstructions of debris or invasive vegetation, clearing underdrains, or repairing/replacing clogged or compacted soils</p> <p><input type="checkbox"/> Other / Comments:</p>		
<p>Presence of mosquitos/larvae</p> <p>For images of egg rafts, larva, pupa, and adult mosquitos, see http://www.mosquito.org/biology</p> <p>Maintenance Needed?</p> <p><input type="checkbox"/> YES</p> <p><input type="checkbox"/> NO</p> <p><input type="checkbox"/> N/A</p>	<p><input type="checkbox"/> Apply corrective measures to remove standing water in BMP when standing water occurs for longer than 24-96 hours following a storm event.**</p> <p><input type="checkbox"/> Other / Comments:</p>		

*Surface ponding longer than approximately 24 hours following a storm event may be detrimental to vegetation health, and surface ponding longer than approximately 96 hours following a storm event poses a risk of vector (mosquito) breeding. Poor drainage can result from clogging of the media layer, filter course, aggregate storage layer, underdrain, or outlet structure. The specific cause of the drainage issue must be determined and corrected.

**If mosquitos persist following corrective measures to remove standing water, or if the BMP design does not meet the 96-hour drawdown criteria due to release rates controlled by an orifice installed on the underdrain, the [City Engineer] shall be contacted to determine a solution. A different BMP type, or a Vector Management Plan prepared with concurrence from the County of San Diego Department of Environmental Health, may be required.

Attachment 4

Copy of Plan Sheets Showing Permanent Storm Water BMPs

This is the cover sheet for Attachment 4.

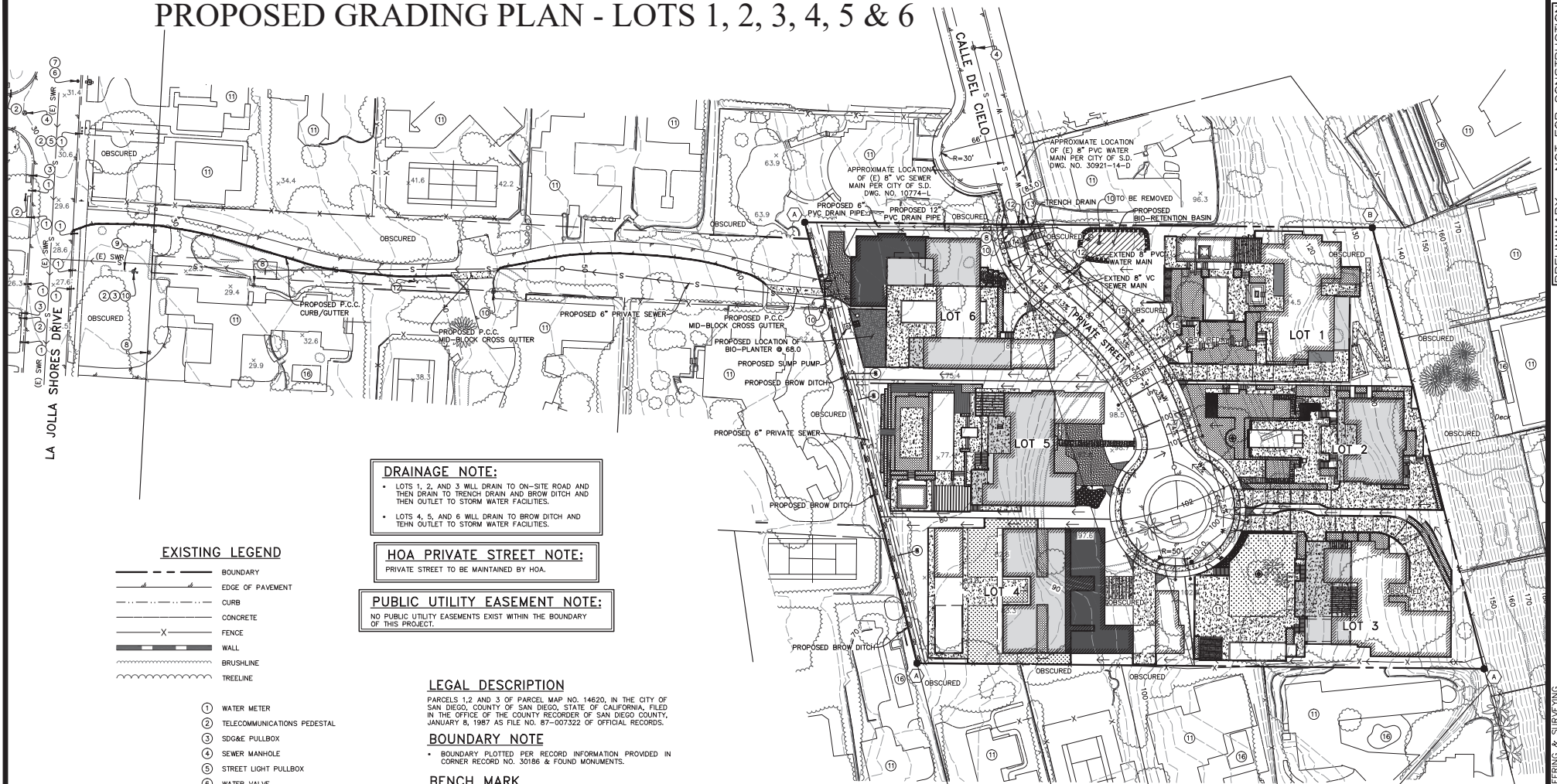
Project Name: Cielo Mar Subdivision

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.

PROPOSED GRADING PLAN - LOTS 1, 2, 3, 4, 5 & 6



DRAINAGE NOTE:

- LOTS 1, 2, AND 3 WILL DRAIN TO ON-SITE ROAD AND THEN DRAIN TO TRENCH DRAIN AND BROW DITCH AND THEN OUTLET TO STORM WATER FACILITIES.
- LOTS 4, 5, AND 6 WILL DRAIN TO BROW DITCH AND THEN OUTLET TO STORM WATER FACILITIES.

HOA PRIVATE STREET NOTE:

PRIVATE STREET TO BE MAINTAINED BY HOA.

PUBLIC UTILITY EASEMENT NOTE:

NO PUBLIC UTILITY EASEMENTS EXIST WITHIN THE BOUNDARY OF THIS PROJECT.

EXISTING LEGEND

- BOUNDARY
- EDGE OF PAVEMENT
- CURB
- CONCRETE
- FENCE
- WALL
- BRUSHLINE
- TREELINE

- 1 WATER METER
- 2 TELECOMMUNICATIONS PEDESTAL
- 3 SDG&E PULLBOX
- 4 SEWER MANHOLE
- 5 STREET LIGHT PULLBOX
- 6 WATER VALVE
- 7 FIRE HYDRANT
- 8 STREET LIGHT POST
- 9 TIME WARNER CHANNEL VAULT
- 10 POWER POLE
- 11 BUILDING
- 12 SEWER CLEANOUT
- 13 WATER RISER
- 14 GAS METER
- 15 IRRIGATION CONTROL VALVE
- 16 POOL

LEGAL DESCRIPTION

PARCELS 1, 2 AND 3 OF PARCEL MAP NO. 14620, IN THE CITY OF SAN DIEGO, COUNTY OF SAN DIEGO, STATE OF CALIFORNIA, FILED IN THE OFFICE OF THE COUNTY RECORDER OF SAN DIEGO COUNTY, JANUARY 8, 1987 AS FILE NO. 87-007322 OF OFFICIAL RECORDS.

BOUNDARY NOTE

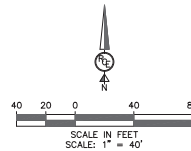
- BOUNDARY PLOTTED PER RECORD INFORMATION PROVIDED IN CORNER RECORD NO. 30186 & FOUND MONUMENTS.

BENCH MARK

- BENCHMARK FOR THIS SURVEY IS A BRASS PLUG SET IN CONCRETE CURB RETURN, LOCATED SOUTHWESTERLY OF THE INTERSECTION OF CALLE DEL ORO & CALLE DEL CIELO IN THE CITY OF LA JOLLA, CA., HAVING A PUBLISHED MEAN SEA LEVEL ELEVATION OF 70.47'.

FOUND MONUMENTS

- A INDICATES FOUND 3/4" IRON PIPE W/YELLOW CAP STAMPED "LS 5717" PER CORNER RECORD NO. 30186.
- B INDICATES FOUND 2" IRON PIPE W/DISC STAMPED "RCE 9822" AS SHOWN ON CORNER RECORD NO. 30186.



RANCHO COASTAL
ENGINEERING & SURVEYING
SINGLE SOURCE DEVELOPMENT CONSULTANT
310 VIA VERA CRUZ, #205
SAN MARCOS, CA. 92078
(760) 510-3152 Ph / (760) 510-3153 Fax

ENGINEER OF WORK

I HEREBY DECLARE THAT I AM THE ENGINEER OF WORK FOR THIS PROJECT AND THAT I HAVE EXERCISED RESPONSIBLE CHANGE OVER THE DESIGN OF THE PROJECT.

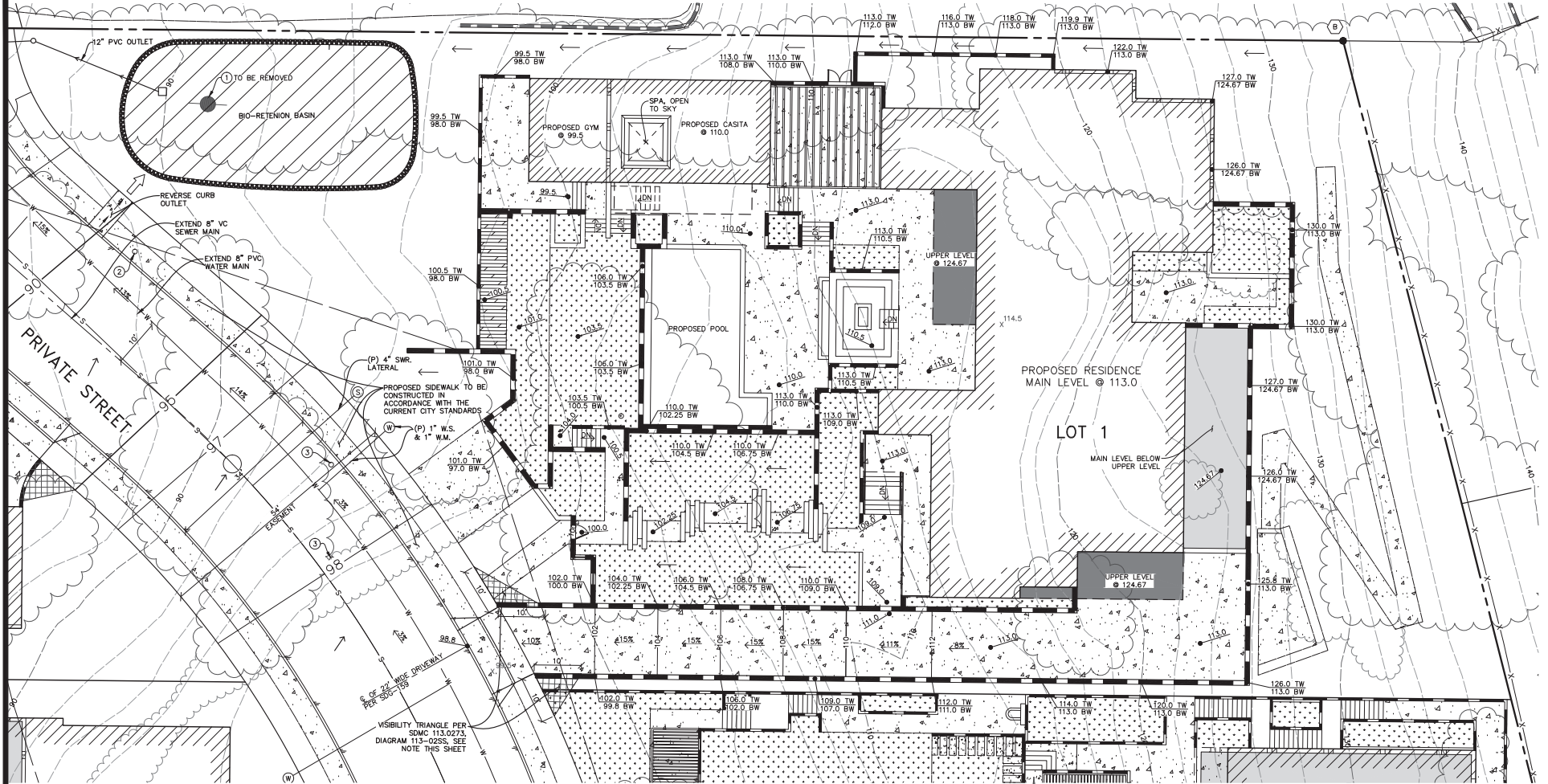
DOUGLAS E. LOGAN DATE: 08/01/24
C-39728 EXPIRES: 12/31/25



PROPOSED GRADING PLAN

C-1
LOTS 1-6

PROPOSED GRADING & DRAINAGE PLAN - LOT 1



EXISTING LEGEND

- BOUNDARY
- - - EDGE OF PAVEMENT
- - - CURB
- CONCRETE
- - - FENCE
- WALL
- BRUSHLINE
- TREELINE
- ① POWER POLE
- ② SEWER CLEANOUT
- ③ IRRIGATION CONTROL VALVE

PROPOSED LEGEND

- CONCRETE
- BUILDING STEM/RETAINING WALL
- RETAINING WALL
- DIRECTION OF DRAINAGE
- LANDSCAPE/GRASS/PLANTER AREA

FOUND MONUMENTS

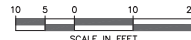
(B) INDICATES FOUND 2" IRON PIPE W/DISC STAMPED "RCE 9822" AS SHOWN ON CORNER RECORD NO. 30166.

GRADING TABULATIONS

- TOTAL LOT SIZE = 0.77 AC.
- DISTURBED AREA = 0.57 AC.
- AMOUNT OF CUT = 1,950 C.Y.
- MAX. DEPTH OF CUT = 12 FT.
- AMOUNT OF FILL = 850 C.Y.
- MAX. DEPTH OF FILL = 10 FT.
- MAX. HEIGHT OF CUT & FILL = 12 FT.
- RETAINING WALL LENGTH = 700
- EXISTING IMPERVIOUS AREA = 0 S.F.
- EXISTING PERVIOUS AREA = 33,724 S.F.
- PROPOSED IMPERVIOUS AREA = 14,255 S.F.
- PROPOSED PERVIOUS AREA = 19,469 S.F.

EARTHWORK QUANTITIES

CUT = 1,950 C.Y. +/- FILL = 850 C.Y. +/-
EXPORT = 1,100 C.Y. +/-



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VISIBILITY TRIANGLE NOTE:

NO OBSTRUCTION INCLUDING SOLID WALLS IN THE VISIBILITY AREA SHALL EXCEED 3 FEET IN HEIGHT. PLANT MATERIAL, OTHER THAN TREES, WITHIN THE PUBLIC RIGHT-OF-WAY THAT IS LOCATED WITHIN VISIBILITY AREAS SHALL NOT EXCEED 24 INCHES IN HEIGHT, MEASURED FROM THE TOP OF THE ADJACENT CURB.

ENGINEER OF WORK

I HEREBY DECLARE THAT I AM THE ENGINEER OF WORK FOR THIS PROJECT AND THAT I HAVE EXERCISED RESPONSIBLE CHARGE OVER THE DESIGN OF THE PROJECT.

