Appendix F

Storm Water Quality Management Plan

(GPA P20-00001, D20-00002)

CITY OF OCEANSIDE
ENGINEERING DIVISION

PRIORITY DEVELOPMENT PROJECT

STORM WATER QUALITY MANAGEMENT PLAN

FOR

SUNRISE SENIOR LIVING OCEANSIDE

ENGINEER OF WORK

BRITTANY KNOTT, PE RCE 76502 EXPIRATION DATE: 12-31-22

PREPARED FOR:

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How to Use This Template

This template, assembled by GHD Inc. on behalf of the City of Oceanside, is for the development of Storm Water Quality Management Plans (SWQMPs) for Priority Development Projects (PDPs) proposed within Oceanside, CA. It is based on requirements set forth in the Regional Water Quality Control Board's National Pollutant Discharge Elimination System MS4 Permit that covers the San Diego Region (Order No. R9-2013-0001).

All references within the template refer to the City of Oceanside BMP Design Manual dated February 2016 (Manual). Use of this template in conjunction with the Manual is intended to help a project applicant develop a SWQMP compliant with City of Oceanside and MS4 Permit requirements.

Template Date: February 16, 2016

Assembled By:

Quick Reference Guide

Item	Project Information
Project Name	Sunrise Senior Living Oceanside
Application Number(s)	P20-00001, D20-00002
Project Address	4700 Mesa Drive, Oceanside, CA 92507
Total Parcel Area	322,367 sq. ft.
Project Description	The project site currently consists of an existing Church facility with associated at-grade parking, surrounded by areas of undeveloped land. The site will be subdivided to create a new 2.92-acre parcel for the proposed project development. Sunrise Senior Living proposes to construct a 2-story structure to be used for senior assisted living. The building will be approximately 76,000 square feet and will contain 95 dwelling units. The proposed development will also include walking paths, landscaping, and a memory garden. In addition to the proposed assisted living facility, the proposed project development will also include a proposed asphalt drive aisle and parking lot to the west of the existing church building.
Proposed Disturbed Area	195,005 sq. ft.
Created or Replaced Impervious	133,090 sq. ft.
Project Hydrologic Unit Watershed	☐ Santa Maria ☒ San Luis Rey ☐ Carlsbad
Required to implement HMP	☒ Yes ☐ No

Table of Contents

CERTIFICATION PAGE

Project Name: Sunrise Senior Living Oceanside
Permit Application Number: P20-00001, D20-00002

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 City of Oceanside BMP Design Manual, which is based on the requirements of San Diego Regional Water Quality Control Board Order No. R9-2013-0001 (MS4 Permit).

I have read and understand that the City has adopted minimum requirements for managing urban runoff, including storm water, from land development activities, as described in the BMP Design Manual. I certify that this 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 SWQMP by City staff 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.

As Engineer of Work, I agree to indemnify, defend, and hold harmless the City of Oceanside, its officers, agents, and employees from any and all liability, claims, damages, or injuries to any person or property which might arise from the negligent acts, errors, or omissions of the Engineer of Work, my employees, agents or consultants.