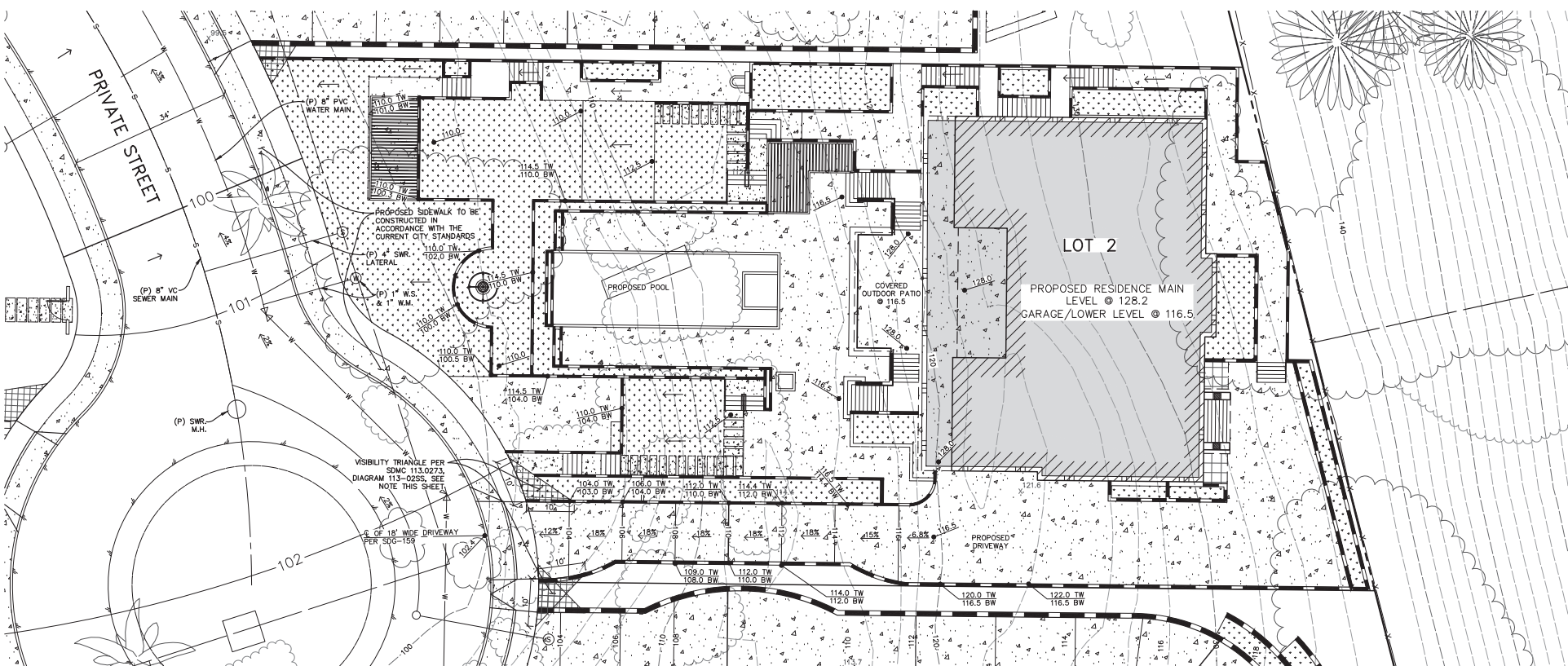
DOUGLAS E. LOGAN
C. 38728
DATE: 08/01/24
EXPIRES: 12/31/25



PROPOSED GRADING
& DRAINAGE PLAN

C-2
LOT 1

PROPOSED GRADING & DRAINAGE PLAN - LOT 2



EXISTING LEGEND

- BOUNDARY
- EDGE OF PAVEMENT
- CURB
- CONCRETE
- FENCE
- WALL
- BRUSHLINE
- TREELINE

PROPOSED LEGEND

- AREA OF LOWER LEVEL
- CONCRETE
- BUILDING STEM/RETAINING WALL
- RETAINING WALL
- DIRECTION OF DRAINAGE
- LANDSCAPE/GRASS/PLANTER AREA

GRADING TABULATIONS

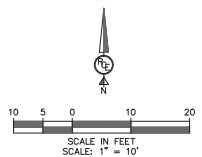
- TOTAL LOT SIZE = 0.48 AC.
- DISTURBED AREA = 0.37 AC.
- AMOUNT OF CUT = 1,390 C.Y.
- MAX. DEPTH OF CUT = 20 FT. DEPTH OF CUT IS MAINLY FOR BASEMENT WALLS
- AMOUNT OF FILL = 460 C.Y.
- MAX DEPTH OF FILL = 14 FT.
- MAX HEIGHT OF CUT & FILL = 20 FT.
- RETAINING WALL LENGTH = 615
- EXISTING IMPERVIOUS AREA = 8' S.F.
- EXISTING PERVIOUS AREA = 20,736 S.F.
- PROPOSED IMPERVIOUS AREA = 9,743 S.F.
- PROPOSED PERVIOUS AREA = 10,993 S.F.

EARTHWORK QUANTITIES

CUT = 1,390 C.Y. +/- FILL = 460 C.Y. +/-
EXPORT = 1,390 C.Y. +/-

VISIBILITY TRIANGLE NOTE:

NO OBSTRUCTION INCLUDING SOLID WALLS IN THE VISIBILITY AREA SHALL EXCEED 5 FEET IN HEIGHT. PLANT MATERIAL, OTHER THAN TREES, WITHIN THE PUBLIC RIGHT-OF-WAY THAT IS LOCATED WITHIN VISIBILITY AREAS SHALL NOT EXCEED 24 INCHES IN HEIGHT, MEASURED FROM THE TOP OF THE ADJACENT CURB.



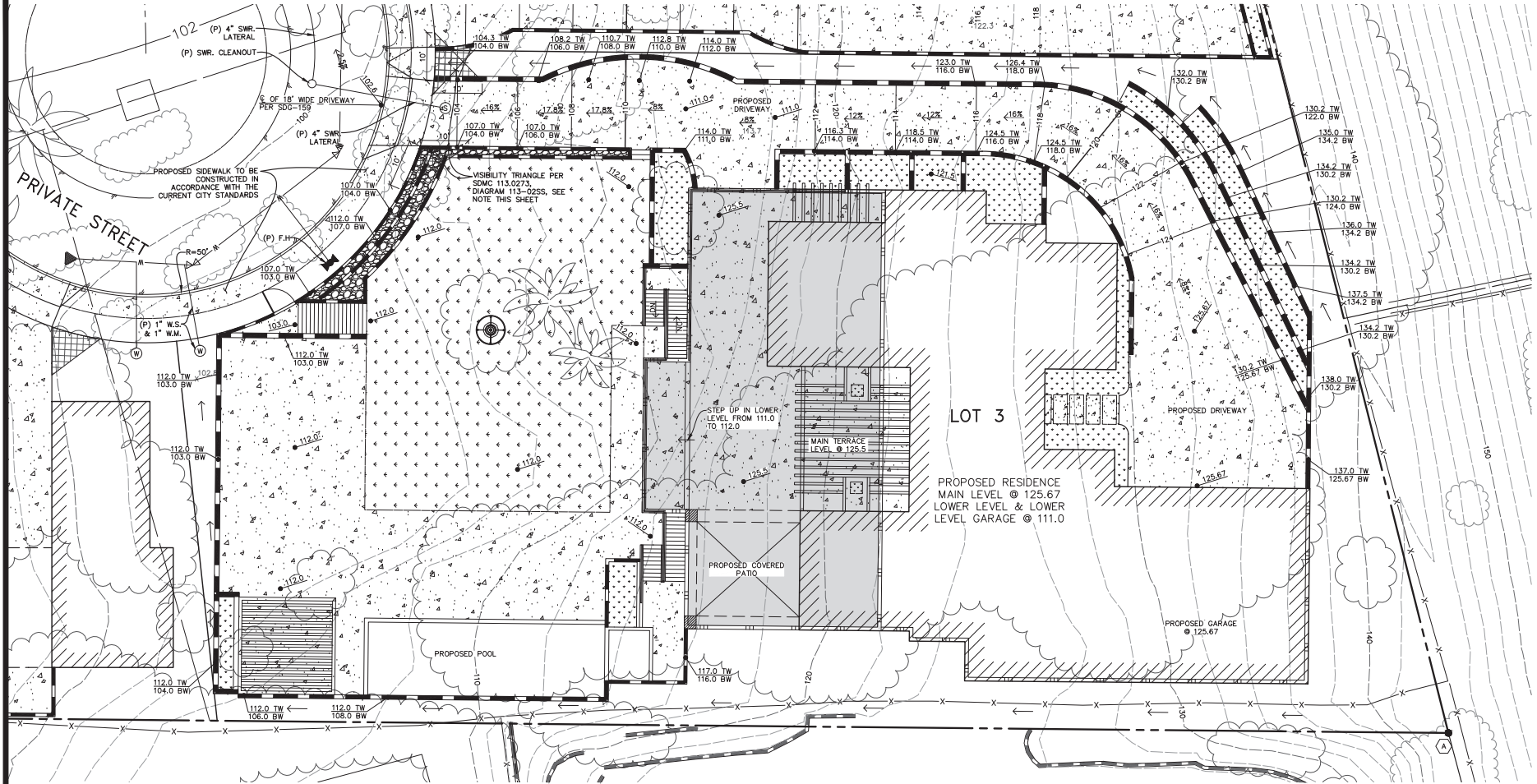
RANCHO COASTAL
ENGINEERING & SURVEYING
SINGLE-SOURCE DEVELOPMENT CONSULTANT
310 VIA VERA CRUZ, #205
SAN MARCOS, CA, 92078
(760) 510-3152 PH / (760) 510-3153 FAX

ENGINEER OF WORK
I HEREBY DECLARE THAT I AM THE ENGINEER OF WORK FOR THIS PROJECT AND THAT I HAVE EXERCISED RESPONSIBLE CHARGE OVER THE DESIGN OF THE PROJECT.
Douglas E. Logan
DOUGLAS E. LOGAN
C 38728
DATE: 07/30/24
EXPIRES: 12/31/25



PROPOSED GRADING & DRAINAGE PLAN
C-3
LOT 2

PROPOSED GRADING & DRAINAGE PLAN - LOT 3



EXISTING LEGEND

- BOUNDARY
- - - - - EDGE OF PAVEMENT
- - - - - CURB
- - - - - CONCRETE
- - - - - FENCE
- - - - - WALL
- - - - - BRUSHLINE
- - - - - TREELINE

FOUND MONUMENTS

- (A) INDICATES FOUND 3/4" IRON PIPE W/YELLOW CAP
- STAMPED "LS 5717" PER CORNER RECORD NO. 30186.

PROPOSED LEGEND

- [Pattern] AREA OF LOWER LEVEL
- [Pattern] CONCRETE
- [Pattern] BUILDING STEM/RETAINING WALL
- [Pattern] RETAINING WALL
- [Pattern] DIRECTION OF DRAINAGE
- [Pattern] LANDSCAPE AREA
- [Pattern] GRAVEL AREA

GRADING TABULATIONS

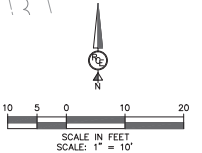
- TOTAL LOT SIZE = 0.72 AC.
- DISTURBED AREA = 0.60 AC.
- AMOUNT OF CUT = 4,860 C.Y.
- MAX. DEPTH OF CUT = 18 FT.
- AMOUNT OF FILL = 1,150 C.Y.
- MAX DEPTH OF FILL = 8 FT.
- MAX HEIGHT OF CUT & FILL = 18 FT.
- RETAINING WALL LENGTH = 1,310
- EXISTING IMPERVIOUS AREA = 8,000 S.F.
- EXISTING PERVIOUS AREA = 31,495 S.F.
- PROPOSED IMPERVIOUS AREA = 16,052 S.F.
- PROPOSED PERVIOUS AREA = 15,443 S.F.

EARTHWORK QUANTITIES

CUT = 4,860 C.Y. +/- FILL = 1,150 C.Y. +/-
EXPORT = 3,710 C.Y. +/-

VISIBILITY TRIANGLE NOTE:

NO OBSTRUCTION INCLUDING SOLID WALLS IN THE VISIBILITY AREA SHALL EXCEED 3 FEET IN HEIGHT. PLANT MATERIAL, OTHER THAN TREES, WITHIN THE PUBLIC RIGHT-OF-WAY THAT IS LOCATED WITHIN VISIBILITY AREAS SHALL NOT EXCEED 24 INCHES IN HEIGHT, MEASURED FROM THE TOP OF THE ADJACENT CURB.



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ENGINEER OF WORK

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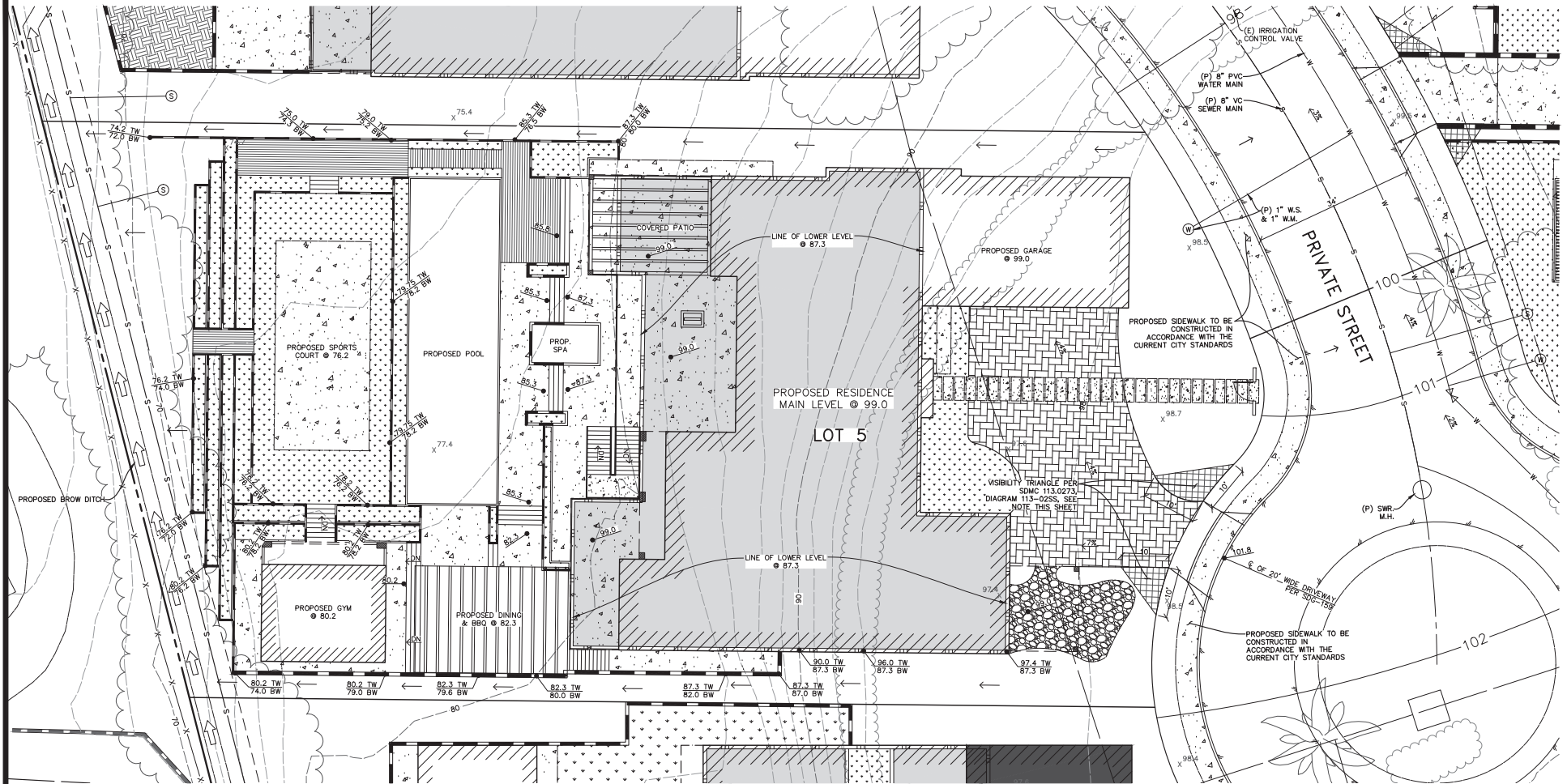
DOUGLAS E. LOGAN
DATE: 07/30/24
EXPIRES: 12/31/25



PROPOSED GRADING & DRAINAGE PLAN

C-4
LOT 3

PROPOSED GRADING & DRAINAGE PLAN - LOT 5



EXISTING LEGEND

- BOUNDARY
- EDGE OF PAVEMENT
- CURB
- CONCRETE
- FENCE
- WALL
- BRUSHLINE
- TREELINE

PROPOSED LEGEND

- AREA OF LOWER LEVEL
- CONCRETE
- BUILDING STEM/RETAINING WALL
- RETAINING WALL
- DIRECTION OF DRAINAGE
- LANDSCAPE/GRASS/PLANTER AREA

GRADING TABULATIONS

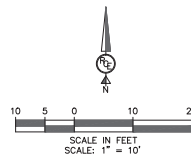
- TOTAL LOT SIZE = 0.63 AC.
- DISTURBED AREA = 0.53 AC.
- AMOUNT OF CUT = 600 C.Y.
- MAX. DEPTH OF CUT = 10 FT. *DEPTH OF CUT IS MAINLY FOR BASEMENT WALLS
- AMOUNT OF FILL = 2,525 C.Y.
- MAX DEPTH OF FILL = 12 FT.
- MAX HEIGHT OF CUT & FILL = 12 FT.
- RETAINING WALL LENGTH = 255
- EXISTING IMPERVIOUS AREA = 87 S.F.
- EXISTING PERVIOUS AREA = 27,645 S.F.
- PROPOSED IMPERVIOUS AREA = 13,720 S.F.
- PROPOSED PERVIOUS AREA = 13,925 S.F.