_____

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

Brittany Knott_____

Print Name

Fuscoe Engineering, Inc._____

Company

_____

Date

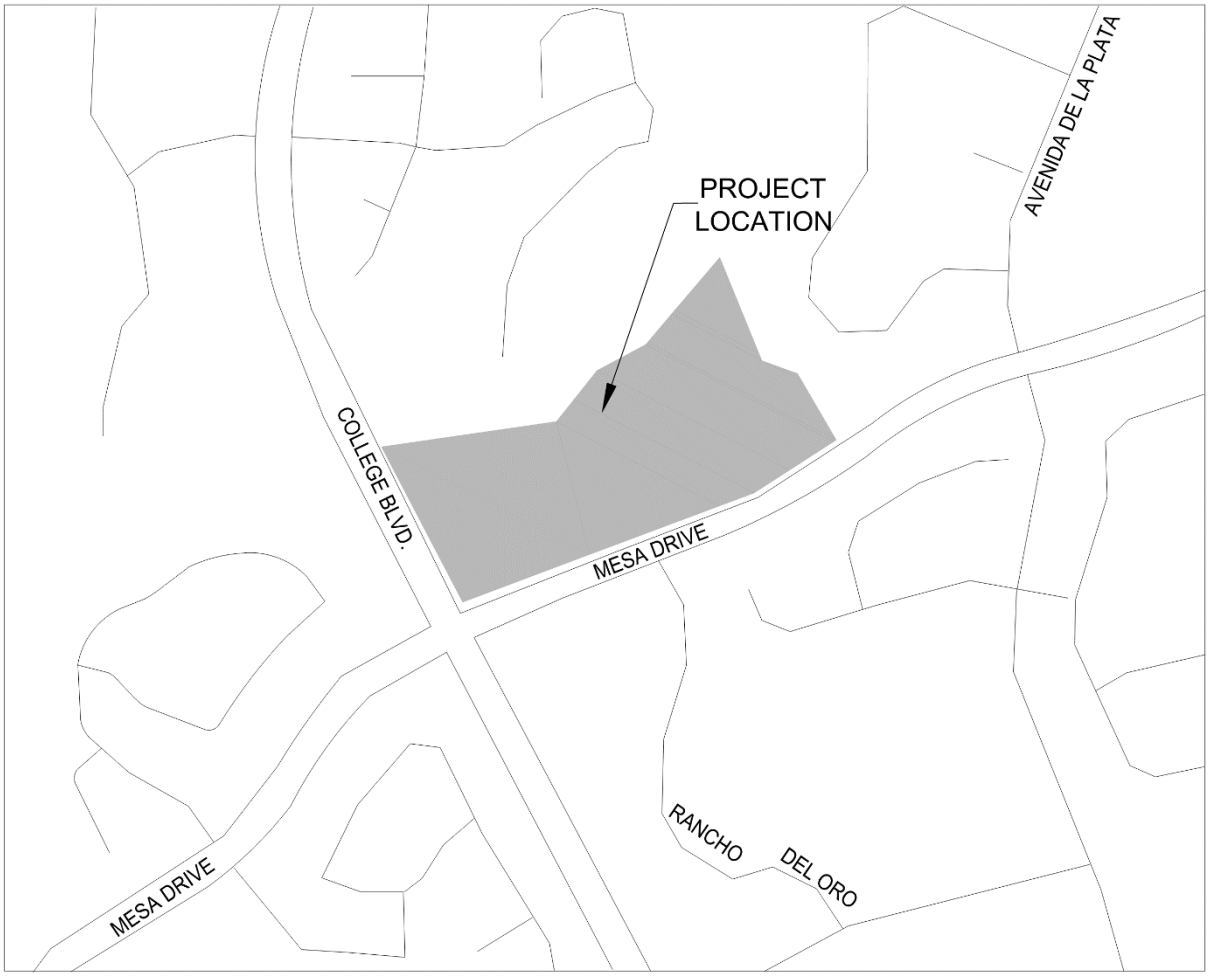
Engineer's Seal:

SUBMITTAL RECORD

Use this Table to keep a record of submittals of this SWQMP. Each time the 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 behind this page.

Submittal Number	Date	Project Status	Changes
1	01/31/20	☒ Preliminary Design/ Planning/ CEQA ☐ Final Design	Initial Submittal
2	06/08/20	☒ Preliminary Design/ Planning/ CEQA ☐ Final Design	2nd Submittal
3	07/22/20	☒ Preliminary Design/ Planning/ CEQA ☐ Final Design	3rd Submittal
4	[MM/DD/YY]	☐ Preliminary Design/ Planning/ CEQA ☐ Final Design	Click here to enter text.

Project Vicinity Map



VICINITY MAP

NOT TO SCALE

Applicability of Permanent, Post-Construction Storm Water BMP Requirements (Storm Water Intake Form for all Development Permit Applications)	Form I-1

Project Identification

Project Name: Sunrise Senior Living Oceanside

Permit Application Number: P20-00001, D20-00002 | Date: 07-22-2020

Determination of Requirements

The purpose of this form is to identify permanent, post-construction requirements that apply to the project. This form serves as a short summary of applicable requirements, in some cases referencing separate forms that will serve as the backup for the determination of requirements.

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.

Step	Answer	Progression
Step 1: Is the project a "development project"? See Section 1.3 of the manual for guidance.	☒Yes	Go to Step 2.
	☐No	Stop. Permanent BMP requirements do not apply. No SWQMP will be required. Provide discussion below.
Discussion / justification if the project is not a "development project" (e.g., the project includes *only* interior remodels within an existing building):		
Step 2: Is the project a Standard Project, PDP, or exception to PDP definitions? To answer this item, see Section 1.4 of the manual *in its entirety* for guidance, AND complete Form I-2, Project Type Determination.	☐Standard Project	Stop. Standard Project requirements apply, including Standard Project SWQMP.
	☒PDP	PDP requirements apply, including PDP SWQMP. Go to Step 3.
	☐ Exception to PDP definitions	Stop. Standard Project requirements apply. Provide discussion and list any additional requirements below. Prepare Standard Project SWQMP.
Discussion / justification, and additional requirements for exceptions to PDP definitions, if applicable:		

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 for guidance.	☐Yes	Consult the [City Engineer] to determine requirements. Provide discussion and identify requirements below. Go to Step 4.
	☒No	BMP Design Manual PDP requirements apply. Go to Step 4.
Discussion / justification of prior lawful approval, and identify requirements (*not required if prior lawful approval does not apply*):		
Step 4. Do hydromodification control requirements apply? See Section 1.6 of the manual for guidance.	☒Yes	PDP structural BMPs required for pollutant control (Chapter 5) and hydromodification control (Chapter 6). Go to Step 5.
	☐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:		
Step 5. Does protection of critical coarse sediment yield areas apply? See Section 6.2 of the manual for guidance.	☒Yes	Management measures required for protection of critical coarse sediment yield areas (Chapter 6.2). Stop.
	☐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:		

Project Type Determination Checklist			Form I-2
Project Information			
Project Name: Sunrise Senior Living Oceanside			
Permit Application Number: P20-00001, D20-00002			
Project Type Determination: Standard Project or PDP			
The project is (select one): ☐ New Development X Redevelopment			
The total proposed newly created or replaced impervious area is: 133,090 ft^2 (3.06 acres)			
Is the project in any of the following categories, (a) through (f)?			
Yes ☒	No ☐	(a)	New development projects that create 10,000 square feet or more of impervious surfaces (collectively over the entire project site). This includes commercial, industrial, residential, mixed-use, and public development projects on public or private land.
Yes ☒	No ☐	(b)	Redevelopment projects that create and/or replace 5,000 square feet or more of impervious surface (collectively over the entire project site on an existing site of 10,000 square feet or more of impervious surfaces). This includes commercial, industrial, residential, mixed-use, and public development projects on public or private land.
Yes ☐	No ☒	(c)	New and redevelopment projects that create 5,000 square feet or more of impervious surface (collectively over the entire project site), and support one or more of the following uses: (i) Restaurants. This category is defined as a facility that sells prepared foods and drinks for consumption, including stationary lunch counters and refreshment stands selling prepared foods and drinks for immediate consumption SIC code 5812). (ii) Hillside development projects. This category includes development on any natural slope that is twenty-five percent or greater. (iii) Parking lots. This category is defined as a land area or facility for the temporary parking or storage of motor vehicles used personally, for business, or for commerce. (iv) Streets, roads, highways, freeways, and driveways. This category is defined as any paved impervious surface used for the transportation of automobiles, trucks, motorcycles, and other vehicles.

Form I-2 Page 2 of 2			
Yes ☐	No ☒	(d)	New or redevelopment projects that create or replace 2,500 square feet or more of impervious surface (collectively over the entire project site), and discharging directly to an Environmentally Sensitive Area (ESA). "Discharging directly to" includes flow that is conveyed overland a distance of 200 feet or less from the project to the ESA, or conveyed in a pipe or open channel any distance as an isolated flow from the project to the ESA (i.e. not commingled with flows from adjacent lands). Note: ESAs are areas that include but are not limited to all Clean Water Act Section 303(d) impaired water bodies; areas designated as Areas of Special Biological Significance by the State Water Board and SDRWQCB; State Water Quality Protected Areas; water bodies designated with the RARE beneficial use by the State Water Board and SDRWQCB; and any other equivalent environmentally sensitive areas which have been identified by the Copermittees. See manual Section 1.4.2 for additional guidance.
Yes ☐	No ☒	(e)	New development projects that support one or more of the following uses: (i) Automotive repair shops. This category is defined as a facility that is categorized in any one of the following SIC codes: 5013, 5014, 5541, 7532-7534, or 7536-7539. (ii) Retail gasoline outlets. This category includes retail gasoline outlets that meet the following criteria: (a) 5,000 square feet or more or (b) a projected Average Daily Traffic of 100 or more vehicles per day.
Yes ☒	No ☐	(f)	New or redevelopment projects that result in the disturbance of one or more acres of land and are expected to generate pollutants post construction. *Note: See manual Section 1.4.2 for additional guidance.*

Does the project meet the definition of one or more of the PDP categories (a) through (f) listed above?