EARTHWORK QUANTITIES

CUT = 600 C.Y. +/- FILL = 2,525 C.Y. +/-
IMPORT = 1,925 C.Y. +/-

VISIBILITY TRIANGLE NOTE:

NO OBSTRUCTION INCLUDING SOLID WALLS IN THE VISIBILITY AREA SHALL EXCEED 3 FEET IN HEIGHT. PLANT MATERIAL, OTHER THAN TREES, WITHIN THE PUBLIC RIGHT-OF-WAY THAT IS LOCATED WITHIN VISIBILITY AREAS SHALL NOT EXCEED 24 INCHES IN HEIGHT, MEASURED FROM THE TOP OF THE ADJACENT CURB.



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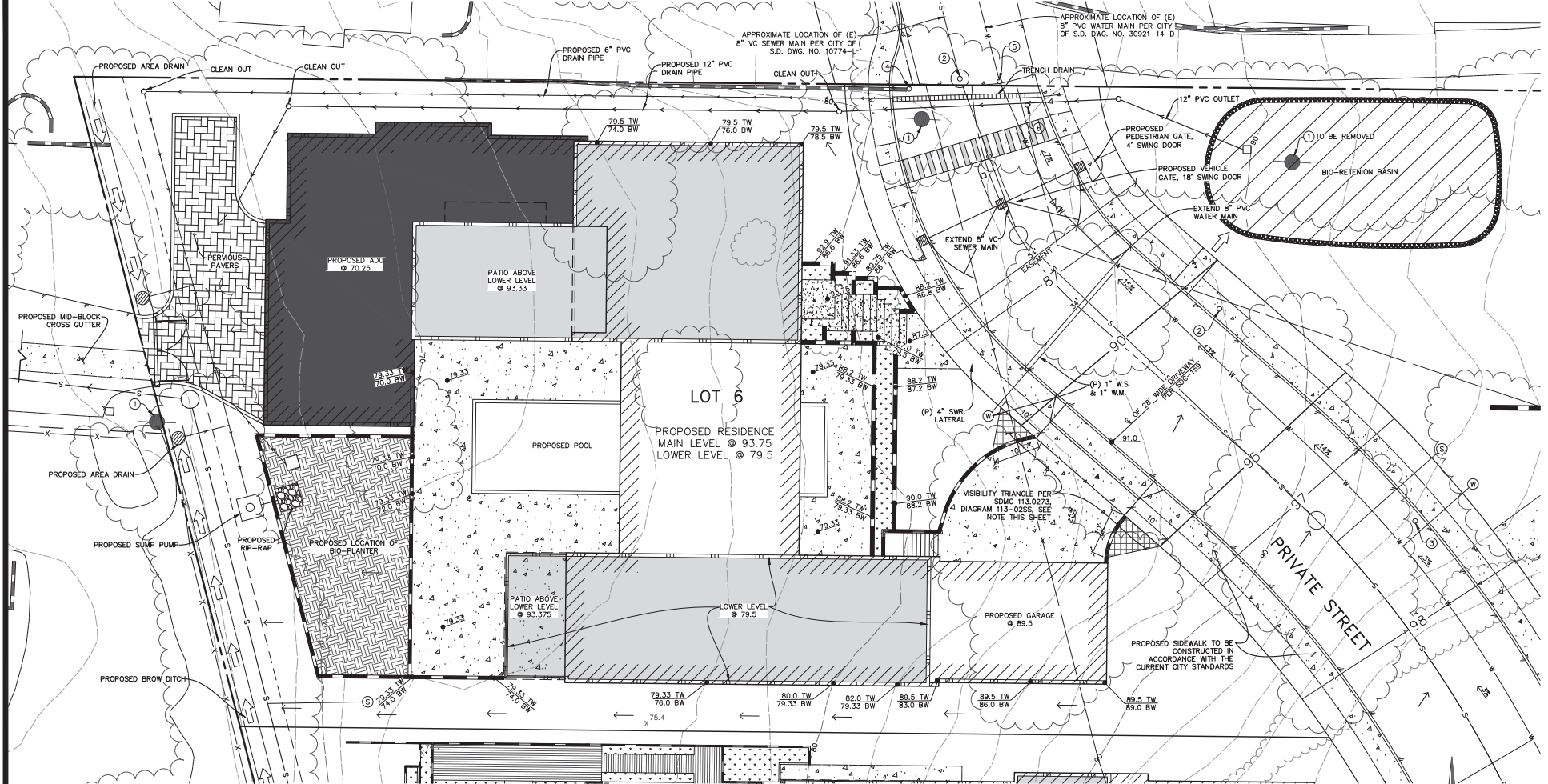
DOUGLAS E. LOGAN
C. 38726
DATE: 07/30/24
EXPIRES: 12/31/25



PROPOSED GRADING
& DRAINAGE PLAN

C-6
LOT 5

PROPOSED GRADING & DRAINAGE PLAN - LOT 6



EXISTING LEGEND

- | | | | |
|-------|------------------|---|--------------------------|
| --- | BOUNDARY | ① | POWER POLE |
| -.-.- | EDGE OF PAVEMENT | ② | SEWER CLEANOUT |
| --- | CURB | ③ | IRRIGATION CONTROL VALVE |
| --- | CONCRETE | ④ | STREET LIGHT POST |
| -X- | FENCE | ⑤ | WATER RISER |
| --- | WALL | ⑥ | GAS METER |
| --- | BRUSHLINE | | |
| --- | TREELINE | | |

PROPOSED LEGEND

- | | |
|-----------|------------------------------|
| [Pattern] | AREA OF LOWER LEVEL |
| [Pattern] | AREA OF ADU |
| [Pattern] | CONCRETE |
| [Pattern] | BUILDING STEM/RETAINING WALL |
| [Pattern] | RETAINING WALL |
| [Pattern] | DIRECTION OF DRAINAGE |
| [Pattern] | LANDSCAPE/GRASS/PLANTER AREA |

GRADING TABULATIONS

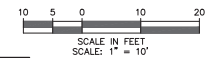
- TOTAL LOT SIZE = 0.60 AC.
- DISTURBED AREA = 0.32 AC.
- AMOUNT OF CUT = 565 C.Y.
- MAX. DEPTH OF CUT = 10 FT. *DEPTH OF CUT IS MAINLY FOR BASEMENT WALLS
- AMOUNT OF FILL = 1,005 C.Y.
- MAX DEPTH OF FILL = 12 FT.
- MAX HEIGHT OF CUT & FILL = 12 FT.
- RETAINING WALL LENGTH = 360
- EXISTING IMPERVIOUS AREA = 29 S.F.
- EXISTING PERVIOUS AREA = 25,935 S.F.
- PROPOSED IMPERVIOUS AREA = 11,730 S.F.
- PROPOSED PERVIOUS AREA = 14,205 S.F.

EARTHWORK QUANTITIES

CUT = 565 C.Y. +/- FILL = 1,005 C.Y. +/-
IMPORT = 440 C.Y. +/-

VISIBILITY TRIANGLE NOTE:

NO OBSTRUCTION INCLUDING SOLID WALLS IN THE VISIBILITY AREA SHALL EXCEED 3 FEET IN HEIGHT. PLANT MATERIAL, OTHER THAN TREES, WITHIN THE PUBLIC RIGHT-OF-WAY THAT IS LOCATED WITHIN VISIBILITY AREAS SHALL NOT EXCEED 24 INCHES IN HEIGHT MEASURED FROM THE TOP OF THE ADJACENT CURB.



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ENGINEER OF WORK
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Douglas E. Logan
DOUGLAS E. LOGAN
C 38728
DATE: 08/01/24
EXPIRES: 12/31/25



PROPOSED GRADING
& DRAINAGE PLAN

C-7
LOT 6

Attachment 5

Drainage Report

Attach project's drainage report. Refer to Drainage Design Manual to determine the reporting requirements.

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**Cielo Mar Subdivision
8280 Calle Del Cielo
La Jolla, CA 92037**

PRELIMINARY DRAINAGE STUDY

PROJECT # 1085883

CITY OF SAN DIEGO, CA.

**PREPARED: February 15, 2023
Revised: August 9, 2024**

PREPARED FOR:

**Cielo Mar La Jolla, LLC
1298 Prospect Street, #2S
La Jolla, CA 92037
661-979-0244**

PREPARED UNDER THE SUPERVISION OF:

**DOUGLAS E. LOGAN
CIVIL ENGINEER PE 39726**



Planning • Civil • Survey • Structural

Rancho Coastal Engineering and Surveying, Inc.

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- 1. INTRODUCTION**
- 2. EXISTING CONDITIONS**
- 3. PROPOSED PROJECT**
- 4. METHODOLOGY**
- 5. SUMMARY**
- 6. CONCLUSIONS**
- 7. REFERENCES**

Appendix

- 1 Hydrology Calculations & Basin Map
- 2 Unit Hydrograph and Modified-Puls Detention Routing
- 3 Soils Map, City Maps and Charts
- 4 Offsite Facilities Hydraulics

1. Introduction

This Drainage Study for the proposed Cielo Mar Subdivision is prepared to analyze the hydrologic and hydraulic characteristics of the existing undeveloped site and proposed development. This report intends to present the methodology and the calculations used for determining the runoff from the project site produced by the 100- year 6-hour storm.

The project is not required to obtain approval from the Regional Water Quality Control Board (SWRCB) Under Federal Clean Water Act (CWA) Section 401 or 404. The project does not propose to discharge fill and dredged material to waters of the State, including waters of the U.S.

2. Existing Conditions

The subject property is located within the La Jolla Shores Planned District. The site consists of 1 developed lot, housing a single-family home. The site is bordered residential development all around. Access to the site is via by a public street, Calle del Cielo. The property's existing terrain consists mostly of mild slopes with some flat areas associated with the existing single family home and private driveway.

Elevations range from approximately 136 feet above mean sea level (MSL) in the easterly side of the property to approximately 66 feet (MSL) at the westerly end of the property.

The existing runoff flows overland westerly, with the majority of the runoff flowing to the 60' road easement westerly of the site and then to La Jolla Shores Drive street gutters that convey flows further to the south into existing curb inlets. A portion of the site runoff flows to the neighboring properties westerly of the site. There is no offsite run-on.

3. Proposed Project

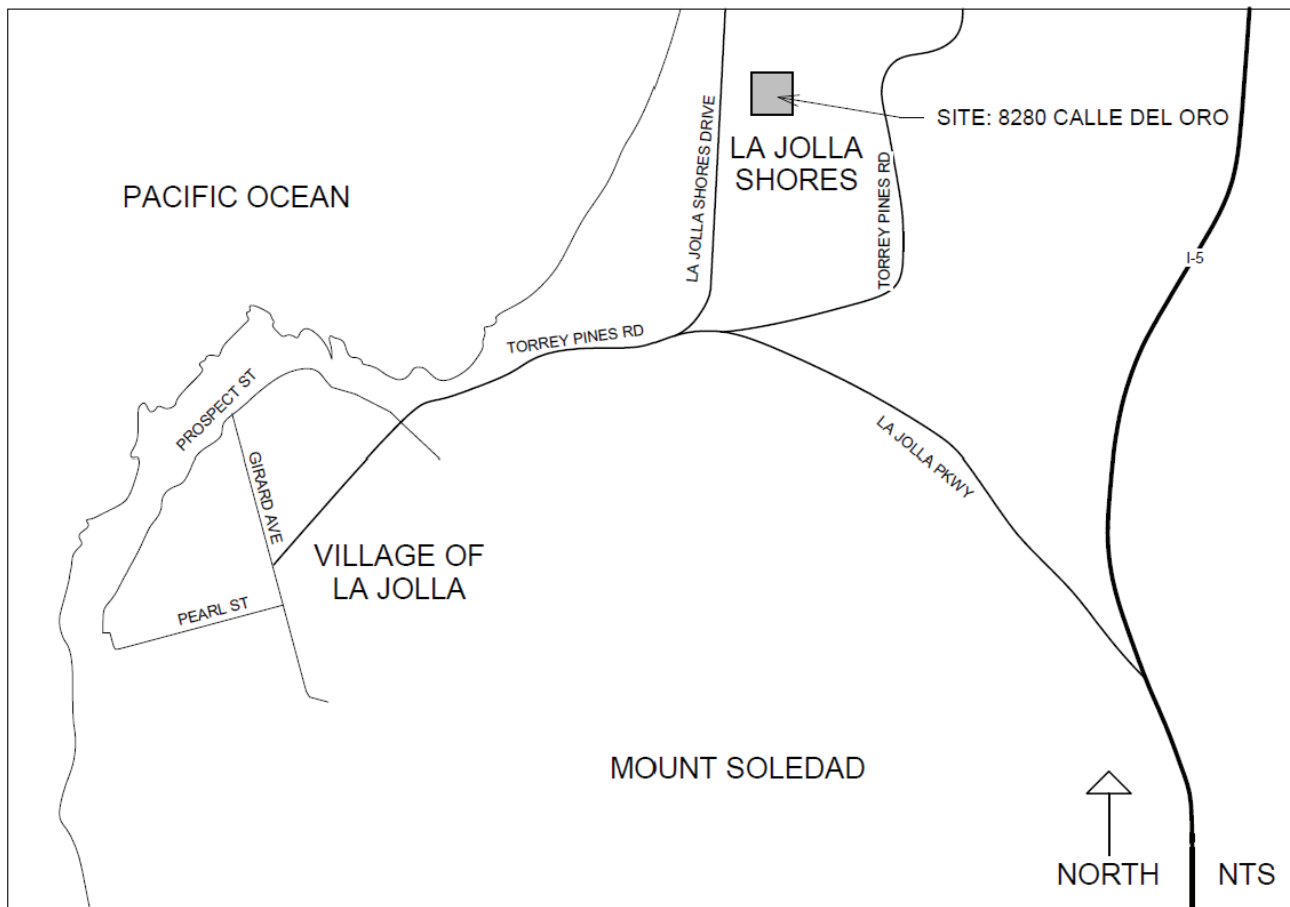
The planned development consists of demolishing the existing residential structures and improvements to subdivide the existing lot into six (6) single-family residential lots. There will be a dead-end cul-de-sac to access all the lots, wet and dry utilities.

Runoff from new all permeable surfaces will be captured by pipes and concrete channels that will convey all runoff to a treatment facility and then discharge flows at a controlled rate to match pre -development peak flows.

All flows generated by the proposed development will discharge onto the same existing discharge points and patterns.