☐ No – the project is not a PDP (Standard Project).

☒ Yes – the project is a PDP.

The following is for redevelopment PDPs only:

The area of existing (pre-project) impervious area at the project site is: 26,270 ft^2 (A)

The total proposed newly created or replaced impervious area is: 133,090 ft^2 (B)

Percent impervious surface created or replaced (A/B)*100: 19.7 %

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

☒ less than or equal to fifty percent (50%) – only new impervious areas are considered PDP

OR

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

Site Information Checklist For PDPs	Form I-3B (PDPs)
Project Summary Information	
Project Name	Sunrise Senior Living Oceanside
Project Address	4700 Mesa Drive, Oceanside, CA 92057
Assessor's Parcel Number(s)	161-511-019
Permit Application Number	P20-00001, D20-00002
Project Watershed (Hydrologic Unit)	Select One: ☐Santa Margarita 902 ☒San Luis Rey 903 ☐Carlsbad 904
Parcel Area (total area of Assessor's Parcel(s) associated with the project)	14.24 Acres (620,136 Square Feet)
Area to be disturbed by the project (Project Area)	4.48 Acres (195,005 Square Feet)
Project Proposed Impervious Area (subset of Project Area)	3.06 Acres (133,090 Square Feet)
Project Proposed Pervious Area (subset of Project Area)	1.42 Acres (61,915 Square Feet)
Note: Proposed Impervious Area + Proposed Pervious Area = Area to be Disturbed by the Project. This may be less than the Parcel Area.	

Hydrologic Unit	Hydrologic Area	Hydrologic Sub-Area
Santa Margarita 902.00	☐ Ysidora 902.10	☐ Lower Ysidora 902.11
San Luis Rey 903.00	☒ Lower San Luis 903.10	☒ Mission 903.11
		☐ Bonsall 903.12
Carlsbad 904.00	☐ Loma Alta 904.10	Not Applicable
	☐ Buena Vista Creek 904.20	☐ El Salto 904.21
		☐ Vista 904.22
	☐ Agua Hedionda 4.30	☐ Los Monos 904.31

Description of Existing Site Condition and Drainage Patterns

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

☒Existing development

☒Previously graded but not built out

☐Agricultural or other non-impervious use

☒Vacant, undeveloped/natural

A portion of the overall 14.24-acre property is developed as a Church with associated at-grade parking and open space. The project proposes to create a new 2.92-acre parcel within the subject property on a portion of the site that has been graded flat, but not currently developed with the exception of an AC pavement access road.

Additionally, the project proposes to create a new 1.20-acre asphalt parking lot and drive aisle to the west of the existing church to account for the existing church parking that will be removed during development of the proposed assisted living facility.

Existing Land Cover Includes (select all that apply):

☒Vegetative Cover

☒Non-Vegetated Pervious Areas

☒Impervious Areas

Project site currently consists of some impervious areas being defined as an AC pavement road, with the majority of the land being vegetative open space with some perimeter landscape slopes.

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

☐NRCS Type A

☐NRCS Type B

☒NRCS Type C

☒NRCS Type D

Approximate Depth to Groundwater:

☐Groundwater Depth < 5 feet

☐5 feet < Groundwater Depth < 10 feet

☐10 feet < Groundwater Depth < 20 feet

☒Groundwater Depth > 20 feet

Description of Existing Site Topography and Drainage [How is storm water runoff conveyed from the site? At a minimum, this description should answer (1) whether existing drainage conveyance is natural or urban; (2) describe existing constructed storm water conveyance systems, if applicable; and (3) is runoff from offsite conveyed through the site? If so, describe]:

The majority of the project site is relatively flat with a general directional flow of west to east. Along the southern edge of the project there is a landscape slope down to Mesa Drive. A portion of this slope is collected via a concrete v-ditch that then curb drains out to Mesa Drive, with the remainder of the slope sheet flowing off-site. The northeastern edge of the project site has a 2:1 landscape slope down from the adjacent residential property.