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PROJECT VICINITY MAP

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4. Methodology

RATIONAL METHOD

Watersheds Less than 0.5 Square Mile

Method of Computing Runoff

Use the Rational Formula $Q = CIA$ where:

Q: is the peak rate of flow in cubic feet per second.

C: is a runoff coefficient expressed as that percentage of rainfall

A: is the drainage area in acres tributary to design point.

I: is the average rainfall intensity in inches per hour for storm duration equal to the time of concentration (Tc) of the contributing drainage area.

(1) Runoff Coefficient, C

Appendix A.1.2, Table A-1 list the Runoff Coefficient based on land use and are typical for urban areas. Select an appropriate coefficient for each type of land use from Table A-1, Appendix A.1.2.

The composite runoff coefficient, C, reflects the runoff potential of the drainage area. The range of runoff coefficients varies from 0.35 to 0.95, with higher values corresponding to greater runoff potential. The composite runoff coefficient is the weighted average of all of the land uses within the drainage area.

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Project Drainage Effective C-Factor - Pre-Development						
Basin ID	Total Area (ac)	Pervious Area Soil Type D (sq-ft)	Impervious Area - Soil Type D (sq-ft)	% Impervious	% Pervious	Weighted Runoff Coef C:
A.1	0.150	6534	0	0%	100%	0.35
A.2	4.000	155390	18850	11%	89%	0.41
B.1	0.280	12197	0	0%	100%	0.35
Total	4.43	174121	18850			
Runoff Coefficient Table						
Soil Type		D (Assumed)				
Impervious		0.9				
Pervious (LS/Perm Pavers)		0.35				
Project Drainage Effective C-Factor - Post-Development						
Basin ID	Total Area (ac)	Pervious Area Soil Type D (sq-ft)	Impervious Area - Soil Type D (sq-ft)	% Impervious	% Pervious	Weighted Runoff Coef C:
A.1	0.050	0	2178	100%	0%	0.90
A.2	2.490	42867	65220	60%	40%	0.68
B.1	0.090	920	3000	77%	23%	0.77
B.2	1.780	32715	44822	58%	42%	0.67
C.1	0.028	1224	0	0%	100%	0.35
Total	4.438	77726	115220			
Runoff Coefficient Table						
Soil Type		D				
Impervious		0.9				
Pervious (LS/Perm Pavers)		0.35				

(2) Rainfall Intensity, I

Rainfall intensity can be determined with the Intensity - duration - frequency Design chart (Figure A-1) on Appendix A.1.3 of "City of San Diego *Drainage Design Manual, Jan. 2017 edition*".

(3) Time of Concentration, T_c

The time of concentration is the time required for runoff to flow from the most remote part of the watershed to the outlet point under consideration.

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In addition to the above Ration Method assumptions, the conservative assumption that all runoff coefficients utilized for this report are based on type "D" soils. (WEB soil Survey Maps identified the site with Types C & A)

The City of San Diego Rational Method program within CivilD was utilized in calculating runoff for all basins smaller than 0.5 square miles in size.

5. Summary

Upon performing hydrologic analysis of the project site in both the proposed developed and existing condition, the following results were produced:

In existing conditions, the hydrologic model included the analysis of the project site at two (2) points of discharge. Output data from the hydrologic analysis model of the project site in the existing condition indicates that the 100-year peak runoff flow of 6.98 cfs is generated by the project site. The total area of the existing conditions contributing storm water runoff is 4.43 acres.

The output data, from the hydrologic analysis model of the proposed project, indicates that the confluence 100-year peak flow is equal to 11.76 cfs. The total area of the proposed project site in the post-development hydrologic basins is 4.44 acres.

6. Conclusions

The proposed storm drain system was designed in accordance with the guidelines set by the City of San Diego. During the design of the proposed drainage systems precautions were taken to limit adverse downstream affects and to maintain existing drainage characteristics wherever possible.

Table 1 – Summary of unmitigated conditions

	C (effective)	Tc Min	I In/hr	A (ac)	Q cfs (100-yr)
Pre-Development					
A.1	0.35	5.00	4.39	0.15	0.23
A.2	0.41	7.47	3.88	4.00	6.37
B.1	0.35	5.00	3.88	0.28	0.38
Post-Development					
A.1	0.90	5.00	4.39	0.05	0.20
A.2	0.68	6.45	3.97	2.49	6.72
B.1	0.77	5.09	4.36	0.09	0.14
B.2	0.67	6.17	4.04	1.78	4.82
C.1	0.35	6.75	3.90	0.028	0.04

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Table 2 – Summary of Peak flows

NODE # PRE/POST	Area (ac)			100-Yr peak Flows (cfs)			
	Existing	Developed	Diff	Existing	Developed Unmitigated	Developed Mitigated*	Diff
30&50 Pre / 55 Post	4.43	4.44	0.01	6.98	11.76	6.58	-0.4

* The proposed bio-planterS will detain and release post peak flows at a predevelopment rates.
A summary of the facts and findings associated with this project and the measures addressed by this report is as follows:

- The project will not significantly alter drainage patterns on the site.
- The ultimate discharge points will not be changed.
- Graded areas and slopes will be landscaped to reduce or eliminate sediment discharge
- Post development flows will not exceed predevelopment flows.

7. References

"City of San Diego Drainage Design Manual, Jan. 2017 edition"

"California Regional Water Quality Control Board Order No. 2001-07," California Regional Water Control Board, San Diego Region (SDRWQCB).

"Low Impact Development Handbook, Storm Water Management Strategies", County of San Diego, 2008 .

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APPENDIX 1
Hydrology Calculations
& Basin Map

EXISTING CONDITIONS

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San Diego County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software, (c)1991-2007 Version 6.5

Rational method hydrology program based on
San Diego County Flood Control Division 1985 hydrology manual
Rational Hydrology Study Date: 02/18/23

***** Hydrology Study Control Information *****

Program License Serial Number 6499

Rational hydrology study storm event year is 100.0
English (in-lb) input data Units used
English (in) rainfall data used

Standard intensity of Appendix I-B used for year and
Elevation 0 - 1500 feet
Factor (to multiply * intensity) = 1.000
Only used if inside City of San Diego
San Diego hydrology manual 'C' values used
Runoff coefficients by rational method

+++++
Process from Point/Station 10.000 to Point/Station 20.000
**** INITIAL AREA EVALUATION ****

User specified 'C' value of 0.350 given for subarea
Initial subarea flow distance = 100.000(Ft.)
Highest elevation = 143.200(Ft.)
Lowest elevation = 124.500(Ft.)
Elevation difference = 18.700(Ft.)
Time of concentration calculated by the urban
areas overland flow method (App X-C) = 5.09 min.
 $TC = [1.8 * (1.1 - C) * distance(Ft.)^{.5}] / (\% slope^{(1/3)})]$
 $TC = [1.8 * (1.1 - 0.3500) * (100.000^{.5}) / (18.700^{(1/3)})] = 5.09$
Rainfall intensity (I) = 4.359(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.350
Subarea runoff = 0.229(CFS)
Total initial stream area = 0.150(Ac.)

+++++
Process from Point/Station 20.000 to Point/Station 30.000

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**** IMPROVED CHANNEL TRAVEL TIME ****

Upstream point elevation = 124.500 (Ft.)
Downstream point elevation = 65.300 (Ft.)
Channel length thru subarea = 670.000 (Ft.)
Channel base width = 2.000 (Ft.)
Slope or 'Z' of left channel bank = 3.000
Slope or 'Z' of right channel bank = 3.000
Estimated mean flow rate at midpoint of channel = 3.280 (CFS)
Manning's 'N' = 0.020
Maximum depth of channel = 0.750 (Ft.)
Flow(q) thru subarea = 3.280 (CFS)
Depth of flow = 0.197 (Ft.), Average velocity = 6.432 (Ft/s)
Channel flow top width = 3.181 (Ft.)
Flow Velocity = 6.43 (Ft/s)
Travel time = 1.74 min.
Time of concentration = 6.82 min.
Critical depth = 0.363 (Ft.)
Adding area flow to channel
User specified 'C' value of 0.410 given for subarea
Rainfall intensity = 3.884 (In/Hr) for a 100.0 year storm
Runoff coefficient used for sub-area, Rational method, $Q=KCIA$, $C = 0.410$
Subarea runoff = 6.370 (CFS) for 4.000 (Ac.)
Total runoff = 6.598 (CFS) Total area = 4.15 (Ac.)

+++++
Process from Point/Station 30.000 to Point/Station 30.000
**** CONFLUENCE OF MAIN STREAMS ****

The following data inside Main Stream is listed:

In Main Stream number: 1
Stream flow area = 4.150 (Ac.)
Runoff from this stream = 6.598 (CFS)
Time of concentration = 6.82 min.
Rainfall intensity = 3.884 (In/Hr)
Summary of stream data:

Stream No.	Flow rate (CFS)	TC (min)	Rainfall Intensity (In/Hr)
1	6.598	6.82	3.884

$Q_{max}(1) = 1.000 * 1.000 * 6.598) + = 6.598$

Total of 1 main streams to confluence:

Flow rates before confluence point:
6.598

Maximum flow rates at confluence using above data:
6.598

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Area of streams before confluence:
4.150

Results of confluence:

Total flow rate = 6.598 (CFS)

Time of concentration = 6.822 min.

Effective stream area after confluence = 4.150 (Ac.)

+++++
Process from Point/Station 40.000 to Point/Station 50.000
**** SUBAREA FLOW ADDITION ****

User specified 'C' value of 0.350 given for subarea

Time of concentration = 6.82 min.

Rainfall intensity = 3.884 (In/Hr) for a 100.0 year storm

Runoff coefficient used for sub-area, Rational method, $Q=KCIA$, $C = 0.350$

Subarea runoff = 0.381 (CFS) for 0.280 (Ac.)

Total runoff = 6.979 (CFS) Total area = 4.43 (Ac.)

End of computations, total study area = 4.430 (Ac.)

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PROPOSED CONDITIONS

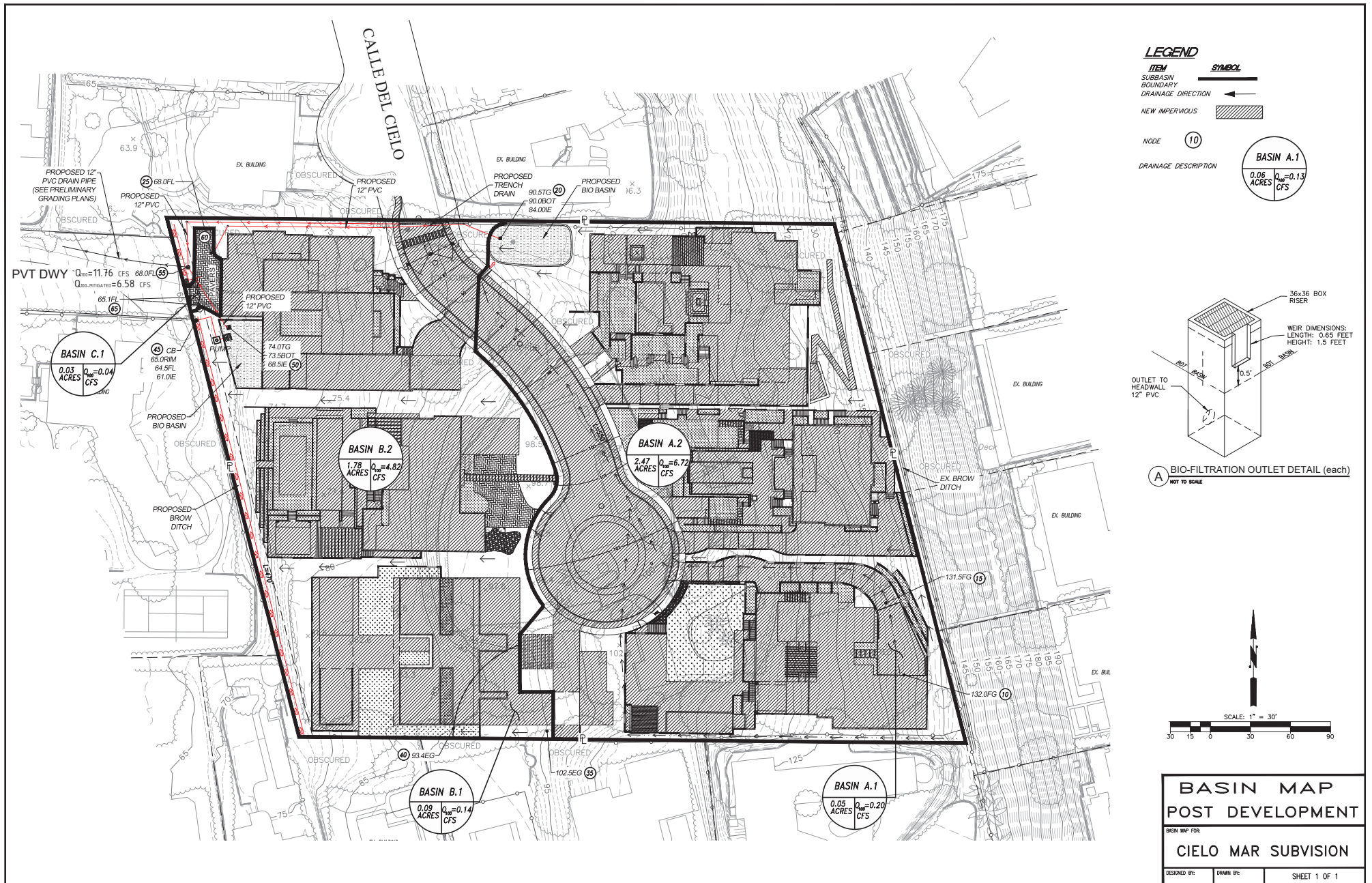
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San Diego County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software, (c)1991-2007 Version 6.5

Rational method hydrology program based on
San Diego County Flood Control Division 1985 hydrology manual
Rational Hydrology Study Date: 08/12/24

***** Hydrology Study Control Information *****

Program License Serial Number 6499

Rational hydrology study storm event year is 100.0
English (in-lb) input data Units used
English (in) rainfall data used

Standard intensity of Appendix I-B used for year and
Elevation 0 - 1500 feet
Factor (to multiply * intensity) = 1.000
Only used if inside City of San Diego
San Diego hydrology manual 'C' values used
Runoff coefficients by rational method

+++++
Process from Point/Station 10.000 to Point/Station 15.000
**** INITIAL AREA EVALUATION ****

User specified 'C' value of 0.900 given for subarea
Initial subarea flow distance = 45.000 (Ft.)
Highest elevation = 132.000 (Ft.)
Lowest elevation = 131.500 (Ft.)
Elevation difference = 0.500 (Ft.)
Time of concentration calculated by the urban
areas overland flow method (App X-C) = 2.33 min.
 $TC = [1.8 * (1.1 - C) * distance(Ft.)^{.5} / (% slope^{(1/3)})]$
 $TC = [1.8 * (1.1 - 0.9000) * (45.000^{.5}) / (1.111^{(1/3)})] = 2.33$
Setting time of concentration to 5 minutes
Rainfall intensity (I) = 4.389 (In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.900
Subarea runoff = 0.198 (CFS)
Total initial stream area = 0.050 (Ac.)

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+++++
Process from Point/Station 15.000 to Point/Station 20.000
**** IMPROVED CHANNEL TRAVEL TIME ****

Upstream point elevation = 131.500 (Ft.)
Downstream point elevation = 90.000 (Ft.)
Channel length thru subarea = 355.000 (Ft.)
Channel base width = 30.000 (Ft.)
Slope or 'Z' of left channel bank = 0.000
Slope or 'Z' of right channel bank = 0.000
Estimated mean flow rate at midpoint of channel = 5.115 (CFS)
Manning's 'N' = 0.015
Maximum depth of channel = 0.400 (Ft.)
Flow(q) thru subarea = 5.115 (CFS)
Depth of flow = 0.042 (Ft.), Average velocity = 4.075 (Ft/s)
Channel flow top width = 30.000 (Ft.)
Flow Velocity = 4.07 (Ft/s)
Travel time = 1.45 min.
Time of concentration = 6.45 min.
Critical depth = 0.097 (Ft.)
Adding area flow to channel
User specified 'C' value of 0.680 given for subarea
Rainfall intensity = 3.968 (In/Hr) for a 100.0 year storm
Runoff coefficient used for sub-area, Rational method, $Q=KCIA$, $C = 0.680$
Subarea runoff = 6.718 (CFS) for 2.490 (Ac.)
Total runoff = 6.915 (CFS) Total area = 2.54 (Ac.)