There is no apparent storm drain system on the proposed assisted living portion of the project site and due to the majority of the land being undeveloped, it is assumed the majority of stormwater runoff currently infiltrates back into the ground. There is an existing 18" RCP storm drainpipe within Mesa Drive downstream of the assisted living portion of the project site, however there are no existing connections to the public storm drain system. Based on current site topography, the runoff from the assisted living portion of the project site is all tributary to Mesa Drive.

There is an existing storm drain system located within the area of the proposed parking lot west of the existing church building. There is also an existing 18" RCP storm drainpipe located at the existing low point to the northwest of the proposed parking lot and drive aisle. Based on current site topography, the proposed parking lot and drive aisle portion of the site are tributary to either Mesa Drive or College Boulevard.

Description of Proposed Site Development and Drainage Patterns

Project Description / Proposed Land Use and/or Activities:

The proposed project intends to develop an approximate 76,000 SF Senior Living Facility on roughly 2.92 acres of land. The proposed building will be two-stories with adjacent parking lots, walking paths, and garden areas.

The proposed project also intends to develop a 1.20-acre parking lot and drive aisle to the west of the existing church.

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

Impervious areas will consist of the proposed two-story building, on-site parking lots with drive aisles, sidewalks running around the perimeter of the building, and an off-site parking lot and drive aisle to the west of the existing church building.

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

Pervious areas will consist of a landscaped slope along Mesa Drive, as well as the existing 2:1 landscape slope on the eastern edge of the property. Additionally, there will be landscape areas adjacent to all parking stalls as well as around the perimeter of the building. There will be two courtyards associated with the project, one in the interior of the building and one on the northern end of the building.

Does the project include grading and changes to site topography?

☒Yes

☐No

Description / Additional Information:

There will be minimal grading needed for the project in order to create accessible walking paths and parking areas, as well as construct a level pad for the building footprint. The majority of the site will maintain existing elevations and grading patterns.

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

☒Yes

☐No

Description / Additional Information:

There is no existing on-site storm drain system for the proposed assisted living facility portion of the project site, therefore a new private system will be installed to collect and route stormwater runoff to treatment devices before ultimately being discharged to Mesa Drive.

Additionally, a new private system will be installed to route runoff from the proposed parking lot located west of the existing church building to a biofiltration system for treatment before ultimately being discharged to College Boulevard via the existing 18" RCP storm drainpipe.

Form I-3B Page 5 of 10

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

Identification of Receiving Water Pollutants of Concern

Describe path of storm water from the project site to the Pacific Ocean (or bay, lagoon, lake or reservoir, as applicable):

Most of the water runoff for the project site is all tributary to Mesa Drive. A small portion of the site drains toward an existing brow ditch offsite, and is ultimately routed to College Boulevard. The western parking lot and drive aisle is tributary to College Boulevard. Once runoff leaves the site, it is either routed to the existing public storm drain system within Mesa Drive, or College Boulevard. From there, runoff is routed to Talone Lake before ultimately discharging to the lower San Luis Rey River and the Pacific Ocean.

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

303(d) Impaired Water Body	Pollutant(s)/Stressor(s)	TMDLs
San Luis Rey River, Lower (west of Interstate 15)	Contaminated Sediments, Hydromodification, Illicit Connections/Illegal Hook-ups, Dry Weather Flows, Urban Runoff/Storm Sewers	Impairments: Benthic Community Effects; Bifenthrin; Chloride; Indicator Bacteria; Nitrogen; Phosphorus; Total Dissolved Solids; Toxicity TMDLs: Bacteria
Pacific Ocean Shoreline, San Luis Rey HU, at San Luis Rey river outlet	Urban Runoff/Storm Sewers	Impairments: Indicator Bacteria TMDLs: Bacteria

Form I-3B Page 7 of 10			
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 expected from the project site based on all proposed use(s) of the site (see manual Appendix B.6):			
Pollutant	**Not Applicable to the Project Site**	**Expected from the Project Site**	**Also a Receiving Water Pollutant of Concern**
Sediment		X	X
Nutrients		X	X
Heavy Metals	X		X
Organic Compounds		X	X
Trash & Debris		X	X
Oxygen Demanding Substances		X	X
Oil & Grease		X	X
Bacteria & Viruses		X	X
Pesticides		X	X

Note: Indicator Bacteria shall be addressed as a Pollutant of Concern (POC) for projects located in the Lower San Luis Hydrologic Area and for projects that discharge to the Pacific Ocean Shoreline within the boundaries of the City of Oceanside.