+++++
Process from Point/Station 20.000 to Point/Station 25.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****

Upstream point/station elevation = 84.000 (Ft.)
Downstream point/station elevation = 68.000 (Ft.)
Pipe length = 230.00 (Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 6.915 (CFS)
Given pipe size = 12.00 (In.)
Calculated individual pipe flow = 6.915 (CFS)
Normal flow depth in pipe = 7.65 (In.)
Flow top width inside pipe = 11.54 (In.)
Critical depth could not be calculated.
Pipe flow velocity = 13.08 (Ft/s)
Travel time through pipe = 0.29 min.
Time of concentration (TC) = 6.75 min.

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+++++
Process from Point/Station 25.000 to Point/Station 25.000
**** CONFLUENCE OF MINOR STREAMS ****

Along Main Stream number: 1 in normal stream number 1
Stream flow area = 2.540 (Ac.)
Runoff from this stream = 6.915 (CFS)
Time of concentration = 6.75 min.
Rainfall intensity = 3.901 (In/Hr)
Summary of stream data:

Stream No.	Flow rate (CFS)	TC (min)	Rainfall Intensity (In/Hr)
1	6.915	6.75	3.901
Qmax(1) =			
	1.000 *	1.000 *	6.915) + = 6.915

Total of 1 streams to confluence:
Flow rates before confluence point:
6.915
Maximum flow rates at confluence using above data:
6.915
Area of streams before confluence:
2.540
Results of confluence:
Total flow rate = 6.915 (CFS)
Time of concentration = 6.745 min.
Effective stream area after confluence = 2.540 (Ac.)

+++++
Process from Point/Station 35.000 to Point/Station 40.000
**** INITIAL AREA EVALUATION ****

User specified 'C' value of 0.350 given for subarea
Initial subarea flow distance = 75.000 (Ft.)
Highest elevation = 102.500 (Ft.)
Lowest elevation = 93.400 (Ft.)
Elevation difference = 9.100 (Ft.)
Time of concentration calculated by the urban
areas overland flow method (App X-C) = 5.09 min.
 $TC = [1.8 * (1.1 - C) * distance(Ft.)^{.5} / (\% \text{ slope}^{(1/3)})]$
 $TC = [1.8 * (1.1 - 0.3500) * (75.000^{.5}) / (12.133^{(1/3)})] = 5.09$
Rainfall intensity (I) = 4.358 (In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.350
Subarea runoff = 0.137 (CFS)
Total initial stream area = 0.090 (Ac.)

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+++++
Process from Point/Station 40.000 to Point/Station 45.000
**** IMPROVED CHANNEL TRAVEL TIME ****

Upstream point elevation = 93.400 (Ft.)
Downstream point elevation = 64.500 (Ft.)
Channel length thru subarea = 470.000 (Ft.)
Channel base width = 0.000 (Ft.)
Slope or 'Z' of left channel bank = 1.000
Slope or 'Z' of right channel bank = 1.000
Estimated mean flow rate at midpoint of channel = 1.495 (CFS)
Manning's 'N' = 0.015
Maximum depth of channel = 1.000 (Ft.)
Flow(q) thru subarea = 1.495 (CFS)
Depth of flow = 0.454 (Ft.), Average velocity = 7.255 (Ft/s)
Channel flow top width = 0.908 (Ft.)
Flow Velocity = 7.25 (Ft/s)
Travel time = 1.08 min.
Time of concentration = 6.17 min.
Critical depth = 0.672 (Ft.)
Adding area flow to channel
User specified 'C' value of 0.670 given for subarea
Rainfall intensity = 4.037 (In/Hr) for a 100.0 year storm
Runoff coefficient used for sub-area, Rational method, $Q=KCIA$, $C = 0.670$
Subarea runoff = 4.815 (CFS) for 1.780 (Ac.)
Total runoff = 4.952 (CFS) Total area = 1.87 (Ac.)

+++++
Process from Point/Station 50.000 to Point/Station 55.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****

Upstream point/station elevation = 68.500 (Ft.)
Downstream point/station elevation = 68.000 (Ft.)
Pipe length = 14.50 (Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 4.952 (CFS)
Given pipe size = 12.00 (In.)
Calculated individual pipe flow = 4.952 (CFS)
Normal flow depth in pipe = 7.75 (In.)
Flow top width inside pipe = 11.48 (In.)
Critical Depth = 10.97 (In.)
Pipe flow velocity = 9.24 (Ft/s)
Travel time through pipe = 0.03 min.
Time of concentration (TC) = 6.19 min.

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+++++
Process from Point/Station 50.000 to Point/Station 50.000
**** CONFLUENCE OF MINOR STREAMS ****

Along Main Stream number: 1 in normal stream number 2
Stream flow area = 1.870 (Ac.)
Runoff from this stream = 4.952 (CFS)
Time of concentration = 6.19 min.
Rainfall intensity = 4.030 (In/Hr)
Summary of stream data:

Stream No.	Flow rate (CFS)	TC (min)	Rainfall Intensity (In/Hr)
------------	-----------------	----------	----------------------------

1	6.915	6.75	3.901
2	4.952	6.19	4.030

Qmax(1) =
1.000 * 1.000 * 6.915) +
0.968 * 1.000 * 4.952) += 11.708

Qmax(2) =
1.000 * 0.918 * 6.915) +
1.000 * 1.000 * 4.952) + = 11.302

Total of 2 streams to confluence:
Flow rates before confluence point:
6.915 4.952

Maximum flow rates at confluence using above data:
11.708 11.302

Area of streams before confluence:
2.540 1.870

Results of confluence:
Total flow rate = 11.708 (CFS)
Time of concentration = 6.745 min.
Effective stream area after confluence = 4.410 (Ac.)

+++++
Process from Point/Station 60.000 to Point/Station 65.000
**** SUBAREA FLOW ADDITION ****

User specified 'C' value of 0.350 given for subarea
Time of concentration = 6.75 min.
Rainfall intensity = 3.901 (In/Hr) for a 100.0 year storm
Runoff coefficient used for sub-area, Rational method, $Q=KCIA$, $C = 0.350$
Subarea runoff = 0.038 (CFS) for 0.028 (Ac.)
Total runoff = 11.756 (CFS) Total area = 4.44 (Ac.)
End of computations, total study area = 4.438 (Ac.)

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APPENDIX 2

Unit Hydrograph and Modified-Puls Detention Routing Planter P4

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FLOOD HYDROGRAPH ROUTING PROGRAM

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2018
Study date: 06/12/24

Program License Serial Number 6499

***** HYDROGRAPH INFORMATION *****

From study/file name: cielohyd.rte
*****HYDROGRAPH DATA*****
Number of intervals = 364
Time interval = 1.0 (Min.)
Maximum/Peak flow rate = 11.760 (CFS)
Total volume = 0.507 (Ac.Ft)
Status of hydrographs being held in storage
Stream 1 Stream 2 Stream 3 Stream 4 Stream 5
Peak (CFS) 0.000 0.000 0.000 0.000 0.000
Vol (Ac.Ft) 0.000 0.000 0.000 0.000 0.000

+++++
Process from Point/Station 10.000 to Point/Station 10.000
**** RETARDING BASIN ROUTING ****

User entry of depth-outflow-storage data

Total number of inflow hydrograph intervals = 364
Hydrograph time unit = 1.000 (Min.)
Initial depth in storage basin = 0.00 (Ft.)

Initial basin depth = 0.00 (Ft.)
Initial basin storage = 0.00 (Ac.Ft)
Initial basin outflow = 0.00 (CFS)

Depth vs. Storage and Depth vs. Discharge data:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-O*dt/2) (Ac.Ft)	(S+O*dt/2) (Ac.Ft)
0.000	0.000	0.000	0.000	0.000

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0.100	0.008	0.127	0.008	0.008
0.200	0.017	0.360	0.017	0.017
0.300	0.025	0.662	0.025	0.025
0.400	0.033	1.020	0.032	0.034
0.500	0.041	1.425	0.040	0.042
0.600	0.050	1.873	0.049	0.051
0.700	0.058	2.360	0.056	0.060
0.800	0.066	2.884	0.064	0.068
0.900	0.074	3.441	0.072	0.076
1.000	0.083	4.030	0.080	0.086
1.100	0.091	4.649	0.088	0.094
1.200	0.099	5.298	0.095	0.103
1.300	0.107	5.973	0.103	0.111
1.400	0.116	6.676	0.111	0.121

Hydrograph Detention Basin Routing

Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)						Depth (Ft.)
				.0	2.9	5.88	8.82	11.76	
0.017	0.05	0.00	0.000	O					0.00
0.033	0.11	0.00	0.000	O					0.00
0.050	0.16	0.01	0.000	O					0.00
0.067	0.22	0.01	0.001	O					0.01
0.083	0.27	0.01	0.001	O					0.01
0.100	0.32	0.02	0.001	O					0.02
0.117	0.38	0.03	0.002	OI					0.02
0.133	0.38	0.04	0.002	OI					0.03
0.150	0.38	0.04	0.003	OI					0.03
0.167	0.38	0.05	0.003	OI					0.04
0.183	0.38	0.06	0.004	OI					0.04
0.200	0.38	0.06	0.004	OI					0.05
0.217	0.38	0.07	0.004	OI					0.06
0.233	0.38	0.08	0.005	OI					0.06
0.250	0.38	0.08	0.005	OI					0.07
0.267	0.39	0.09	0.006	OI					0.07
0.283	0.39	0.10	0.006	OI					0.08
0.300	0.39	0.10	0.007	OI					0.08
0.317	0.39	0.11	0.007	OI					0.09
0.333	0.39	0.12	0.007	OI					0.09
0.350	0.39	0.12	0.008	OI					0.10
0.367	0.39	0.13	0.008	OI					0.10
0.383	0.40	0.14	0.008	OI					0.10
0.400	0.40	0.15	0.009	OI					0.11
0.417	0.40	0.16	0.009	OI					0.11
0.433	0.40	0.16	0.009	OI					0.12
0.450	0.40	0.17	0.010	OI					0.12
0.467	0.40	0.18	0.010	OI					0.12
0.483	0.40	0.19	0.010	OI					0.13
0.500	0.40	0.19	0.011	OI					0.13
0.517	0.40	0.20	0.011	OI					0.13

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0.533	0.41	0.21	0.011	OI					0.14
0.550	0.41	0.22	0.011	OI					0.14
0.567	0.41	0.22	0.012	OI					0.14
0.583	0.41	0.23	0.012	OI					0.14
0.600	0.41	0.24	0.012	OI					0.15
0.617	0.41	0.24	0.012	OI					0.15
0.633	0.41	0.25	0.013	OI					0.15
0.650	0.41	0.25	0.013	OI					0.15
0.667	0.41	0.26	0.013	OI					0.16
0.683	0.42	0.26	0.013	OI					0.16
0.700	0.42	0.27	0.014	OI					0.16
0.717	0.42	0.28	0.014	OI					0.16
0.733	0.42	0.28	0.014	OI					0.17
0.750	0.42	0.29	0.014	OI					0.17
0.767	0.42	0.29	0.014	OI					0.17
0.783	0.43	0.29	0.014	OI					0.17
0.800	0.43	0.30	0.015	OI					0.17
0.817	0.43	0.30	0.015	OI					0.18
0.833	0.43	0.31	0.015	OI					0.18
0.850	0.43	0.31	0.015	OI					0.18
0.867	0.43	0.32	0.015	OI					0.18
0.883	0.43	0.32	0.015	OI					0.18
0.900	0.43	0.32	0.016	OI					0.18
0.917	0.44	0.33	0.016	OI					0.19
0.933	0.44	0.33	0.016	OI					0.19
0.950	0.44	0.34	0.016	OI					0.19
0.967	0.44	0.34	0.016	OI					0.19
0.983	0.44	0.34	0.016	OI					0.19
1.000	0.44	0.35	0.016	OI					0.19
1.017	0.45	0.35	0.017	OI					0.20
1.033	0.45	0.35	0.017	OI					0.20
1.050	0.45	0.36	0.017	OI					0.20
1.067	0.45	0.36	0.017	OI					0.20
1.083	0.45	0.37	0.017	OI					0.20
1.100	0.45	0.37	0.017	IO					0.20
1.117	0.45	0.37	0.017	IO					0.20
1.133	0.46	0.38	0.017	IO					0.21
1.150	0.46	0.38	0.018	IO					0.21
1.167	0.46	0.39	0.018	IO					0.21
1.183	0.46	0.39	0.018	IO					0.21
1.200	0.46	0.39	0.018	IO					0.21
1.217	0.47	0.40	0.018	IO					0.21
1.233	0.47	0.40	0.018	IO					0.21
1.250	0.47	0.40	0.018	IO					0.21
1.267	0.47	0.41	0.018	IO					0.22
1.283	0.47	0.41	0.018	IO					0.22
1.300	0.48	0.41	0.018	IO					0.22
1.317	0.48	0.42	0.019	IO					0.22
1.333	0.48	0.42	0.019	IO					0.22
1.350	0.48	0.42	0.019	IO					0.22
1.367	0.48	0.43	0.019	IO					0.22
1.383	0.48	0.43	0.019	IO					0.22
1.400	0.48	0.43	0.019	IO					0.22

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1.417	0.49	0.43	0.019					0.22
1.433	0.49	0.44	0.019					0.23
1.450	0.49	0.44	0.019					0.23
1.467	0.49	0.44	0.019					0.23
1.483	0.50	0.45	0.019					0.23
1.500	0.50	0.45	0.019					0.23
1.517	0.50	0.45	0.019					0.23
1.533	0.50	0.45	0.019					0.23
1.550	0.51	0.46	0.020					0.23
1.567	0.51	0.46	0.020					0.23
1.583	0.51	0.46	0.020					0.23
1.600	0.51	0.46	0.020					0.23
1.617	0.51	0.47	0.020					0.24
1.633	0.51	0.47	0.020					0.24
1.650	0.52	0.47	0.020					0.24
1.667	0.52	0.47	0.020					0.24
1.683	0.52	0.48	0.020					0.24
1.700	0.53	0.48	0.020					0.24
1.717	0.53	0.48	0.020					0.24
1.733	0.53	0.48	0.020					0.24
1.750	0.54	0.49	0.020					0.24
1.767	0.54	0.49	0.020					0.24
1.783	0.54	0.49	0.020					0.24
1.800	0.54	0.49	0.021					0.24
1.817	0.54	0.50	0.021					0.24
1.833	0.54	0.50	0.021					0.25
1.850	0.55	0.50	0.021					0.25
1.867	0.55	0.50	0.021					0.25
1.883	0.55	0.50	0.021					0.25
1.900	0.55	0.51	0.021					0.25
1.917	0.56	0.51	0.021					0.25
1.933	0.56	0.51	0.021					0.25
1.950	0.57	0.51	0.021					0.25
1.967	0.57	0.52	0.021					0.25
1.983	0.57	0.52	0.021					0.25
2.000	0.58	0.52	0.021					0.25
2.017	0.58	0.53	0.021					0.25
2.033	0.58	0.53	0.021					0.26
2.050	0.58	0.53	0.022					0.26
2.067	0.58	0.53	0.022					0.26
2.083	0.59	0.54	0.022					0.26
2.100	0.59	0.54	0.022					0.26
2.117	0.59	0.54	0.022					0.26
2.133	0.60	0.54	0.022					0.26
2.150	0.60	0.55	0.022					0.26
2.167	0.61	0.55	0.022					0.26
2.183	0.61	0.55	0.022					0.26
2.200	0.62	0.56	0.022					0.26
2.217	0.62	0.56	0.022					0.27
2.233	0.62	0.56	0.022					0.27
2.250	0.62	0.57	0.022					0.27
2.267	0.63	0.57	0.023					0.27
2.283	0.63	0.57	0.023					0.27

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RANCHO COASTAL ENGINEERING

Single Source Development Consultant

2.300	0.63	0.57	0.023	IO					0.27
2.317	0.63	0.58	0.023	IO					0.27
2.333	0.64	0.58	0.023	IO					0.27
2.350	0.64	0.58	0.023	IO					0.27
2.367	0.65	0.59	0.023	IO					0.27
2.383	0.65	0.59	0.023	IO					0.28
2.400	0.66	0.59	0.023	IO					0.28
2.417	0.67	0.60	0.023	IO					0.28
2.433	0.67	0.60	0.023	IO					0.28
2.450	0.68	0.60	0.023	IO					0.28
2.467	0.68	0.61	0.024	IO					0.28
2.483	0.68	0.61	0.024	IO					0.28
2.500	0.69	0.62	0.024	IO					0.28
2.517	0.69	0.62	0.024	IO					0.29
2.533	0.69	0.62	0.024	IO					0.29
2.550	0.70	0.63	0.024	IO					0.29
2.567	0.70	0.63	0.024	IO					0.29
2.583	0.71	0.63	0.024	IO					0.29
2.600	0.71	0.64	0.024	IO					0.29
2.617	0.72	0.64	0.024	IO					0.29
2.633	0.73	0.65	0.025	IO					0.29
2.650	0.73	0.65	0.025	IO					0.30
2.667	0.74	0.65	0.025	IOI					0.30
2.683	0.75	0.66	0.025	IOI					0.30
2.700	0.75	0.66	0.025	IOI					0.30
2.717	0.76	0.67	0.025	IOI					0.30
2.733	0.76	0.67	0.025	IOI					0.30
2.750	0.77	0.68	0.025	IOI					0.31
2.767	0.77	0.69	0.026	IOI					0.31
2.783	0.77	0.69	0.026	IOI					0.31
2.800	0.78	0.70	0.026	IOI					0.31
2.817	0.79	0.70	0.026	IOI					0.31
2.833	0.80	0.71	0.026	IOI					0.31
2.850	0.81	0.71	0.026	IOI					0.31
2.867	0.82	0.72	0.026	IOI					0.32
2.883	0.83	0.72	0.026	IOI					0.32
2.900	0.84	0.73	0.027	IOI					0.32
2.917	0.85	0.74	0.027	IO					0.32
2.933	0.85	0.74	0.027	IO					0.32
2.950	0.86	0.75	0.027	IO					0.32
2.967	0.86	0.76	0.027	IO					0.33
2.983	0.87	0.76	0.027	IO					0.33
3.000	0.87	0.77	0.027	IO					0.33
3.017	0.88	0.78	0.028	IO					0.33
3.033	0.89	0.78	0.028	IO					0.33
3.050	0.90	0.79	0.028	IO					0.34
3.067	0.91	0.80	0.028	IO					0.34
3.083	0.93	0.80	0.028	IO					0.34
3.100	0.94	0.81	0.028	IO					0.34
3.117	0.95	0.82	0.029	IO					0.34
3.133	0.97	0.83	0.029	IO					0.35
3.150	0.98	0.84	0.029	IO					0.35
3.167	0.99	0.85	0.029	IO					0.35

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RANCHO COASTAL ENGINEERING

Single Source Development Consultant

3.183	1.00	0.86	0.029	O					0.35
3.200	1.01	0.86	0.030	O					0.36
3.217	1.02	0.87	0.030	O					0.36
3.233	1.03	0.88	0.030	O					0.36
3.250	1.03	0.89	0.030	O					0.36
3.267	1.04	0.90	0.030	O					0.37
3.283	1.06	0.91	0.031	O					0.37
3.300	1.09	0.92	0.031	O					0.37
3.317	1.11	0.93	0.031	OI					0.37
3.333	1.13	0.94	0.031	OI					0.38
3.350	1.15	0.95	0.031	OI					0.38
3.367	1.17	0.96	0.032	OI					0.38
3.383	1.19	0.98	0.032	OI					0.39
3.400	1.21	0.99	0.032	OI					0.39
3.417	1.22	1.00	0.033	OI					0.40
3.433	1.24	1.02	0.033	OI					0.40
3.450	1.25	1.03	0.033	OI					0.40
3.467	1.27	1.05	0.034	OI					0.41
3.483	1.28	1.06	0.034	OI					0.41
3.500	1.30	1.08	0.034	OI					0.41
3.517	1.34	1.09	0.034	OI					0.42
3.533	1.38	1.11	0.035	O					0.42
3.550	1.42	1.13	0.035	O					0.43
3.567	1.46	1.15	0.036	O					0.43
3.583	1.50	1.17	0.036	OI					0.44
3.600	1.54	1.20	0.037	OI					0.44
3.617	1.58	1.22	0.037	OI					0.45
3.633	1.61	1.25	0.037	OI					0.46
3.650	1.65	1.27	0.038	OI					0.46
3.667	1.68	1.30	0.039	OI					0.47
3.683	1.71	1.33	0.039	OI					0.48
3.700	1.74	1.35	0.040	OI					0.48
3.717	1.77	1.38	0.040	OI					0.49
3.733	1.80	1.41	0.041	OI					0.50
3.750	1.92	1.44	0.041	O I					0.50
3.767	2.04	1.47	0.042	OI					0.51
3.783	2.16	1.52	0.043	OI					0.52
3.800	2.29	1.56	0.044	O I					0.53
3.817	2.41	1.61	0.045	O I					0.54
3.833	2.53	1.67	0.046	O I					0.56
3.850	2.65	1.73	0.047	O I					0.57
3.867	2.80	1.80	0.048	O I					0.58
3.883	2.96	1.87	0.050	O I					0.60
3.900	3.11	1.96	0.051	O I					0.62
3.917	3.27	2.06	0.053	O I					0.64
3.933	3.42	2.16	0.055	O I					0.66
3.950	3.58	2.27	0.057	O I					0.68
3.967	3.73	2.38	0.058	O I					0.70
3.983	4.88	2.55	0.061	O I		I			0.74
4.000	6.02	2.80	0.065	O I		I			0.78
4.017	7.17	3.14	0.070	O		I			0.85
4.033	8.32	3.56	0.076	O		I			0.92
4.050	9.47	4.02	0.083	O		I			1.00

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Single Source Development Consultant

4.067	10.61	4.62	0.091			O			I		1.10
4.083	11.76	5.32	0.099			O			I		1.20
4.100	10.38	5.95	0.107			O			I		1.30
4.117	9.01	6.33	0.112			O			I		1.35
4.133	7.63	6.54	0.114			O	I				1.38
4.150	6.25	6.58	0.115			O					1.39
4.167	4.88	6.47	0.113			I	O				1.37
4.183	3.50	6.24	0.110		I		O				1.34
4.200	2.12	5.89	0.106	I			O				1.29
4.217	2.02	5.47	0.101	I		O					1.22
4.233	1.92	5.09	0.096	I		O					1.17
4.250	1.82	4.75	0.092	I		O					1.12
4.267	1.72	4.44	0.088	I		O					1.07
4.283	1.62	4.16	0.085	I		O					1.02
4.300	1.52	3.92	0.081	I		O					0.98
4.317	1.42	3.71	0.078	I		O					0.95
4.333	1.38	3.51	0.075	I		O					0.91
4.350	1.33	3.32	0.072	I		O					0.88
4.367	1.29	3.13	0.070	I		O					0.84
4.383	1.24	2.96	0.067	I		O					0.81
4.400	1.20	2.81	0.065	I	O						0.79
4.417	1.16	2.67	0.063	I	O						0.76
4.433	1.11	2.53	0.061	I	O						0.73
4.450	1.09	2.41	0.059	I	O						0.71
4.467	1.06	2.30	0.057	I	O						0.69
4.483	1.03	2.20	0.055	I	O						0.67
4.500	1.01	2.10	0.054	I	O						0.65
4.517	0.98	2.01	0.052	I	O						0.63
4.533	0.96	1.93	0.051	I	O						0.61
4.550	0.93	1.86	0.050	I	O						0.60
4.567	0.91	1.79	0.048	I	O						0.58
4.583	0.90	1.73	0.047	I	O						0.57
4.600	0.88	1.68	0.046	I	O						0.56
4.617	0.86	1.62	0.045	I	O						0.54
4.633	0.84	1.57	0.044	I	O						0.53
4.650	0.83	1.52	0.043	I	O						0.52
4.667	0.81	1.48	0.042	I	O						0.51
4.683	0.80	1.43	0.041	IO							0.50
4.700	0.79	1.39	0.040	IO							0.49
4.717	0.77	1.35	0.039	IO							0.48
4.733	0.76	1.31	0.039	IO							0.47
4.750	0.75	1.27	0.038	IO							0.46
4.767	0.74	1.24	0.037	IO							0.45
4.783	0.72	1.20	0.037	IO							0.45
4.800	0.71	1.17	0.036	IO							0.44
4.817	0.70	1.14	0.035	IO							0.43
4.833	0.69	1.11	0.035	IO							0.42
4.850	0.68	1.08	0.034	IO							0.42
4.867	0.68	1.05	0.034	IO							0.41
4.883	0.67	1.03	0.033	IO							0.40
4.900	0.66	1.01	0.033	IO							0.40
4.917	0.65	0.98	0.032	IO							0.39
4.933	0.64	0.96	0.032	IO							0.38

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RANCHO COASTAL ENGINEERING

Single Source Development Consultant

4.950	0.63	0.94	0.031	IO					0.38
4.967	0.63	0.93	0.031	IO					0.37
4.983	0.62	0.91	0.030	IO					0.37
5.000	0.61	0.89	0.030	IO					0.36
5.017	0.60	0.87	0.030	IO					0.36
5.033	0.60	0.86	0.029	IO					0.35
5.050	0.59	0.84	0.029	IO					0.35
5.067	0.58	0.83	0.029	IO					0.35
5.083	0.58	0.81	0.028	IO					0.34
5.100	0.57	0.80	0.028	IO					0.34
5.117	0.57	0.78	0.028	IO					0.33
5.133	0.56	0.77	0.027	IO					0.33
5.150	0.55	0.76	0.027	IO					0.33
5.167	0.55	0.75	0.027	IO					0.32
5.183	0.54	0.73	0.027	IO					0.32
5.200	0.54	0.72	0.026	IO					0.32
5.217	0.53	0.71	0.026	IO					0.31
5.233	0.53	0.70	0.026	IO					0.31
5.250	0.52	0.69	0.026	IO					0.31
5.267	0.52	0.68	0.025	IO					0.30
5.283	0.51	0.67	0.025	IO					0.30
5.300	0.51	0.66	0.025	IO					0.30
5.317	0.51	0.65	0.025	IO					0.30
5.333	0.50	0.65	0.025	IO					0.29
5.350	0.50	0.64	0.024	IO					0.29
5.367	0.49	0.63	0.024	IO					0.29
5.383	0.49	0.62	0.024	IO					0.29
5.400	0.49	0.62	0.024	IO					0.29
5.417	0.48	0.61	0.024	IO					0.28
5.433	0.48	0.60	0.023	IO					0.28
5.450	0.47	0.60	0.023	IO					0.28
5.467	0.47	0.59	0.023	IO					0.28
5.483	0.47	0.58	0.023	IO					0.27
5.500	0.46	0.58	0.023	IO					0.27
5.517	0.46	0.57	0.023	IO					0.27
5.533	0.46	0.57	0.022	IO					0.27
5.550	0.45	0.56	0.022	IO					0.27
5.567	0.45	0.56	0.022	IO					0.26
5.583	0.45	0.55	0.022	IO					0.26
5.600	0.44	0.54	0.022	IO					0.26
5.617	0.44	0.54	0.022	IO					0.26
5.633	0.44	0.53	0.022	IO					0.26
5.650	0.43	0.53	0.021	IO					0.26
5.667	0.43	0.52	0.021	IO					0.25
5.683	0.43	0.52	0.021	IO					0.25
5.700	0.43	0.51	0.021	IO					0.25
5.717	0.42	0.51	0.021	IO					0.25
5.733	0.42	0.51	0.021	IO					0.25
5.750	0.42	0.50	0.021	IO					0.25
5.767	0.41	0.50	0.021	IO					0.25
5.783	0.41	0.49	0.021	IO					0.24
5.800	0.41	0.49	0.020	IO					0.24
5.817	0.41	0.48	0.020	IO					0.24

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5.833	0.40	0.48	0.020	IO					0.24
5.850	0.40	0.48	0.020	IO					0.24
5.867	0.40	0.47	0.020	IO					0.24
5.883	0.40	0.47	0.020	IO					0.24
5.900	0.40	0.47	0.020	IO					0.23
5.917	0.39	0.46	0.020	IO					0.23
5.933	0.39	0.46	0.020	IO					0.23
5.950	0.39	0.45	0.020	IO					0.23
5.967	0.39	0.45	0.019	IO					0.23
5.983	0.38	0.45	0.019	IO					0.23
6.000	0.38	0.44	0.019	IO					0.23
6.017	0.38	0.44	0.019	IO					0.23
6.033	0.38	0.44	0.019	IO					0.23
6.050	0.38	0.44	0.019	IO					0.22
6.067	0.37	0.43	0.019	IO					0.22
6.083	0.00	0.42	0.019	IO					0.22
6.100	0.00	0.40	0.018	IO					0.21
6.117	0.00	0.38	0.017	IO					0.21
6.133	0.00	0.36	0.017	O					0.20
6.150	0.00	0.35	0.016	O					0.19
6.167	0.00	0.33	0.016	O					0.19
6.183	0.00	0.32	0.016	O					0.18
6.200	0.00	0.31	0.015	O					0.18
6.217	0.00	0.30	0.015	O					0.17
6.233	0.00	0.29	0.014	O					0.17
6.250	0.00	0.28	0.014	O					0.17
6.267	0.00	0.27	0.014	O					0.16
6.283	0.00	0.26	0.013	O					0.16
6.300	0.00	0.25	0.013	O					0.15
6.317	0.00	0.24	0.012	O					0.15
6.333	0.00	0.23	0.012	O					0.15
6.350	0.00	0.23	0.012	O					0.14
6.367	0.00	0.22	0.012	O					0.14
6.383	0.00	0.21	0.011	O					0.14
6.400	0.00	0.20	0.011	O					0.13
6.417	0.00	0.20	0.011	O					0.13
6.433	0.00	0.19	0.010	O					0.13
6.450	0.00	0.18	0.010	O					0.12
6.467	0.00	0.18	0.010	O					0.12
6.483	0.00	0.17	0.010	O					0.12
6.500	0.00	0.16	0.009	O					0.12
6.517	0.00	0.16	0.009	O					0.11
6.533	0.00	0.15	0.009	O					0.11
6.550	0.00	0.15	0.009	O					0.11
6.567	0.00	0.14	0.009	O					0.11
6.583	0.00	0.14	0.008	O					0.10
6.600	0.00	0.13	0.008	O					0.10
6.617	0.00	0.13	0.008	O					0.10
6.633	0.00	0.12	0.008	O					0.10
6.650	0.00	0.12	0.008	O					0.10
6.667	0.00	0.12	0.008	O					0.09
6.683	0.00	0.12	0.007	O					0.09
6.700	0.00	0.11	0.007	O					0.09