Note: Nutrients shall be addressed as a Pollutant of Concern (POC) for projects located in the Loma Alta Hydrologic Area.

Hydromodification Management Requirements

Do hydromodification management requirements apply (see Section 1.6 of the manual)?

☒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):

Critical Coarse Sediment Yield Areas*

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

Based on the maps provided within the WMAA, do potential critical coarse sediment yield areas exist within the project drainage boundaries?

☒Yes

☐No, no critical coarse sediment yield areas to be protected based on WMAA maps

If yes, have any of the optional analyses presented in Section 6.2 of the manual been performed?

☒6.2.1 Verification of GLUs Onsite

☒6.2.2 Downstream Systems Sensitivity to Coarse Sediment

☐6.2.3 Optional Additional Analysis of Potential Critical Coarse Sediment Yield Areas Onsite

☐No optional analyses performed; the project will avoid critical coarse sediment yield areas identified based on WMAA maps

If optional analyses were performed, what is the final result?

☐No critical coarse sediment yield areas to be protected based on verification of GLUs onsite.

☒Critical coarse sediment yield areas exist but additional analysis has determined that protection is not required. Documentation attached in Attachment 8 of the SWQMP.

☐Critical coarse sediment yield areas exist and require protection. The project will implement management measures described in Sections 6.2.4 and 6.2.5 as applicable, and the areas are identified on the SWQMP Exhibit.

The majority of the project site is flat and developed and appears the mapping was based on pre-development conditions versus actual conditions. All slopes are less than 50' in height and all pads are less than 10% slope. Additionally, the entire project site drains to Talone Lake (sump condition) through a hardened MS4 system which would capture critical coarse sediment. As such, it was determined that critical coarse sediment yield protection is not required.

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.

The project site does not directly discharge to a natural or un-lined channel, and instead runoff must travel a distance through the public storm drain infrastructure before discharging to Talone Lake. Therefore, the POCs for the site will be limited to comparing the pre- and post-development flows. Two POCs will be implemented on site, POC-1 and POC-2. Hydromodification volumes will be detained on-site with outlet controls constructed in order to govern the release rate of the detention basin.

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

☒No, the low flow threshold is 0.1Q2 (default low flow threshold)

☐Yes, the result is the low flow threshold is 0.1Q2

☐Yes, the result is the low flow threshold is 0.3Q2

☐Yes, the result is the low flow threshold is 0.5Q2

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

Discussion / Additional Information: (optional)

Form I-3B Page 10 of 10
Other Site Requirements and Constraints
When applicable, list other site requirements or constraints that will influence storm water management design, such as zoning requirements including setbacks and open space, or local codes governing minimum street width, sidewalk construction, allowable pavement types, and drainage requirements. Not applicable
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 All Development Projects (Standard Projects and PDPs)	Form I-4

Project Identification

Project Name: Sunrise Senior Living Oceanside

Permit Application Number: P20-00001, D20-00002

Source Control BMPs

All development projects must implement source control BMPs SC-1 through SC-6 where applicable and feasible. See Chapter 4 and Appendix E of the manual for information to implement source control BMPs shown in this checklist.

Answer each category below pursuant to the following.

- "Yes" means the project will implement the source control BMP as described in Chapter 4 and/or Appendix E of the 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	Implemented?		
SC-1 Prevention of Illicit Discharges into the MS4	☒ Yes	☐ No	☐ N/A
Discussion / justification if SC-1 not implemented:			
SC-2 Storm Drain Stenciling or Signage	☒ Yes	☐ No	☐ N/A
Discussion / justification if SC-2 not implemented:			
SC-3 Protect Outdoor Materials Storage Areas from Rainfall, Run-On, Runoff, and Wind Dispersal	☐ Yes	☐ No	☒ N/A
Discussion / justification if SC-3 not implemented:			

Form I-4 Page 2 of 3			
Source Control Requirement	**Implemented?**		
SC-4 Protect Materials Stored in Outdoor Work Areas from Rainfall, Run-On, Runoff, and Wind Dispersal	☐ Yes	☐ No	☒ N/A
Discussion / justification if SC-4 not implemented:			
SC-5 Protect Trash Storage Areas from Rainfall, Run-On, Runoff, and Wind Dispersal	☒ Yes	☐ No	☐ N/A
Discussion / justification if SC-5 not implemented:			