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6.717	0.00	0.11	0.007	O					0.09
6.733	0.00	0.11	0.007	O					0.09
6.750	0.00	0.11	0.007	O					0.08
6.767	0.00	0.10	0.007	O					0.08
6.783	0.00	0.10	0.006	O					0.08
6.800	0.00	0.10	0.006	O					0.08
6.817	0.00	0.10	0.006	O					0.08
6.833	0.00	0.10	0.006	O					0.08
6.850	0.00	0.09	0.006	O					0.07
6.867	0.00	0.09	0.006	O					0.07
6.883	0.00	0.09	0.006	O					0.07
6.900	0.00	0.09	0.006	O					0.07
6.917	0.00	0.09	0.005	O					0.07
6.933	0.00	0.08	0.005	O					0.07
6.950	0.00	0.08	0.005	O					0.06
6.967	0.00	0.08	0.005	O					0.06
6.983	0.00	0.08	0.005	O					0.06
7.000	0.00	0.08	0.005	O					0.06
7.017	0.00	0.08	0.005	O					0.06
7.033	0.00	0.07	0.005	O					0.06
7.050	0.00	0.07	0.005	O					0.06
7.067	0.00	0.07	0.004	O					0.06
7.083	0.00	0.07	0.004	O					0.05
7.100	0.00	0.07	0.004	O					0.05
7.117	0.00	0.07	0.004	O					0.05
7.133	0.00	0.06	0.004	O					0.05
7.150	0.00	0.06	0.004	O					0.05
7.167	0.00	0.06	0.004	O					0.05
7.183	0.00	0.06	0.004	O					0.05
7.200	0.00	0.06	0.004	O					0.05
7.217	0.00	0.06	0.004	O					0.05
7.233	0.00	0.06	0.004	O					0.04
7.250	0.00	0.06	0.003	O					0.04
7.267	0.00	0.05	0.003	O					0.04
7.283	0.00	0.05	0.003	O					0.04
7.300	0.00	0.05	0.003	O					0.04
7.317	0.00	0.05	0.003	O					0.04
7.333	0.00	0.05	0.003	O					0.04
7.350	0.00	0.05	0.003	O					0.04
7.367	0.00	0.05	0.003	O					0.04
7.383	0.00	0.05	0.003	O					0.04
7.400	0.00	0.05	0.003	O					0.04
7.417	0.00	0.04	0.003	O					0.04
7.433	0.00	0.04	0.003	O					0.03
7.450	0.00	0.04	0.003	O					0.03
7.467	0.00	0.04	0.003	O					0.03
7.483	0.00	0.04	0.003	O					0.03
7.500	0.00	0.04	0.003	O					0.03
7.517	0.00	0.04	0.002	O					0.03
7.533	0.00	0.04	0.002	O					0.03
7.550	0.00	0.04	0.002	O					0.03
9.333	0.00	0.00	0.000	O					0.00
9.350	0.00	0.00	0.000	O					0.00

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9.367	0.00	0.00	0.000	O					0.00
9.383	0.00	0.00	0.000	O					0.00
9.400	0.00	0.00	0.000	O					0.00
9.417	0.00	0.00	0.000	O					0.00
9.433	0.00	0.00	0.000	O					0.00
9.450	0.00	0.00	0.000	O					0.00
9.467	0.00	0.00	0.000	O					0.00
9.483	0.00	0.00	0.000	O					0.00
9.500	0.00	0.00	0.000	O					0.00
9.517	0.00	0.00	0.000	O					0.00
9.533	0.00	0.00	0.000	O					0.00
9.550	0.00	0.00	0.000	O					0.00
9.567	0.00	0.00	0.000	O					0.00
9.583	0.00	0.00	0.000	O					0.00
9.600	0.00	0.00	0.000	O					0.00
9.617	0.00	0.00	0.000	O					0.00
9.633	0.00	0.00	0.000	O					0.00
9.650	0.00	0.00	0.000	O					0.00
9.667	0.00	0.00	0.000	O					0.00
9.683	0.00	0.00	0.000	O					0.00
9.700	0.00	0.00	0.000	O					0.00
9.717	0.00	0.00	0.000	O					0.00
9.733	0.00	0.00	0.000	O					0.00
9.750	0.00	0.00	0.000	O					0.00
9.767	0.00	0.00	0.000	O					0.00
9.783	0.00	0.00	0.000	O					0.00
9.800	0.00	0.00	0.000	O					0.00
9.817	0.00	0.00	0.000	O					0.00
9.833	0.00	0.00	0.000	O					0.00
9.850	0.00	0.00	0.000	O					0.00
9.867	0.00	0.00	0.000	O					0.00
9.883	0.00	0.00	0.000	O					0.00
9.900	0.00	0.00	0.000	O					0.00
9.917	0.00	0.00	0.000	O					0.00
9.933	0.00	0.00	0.000	O					0.00
9.950	0.00	0.00	0.000	O					0.00
9.967	0.00	0.00	0.000	O					0.00
9.983	0.00	0.00	0.000	O					0.00
10.000	0.00	0.00	0.000	O					0.00
10.017	0.00	0.00	0.000	O					0.00
10.033	0.00	0.00	0.000	O					0.00
10.050	0.00	0.00	0.000	O					0.00
10.067	0.00	0.00	0.000	O					0.00
10.083	0.00	0.00	0.000	O					0.00
10.100	0.00	0.00	0.000	O					0.00
10.117	0.00	0.00	0.000	O					0.00
10.133	0.00	0.00	0.000	O					0.00

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BMPs 1 & 2							
	Elevation		Elev. Difference	Area (sf)	Acre-feet		
1	0.00		0.00	3600	0.0000	Invert of weir	
2	0.10		0.10	3600	0.0083		
3	0.20		0.10	3600	0.0165		
4	0.30		0.10	3600	0.0248		
5	0.40		0.10	3600	0.0331		
6	0.50		0.10	3600	0.0413		
7	0.60		0.10	3600	0.0496		
8	0.70		0.10	3600	0.0579		
9	0.80		0.10	3600	0.0661		
10	0.90		0.10	3600	0.0744		
11	1.00		0.10	3600	0.0826		
12	1.10		0.10	3600	0.0909		
13	1.20		0.10	3600	0.0992		
14	1.30		0.10	3600	0.1074		
15	1.40		0.10	3600	0.1157		
16	1.50		0.10	3600	0.1240		

Outlet structure for Discharge of Detention Basin BMPs 1 & 2

Discharge vs Elevation Table

Emergency Weir		
Invert:	0.500 ft	
B:	1.3 ft	Weir Perimeter Length(combined)

h (ft)	H/D-low -	H/D-mid -	Qemer (cfs)	
0.000	0.000	0.000	0.000	Bottom of Basin
0.100	1.200	0.000	0.000	
0.200	2.400	0.000	0.000	
0.300	3.600	0.600	0.000	
0.400	4.800	1.800	0.000	
0.500	6.000	3.000	0.000	Emergency Weir
0.600	7.200	4.200	0.127	
0.700	8.400	5.400	0.360	
0.800	9.600	6.600	0.662	
0.900	10.800	7.800	1.020	
1.000	12.000	9.000	1.425	
1.100	13.200	10.200	1.873	
1.200	14.400	11.400	2.360	
1.300	15.600	12.600	2.884	
1.400	16.800	13.800	3.441	
1.500	18.000	15.000	4.030	
1.600	19.200	16.200	4.649	
1.700	20.400	17.400	5.298	
1.800	21.600	18.600	5.973	
1.900	22.800	19.800	6.676	
2.000	24.000	21.000	7.404	
2.100	25.200	22.200	8.156	
2.200	26.400	23.400	8.933	
2.300	27.600	24.600	9.732	
2.400	28.800	25.800	10.554	
2.500	30.000	27.000	11.399	Free Board

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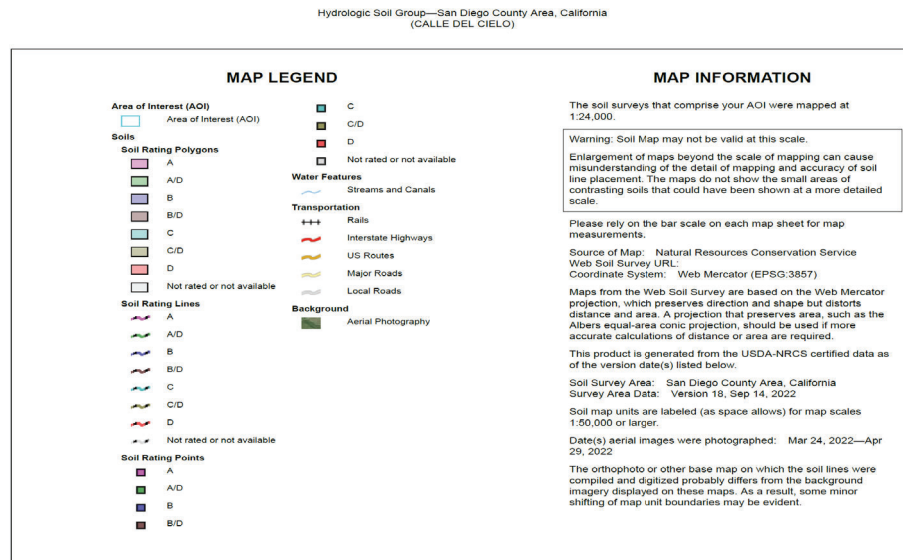
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APPENDIX 3
Soil Map, City Maps and Charts

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Rational Method and Modified Rational Method

A.1. Rational Method (RM)

The Rational Method (RM) is a mathematical formula used to determine the maximum runoff rate from a given rainfall. It has particular application in urban storm drainage where it is used to estimate peak runoff rates from small urban and rural watersheds for the design of storm drains and drainage structures. The RM is recommended for analyzing the runoff response from drainage areas for watersheds less than 0.5 square miles. It should not be used in instances where there is a junction of independent drainage systems or for drainage areas greater than approximately 0.5 square mile in size. In these instances, the Modified Rational Method (MRM) should be used for junctions of independent drainage systems in watersheds up to approximately 1 square mile in size (see Section A.2); or the NRCS Hydrologic Method should be used for watersheds greater than approximately 1 square mile in size (see Appendix B).

A.1.1. Rational Method Formula

The RM formula estimates the peak rate of runoff at any location in a watershed as a function of the drainage area (A), runoff coefficient (C), and rainfall intensity (I) for a duration equal to the time of concentration (T_c), which is the time required for water to flow from the most remote point of the basin to the location being analyzed. The RM formula is expressed in Equation A-1.

Equation A-1. RM Formula Expression

$$Q = C I A$$

where:

- | | | |
|---|---|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Q | = | peak discharge, in cubic feet per second (cfs) |
| C | = | runoff coefficient expressed as that percentage of rainfall which becomes surface runoff (no units); Refer to Appendix A.1.2 |
| I | = | average rainfall intensity for a storm duration equal to the time of concentration (T_c) of the contributing drainage area, in inches per hour; Refer to Appendix A.1.3 and Appendix A.1.4 |
| A | = | drainage area contributing to the design location, in acres |

APPENDIX A: RATIONAL METHOD AND MODIFIED RATIONAL METHOD

Combining the units for the expression CIA yields:

$$\left(\frac{1 \text{ acre} \times \text{inch}}{\text{hour}} \right) \left(\frac{43,560 \text{ ft}^2}{\text{acre}} \right) \left(\frac{1 \text{ foot}}{12 \text{ inches}} \right) \left(\frac{1 \text{ hour}}{3,600 \text{ seconds}} \right) \Rightarrow 1.008 \text{ cfs}$$

For practical purposes, the unit conversion coefficient difference of 0.8% can be ignored.

The RM formula is based on the assumption that for constant rainfall intensity, the peak discharge rate at a point will occur when the raindrop that falls at the most upstream point in the tributary drainage basin arrives at the point of interest.

Unlike the MRM (discussed in Appendix A.2) or the NRCS hydrologic method (discussed in Appendix B), the RM does not create hydrographs and therefore does not add separate subarea hydrographs at collection points. Instead, the RM develops peak discharges in the main line by increasing the T_c as flow travels downstream.

Characteristics of, or assumptions inherent to, the RM are listed below:

1. The discharge resulting from any I is maximum when the I lasts as long as or longer than the T_c .
2. The storm frequency of peak discharges is the same as that of I for the given T_c .
3. The fraction of rainfall that becomes runoff (or the runoff coefficient, C) is independent of I or precipitation zone number (PZN) condition (PZN Condition is discussed in the NRCS method).
4. The peak rate of runoff is the only information produced by using the RM.

A.1.2. Runoff Coefficient

The runoff coefficients are based on land use (see Table A-1). Soil type "D" is used throughout the City of San Diego for storm drain conveyance design. An appropriate runoff coefficient (C) for each type of land use in the subarea should be selected from this table and multiplied by the percentage of the total area (A) included in that class. The sum of the products for all land uses is the weighted runoff coefficient ($\Sigma[CA]$). Good engineering judgment should be used when applying the values presented in Table A-1, as adjustments to these values may be appropriate based on site-specific characteristics.

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APPENDIX A: RATIONAL METHOD AND MODIFIED RATIONAL METHOD

Table A-1. Runoff Coefficients for Rational Method

Land Use	Runoff Coefficient (C) Soil Type ⁽¹⁾
Residential:	
Single Family	0.55
Multi-Units	0.70
Mobile Homes	0.65
Rural (lots greater than 1/2 acre)	0.45
Commercial ⁽²⁾	
80% Impervious	0.85
Industrial ⁽²⁾	
90% Impervious	0.95

Note:

⁽¹⁾ Type D soil to be used for all areas.

⁽²⁾ Where actual conditions deviate significantly from the tabulated imperviousness values of 80% or 90%, the values given for coefficient C, may be revised by multiplying 80% or 90% by the ratio of actual imperviousness to the tabulated imperviousness. However, in case shall the final coefficient be less than 0.50. For example: Consider commercial property on D soil.

$$\begin{aligned}\text{Actual imperviousness} &= 50\% \\ \text{Tabulated imperviousness} &= 80\% \\ \text{Revised C} &= (50/80) \times 0.85 = 0.53\end{aligned}$$

The values in Table A-1 are typical for urban areas. However, if the basin contains rural or agricultural land use, parks, golf courses, or other types of nonurban land use that are expected to be permanent, the appropriate value should be selected based upon the soil and cover and approved by the City.

A.1.3. Rainfall Intensity

The rainfall intensity (I) is the rainfall in inches per hour (in/hr.) for a duration equal to the T_c for a selected storm frequency. Once a particular storm frequency has been selected for design and a T_c calculated for the drainage area, the rainfall intensity can be determined from the Intensity-Duration-Frequency Design Chart (Figure A-1).

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APPENDIX A: RATIONAL METHOD AND MODIFIED RATIONAL METHOD

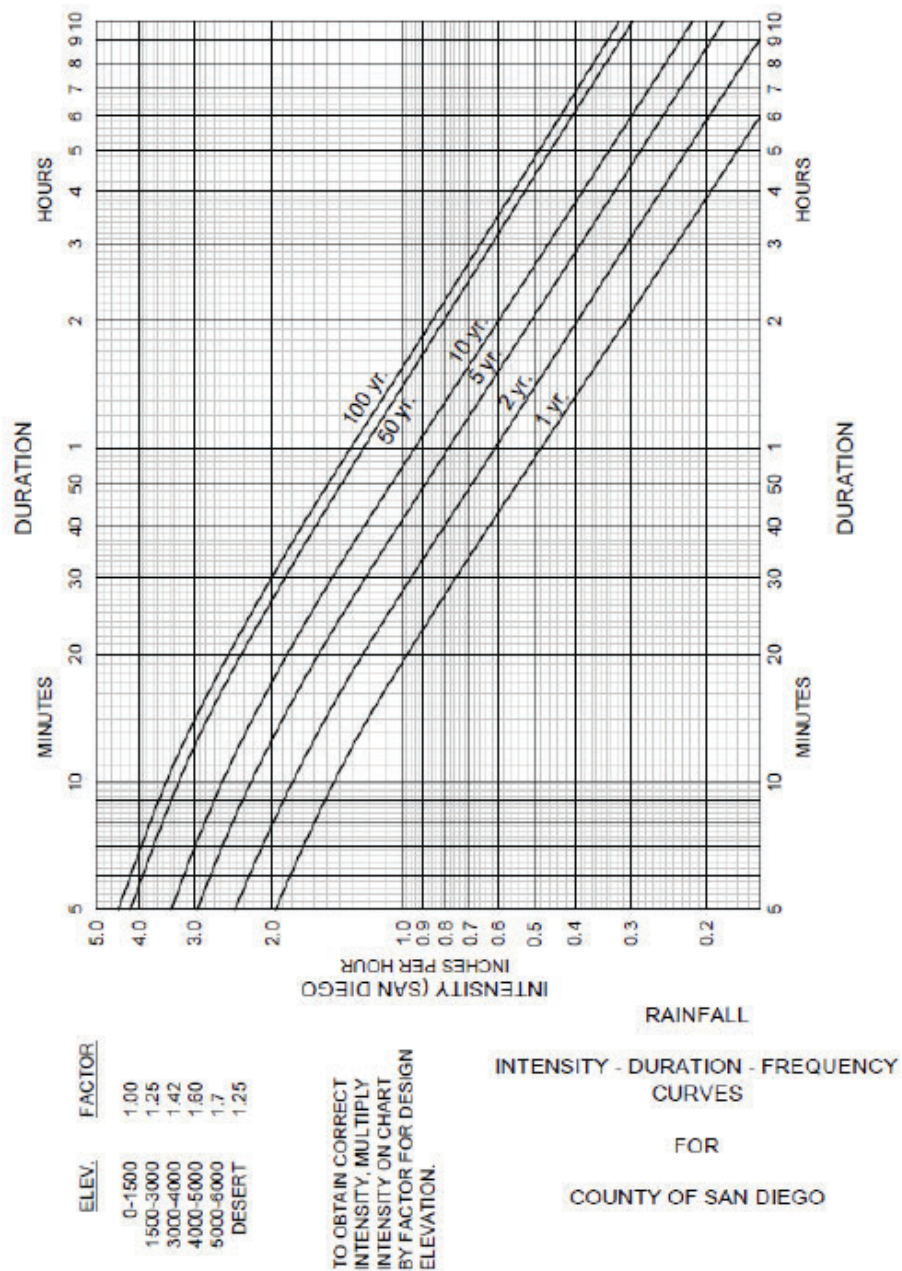


Figure A-1. Intensity-Duration-Frequency Design Chart

APPENDIX A: RATIONAL METHOD AND MODIFIED RATIONAL METHOD

A.1.4. Time of Concentration

The Time of Concentration (T_c) is the time required for runoff to flow from the most remote part of the watershed to the outlet point under consideration.

Methods of calculation differ for natural watersheds (non-urbanized) and for urban drainage systems. Also, when designing storm drain systems, the designer must consider the possibility that an existing natural watershed may become urbanized during the useful life of the storm drain system. Future land uses must be used for T_c and runoff calculations, and can be determined from the Community Plans.

- a. Natural watersheds: Obtain T_c from Figures A.2 and A.3
- b. Urban drainage systems: In the case of urban drainage systems, the time of concentration at any point within the drainage area is given by:

$$T_c = T_i + T_t \text{ where}$$

T_i is the inlet time or the time required for the storm water to flow to the first inlet in the system. It is the sum of time in overland flow across lots and in the street gutter.

T_t is the travel time or the time required for the storm water to flow in the storm drain from the most upstream inlet to the point in question.

Travel Time, T_t is computed by dividing the length of storm drain by the computed flow velocity. Since the velocity normally changes at each inlet because of changes in flow rate or slope, total travel time must be computed as the sum of the travel times for each section of the storm drain.

The overland flow component of inlet time, T_i , may be estimated by the use of the chart shown in Figure A-4. Use Figure A-5 to estimate time of travel for street gutter flow.

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APPENDIX A: RATIONAL METHOD AND MODIFIED RATIONAL METHOD

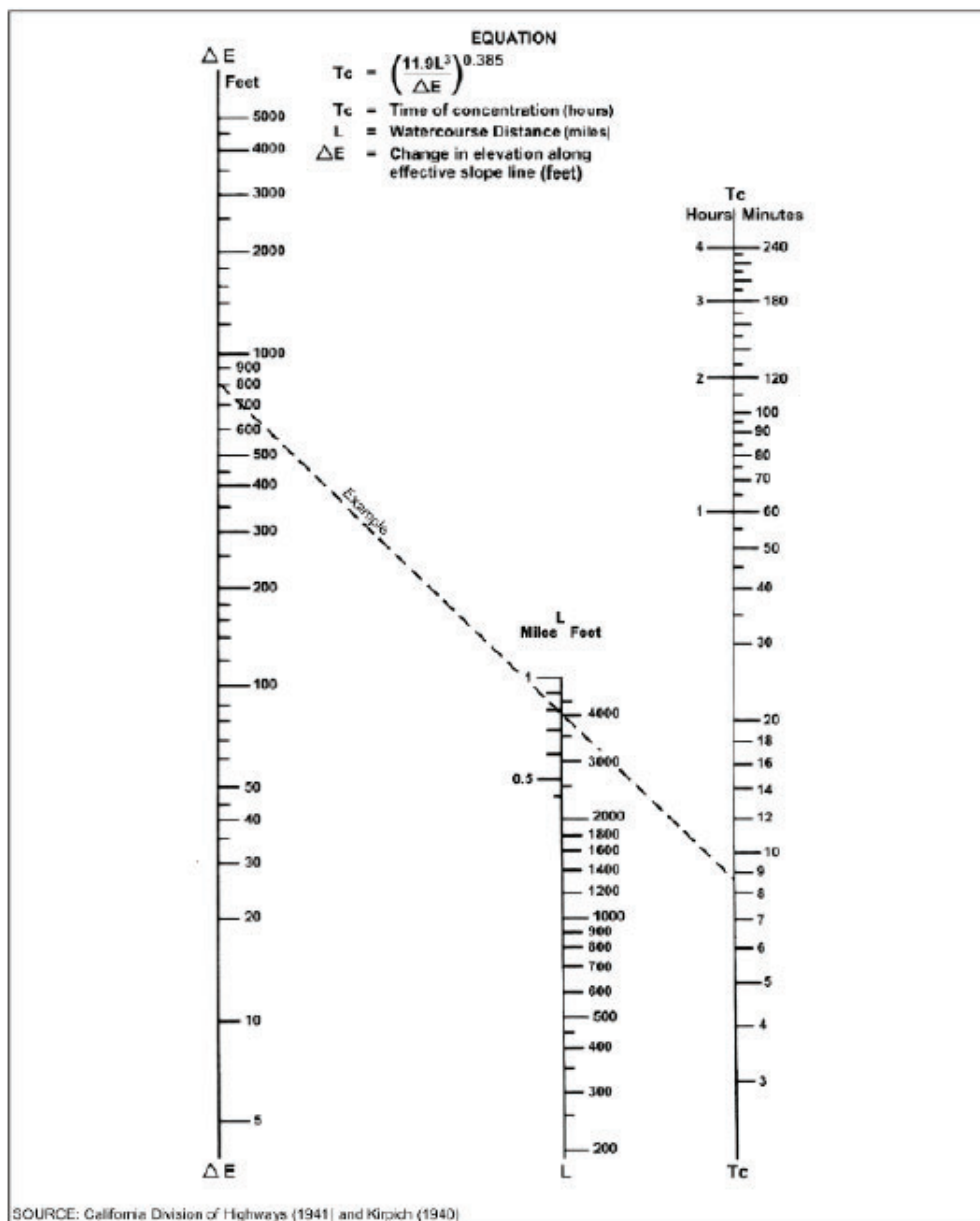


Figure A-2. Nomograph for Determination of T_c for Natural Watersheds

Note: Add ten minutes to the computed time of concentration from Figure A-2.

APPENDIX A: RATIONAL METHOD AND MODIFIED RATIONAL METHOD

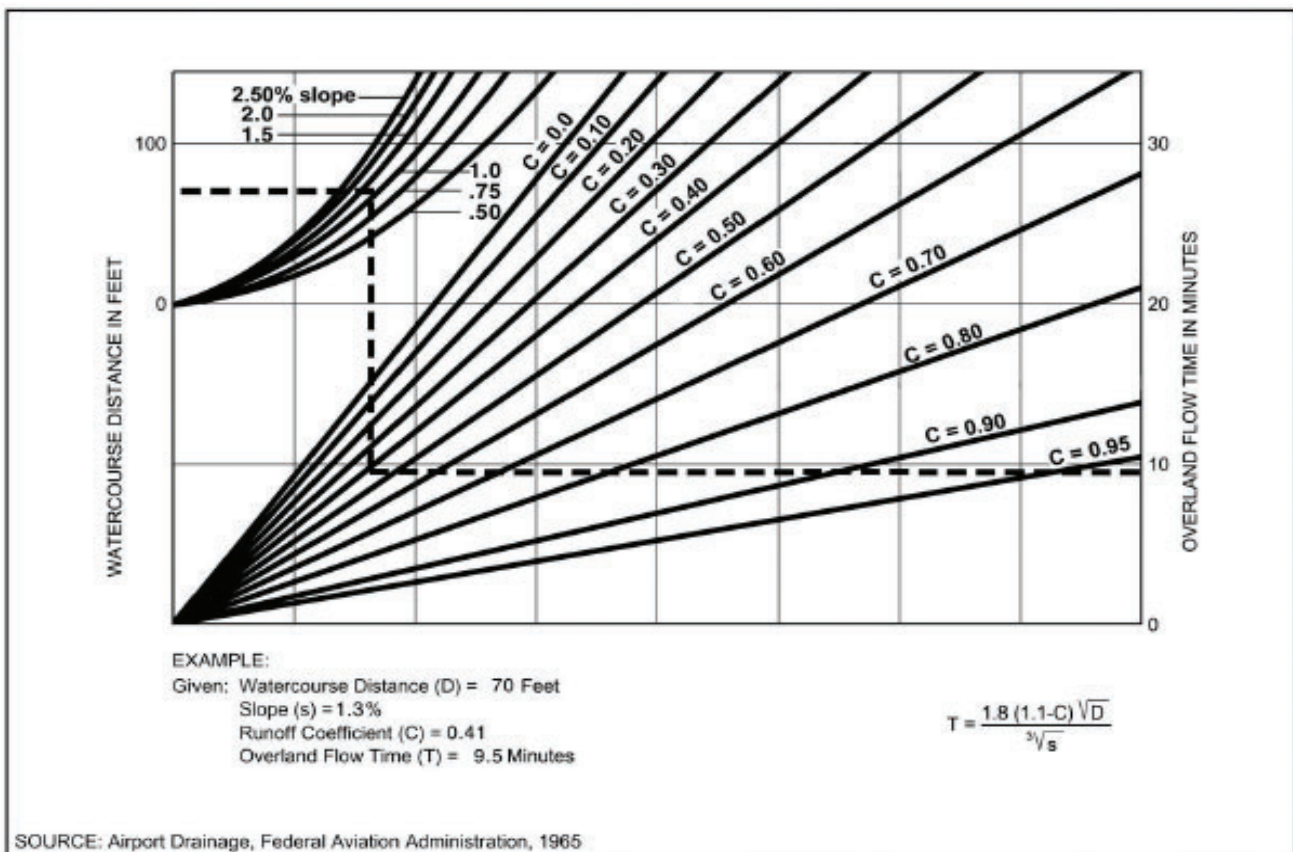


Figure A-4. Rational Formula - Overland Time of Flow Nomograph

Note: Use formula for watercourse distances in excess of 100 feet.

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APPENDIX 4
Hydraulics – Sizing of offsite facilities along Calle Frescota

Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc.

Monday, Aug 12 2024

12 WIDE CONCRETE DRIVEWAY - V TYPE CHANNEL

Triangular

Side Slopes (z:1) = 12.00, 12.00
Total Depth (ft) = 0.50

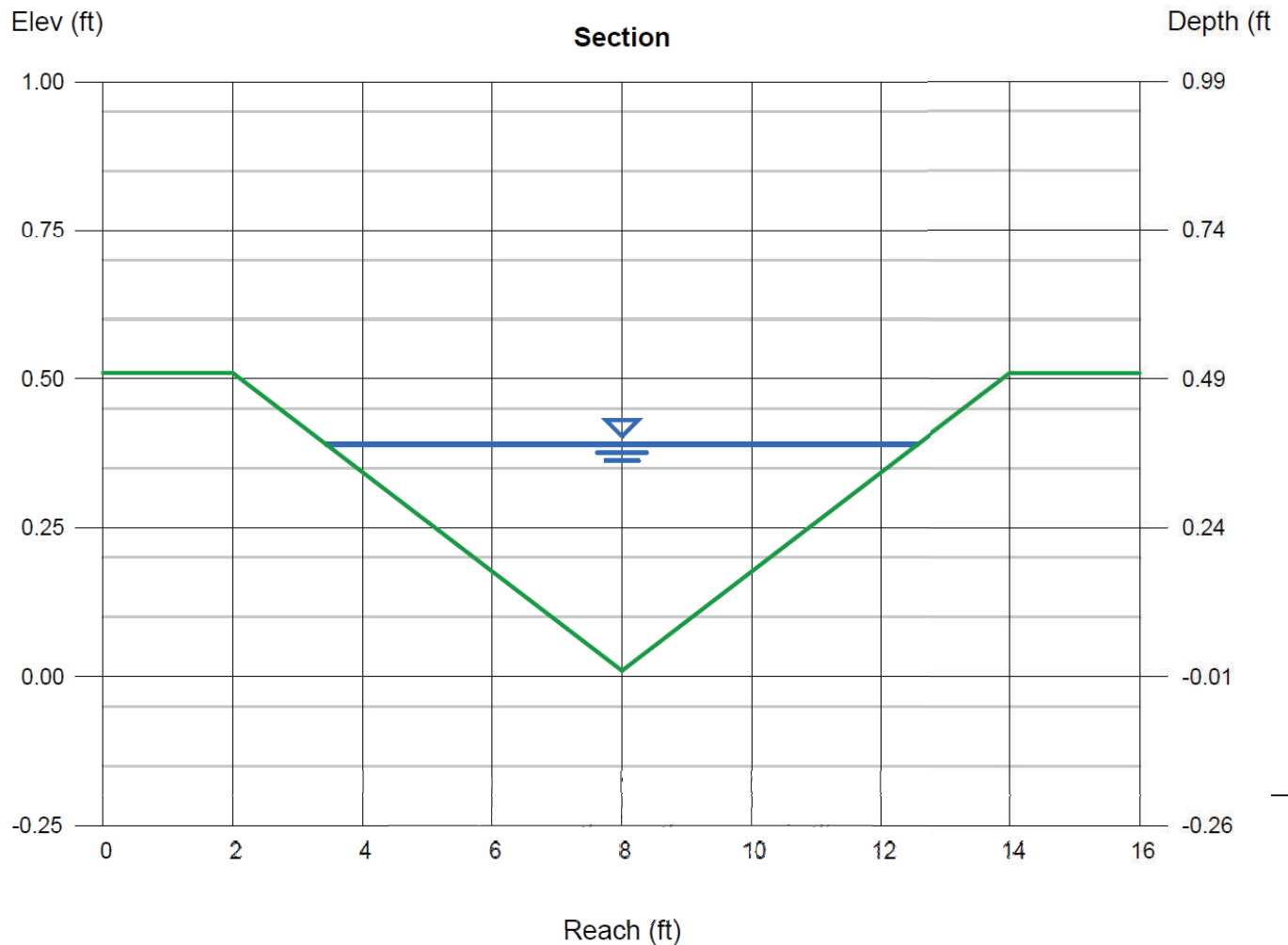
Invert Elev (ft) = 0.01
Slope (%) = 1.50
N-Value = 0.015

Calculations

Compute by: Known Q
Known Q (cfs) = 6.58

Highlighted

Depth (ft) = 0.38
Q (cfs) = 6.580
Area (sqft) = 1.73
Velocity (ft/s) = 3.80
Wetted Perim (ft) = 9.15
Crit Depth, Yc (ft) = 0.46
Top Width (ft) = 9.12
EGL (ft) = 0.60



Project Name: Cielo Mar Subdivision

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Attachment 6

Geotechnical and Groundwater Investigation Report

Attach project's geotechnical and groundwater investigation report. Refer to Appendix C.4 to determine the reporting requirements.

Project Name: Cielo Mar Subdivision

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