Form I-4 Page 3 of 3			
SC-6 Additional BMPs Based on Potential Sources of Runoff Pollutants (must answer for each source listed below)	**Implemented?**		
Onsite storm drain inlets	☒ Yes	☐ No	☐ N/A
Interior floor drains and elevator shaft sump pumps	☒ Yes	☐ No	☐ N/A
Interior parking garages	☐ Yes	☐ No	☒ N/A
Need for future indoor & structural pest control	☐ Yes	☐ No	☒ N/A
Landscape/outdoor pesticide use	☒ Yes	☐ No	☐ N/A
Pools, spas, ponds, decorative fountains, and other water features	☐ Yes	☐ No	☒ N/A
Food service	☒ Yes	☐ No	☐ N/A
Refuse area	☐ Yes	☐ No	☒ N/A
Industrial processes	☐ Yes	☐ No	☒ N/A
Outdoor storage of equipment or materials	☐ Yes	☐ No	☒ N/A
Vehicle and equipment cleaning	☐ Yes	☐ No	☒ N/A
Vehicle/equipment repair and maintenance	☐ Yes	☐ No	☒ N/A
Fuel dispensing areas	☐ Yes	☐ No	☒ N/A
Loading docks	☐ Yes	☐ No	☒ N/A
Fire sprinkler test water	☒ Yes	☐ No	☐ N/A
Miscellaneous drain or wash water	☒ Yes	☐ No	☐ N/A
Plazas, sidewalks, and parking lots	☒ Yes	☐ No	☐ N/A
Discussion / justification if SC-6 not implemented. Clearly identify which sources of runoff pollutants are discussed. Justification must be provided for all "No" answers shown above.			

Site Design BMP Checklist for All Development Projects (Standard Projects and PDPs)	Form I-5

Project Identification

Project Name: Sunrise Senior Living Oceanside

Permit Application Number: P20-00001, D20-00002

Site Design BMPs

All development projects must implement site design BMPs SD-1 through SD-8 where applicable and feasible. See Chapter 4 and Appendix E of the manual for information to implement site design BMPs shown in this checklist.

Answer each category below pursuant to the following.

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

Site Design Requirement	Applied?		
SD-1 Maintain Natural Drainage Pathways and Hydrologic Features	☒ Yes	☐ No	☐ N/A
Discussion / justification if SD-1 not implemented:			
SD-2 Conserve Natural Areas, Soils, and Vegetation	☒ Yes	☐ No	☐ N/A
Discussion / justification if SD-2 not implemented:			
SD-3 Minimize Impervious Area	☒ Yes	☐ No	☐ N/A
Discussion / justification if SD-3 not implemented:			
SD-4 Minimize Soil Compaction	☒ Yes	☐ No	☐ N/A
Discussion / justification if SD-4 not implemented:			

Form I-5 Page 2 of 2			
Site Design Requirement	**Applied?**		
SD-5 Impervious Area Dispersion	☒ Yes	☐ No	☐ N/A
Discussion / justification if SD-5 not implemented:			
SD-6 Runoff Collection	☐ Yes	☒ No	☐ N/A
Discussion / justification if SD-6 not implemented: The Updated Geotechnical Investigation report prepared by Geocon Incorporated, states that full and partial infiltration should be considered geotechnically infeasible on the project site due to the presence of engineered fills, as well as the potential for heaving, distress to adjacent improvements, slope instability, lateral water migration, and daylight water seepage. The report also notes that liners and subdrains should be used for stormwater BMPs. As such, SD-6 is unable to be implemented through means such as infiltration of stormwater in landscaped areas or pervious pavements. See Geotechnical Report for additional details.			
SD-7 Landscaping with Native or Drought Tolerant Species	☒ Yes	☐ No	☐ N/A
Discussion / justification if SD-7 not implemented:			
SD-8 Harvesting and Using Precipitation	☐ Yes	☒ No	☐ N/A
Discussion / justification if SD-8 not implemented: Per the calculations provided in Worksheet B.3-1, there is insufficient demand. Harvest and use is considered infeasible for the project site.			

Summary of PDP Structural BMPs	Form I-6 (PDPs)
Project Identification	
Project Name: Sunrise Senior Living Oceanside	
Permit Application Number: P20-00001, D20-00002	
PDP Structural BMPs	
All PDPs must implement structural BMPs for storm water pollutant control (see Chapter 5 of the manual). Selection of PDP structural BMPs for storm water pollutant control must be based on the selection process described in Chapter 5. PDPs subject to hydromodification management requirements must also implement structural BMPs for flow control for hydromodification management (see Chapter 6 of the manual). Both storm water pollutant control and flow control for hydromodification management can be achieved within the same structural BMP(s). PDP structural BMPs must be verified by the local jurisdiction at the completion of construction. This may include requiring the project owner or project owner's representative to certify construction of the structural BMPs (see Section 1.12 of the manual). PDP structural BMPs must be maintained into perpetuity, and the local jurisdiction must confirm the maintenance (see Section 7 of the manual). Use this form to provide narrative description of the general strategy for structural BMP implementation at the project site in the box below. Then complete the PDP structural BMP summary information sheet (page 3 of this form) for each structural BMP within the project (copy the BMP summary information page as many times as needed to provide summary information for each individual structural BMP).	
Describe the general strategy for structural BMP implementation at the site. This information must describe how the steps for selecting and designing storm water pollutant control BMPs presented in Section 5.1 of the manual were followed, and the results (type of BMPs selected). For projects requiring hydromodification flow control BMPs, indicate whether pollutant control and flow control BMPs are integrated or separate. The proposed assisted living facility will be divided into six (6) separate DMAs, DMA 1A, DMA 1B, DMA 2, DMA 3A, DMA 3B, and DMA 3C. The proposed parking lot and drive aisle to the west of the existing church facility is one DMA, DMA P. DMA 1A is comprised of proposed roof area, asphalt parking and drive aisles, pedestrian walks, landscaping, and offsite run-on from the adjacent church parking lot. BMP strategies for DMA 1A will consist of a detention system combined with a biofiltration BMP (BF1). An ADS Stormtech system has been sized to detain the required volume from DMA 1A, DMA 1B, DMA 2, and DMA 3B to address hydromodification. In addition to the Stormtech detention system, a biofiltration BMP has been sized to biofilter 1.5 times the DCV for DMA 1A. Overflow for the system will be routed to a new parkway drain along Mesa Drive. This design generally maintains the existing hydrology patterns. (Continue on page 2 as necessary.)	

(Page reserved for continuation of description of general strategy for structural BMP implementation at the site)

(Continued from page 1)

DMA 1B is comprised of proposed roof area, asphalt parking and drive aisles, pedestrian walks, and landscaping. BMP strategies for DMA 1B will consist of a detention system combined with a biofiltration BMP (BF1). An ADS Stormtech system has been sized to detain the required volume from DMA 1A, DMA 1B, DMA 2, and DMA 3B to address hydromodification. In addition to the Stormtech detention system, a biofiltration BMP has been sized to biofilter 1.5 times the DCV for DMA 1B. Overflow for the system will be routed to a new parkway drain along Mesa Drive. This design generally maintains the existing hydrology patterns.

DMA 2 is comprised of proposed roof area, pedestrian walks, at-grade landscaping, and an existing 2:1 landscaped slope along the eastern edge of the property. BMP strategies for DMA 2 will mimic those of DMA s1A and 1B, with the installation of a detention system combined with a biofiltration BMP (BF1). An ADS Stormtech system has been sized to detain the required volume from DMA 1A, DMA 1B, DMA 2, and DMA 3B to address hydromodification. In addition to the Stormtech detention system, a biofiltration BMP has been sized to biofilter 1.5 times the DCV. Overflow for the system will be routed to a new parkway drain along Mesa Drive. This design generally maintains the existing hydrology patterns.

DMA 3A consists of a 2:1 landscape slope along the southern edge of the property and is therefore considered self-mitigating. No BMPs are intended to be installed for DMA 3A.

DMA 3B is comprised of landscaping, a pedestrian walk, and the proposed site driveway. BMP strategies for DMA 1A will consist of a detention system and a biofiltration BMP (BF1). An ADS Stormtech system has been sized to detain the required volume from DMA 1A, DMA 1B, DMA 2, and DMA 3B to address hydromodification. In addition to the Stormtech detention system, a biofiltration BMP has been sized to biofilter 1.5 times the DCV for DMA 3B. Overflow for the system will be routed to Mesa Drive. This design generally maintains the existing hydrology patterns.

DMA 3C consists of a 2:1 landscape slope along the southern edge of the property and is therefore considered self-mitigating. No BMPs are intended to be installed for DMA 3C.

(Continue on page 3 as necessary.)

(Page reserved for continuation of description of general strategy for structural BMP implementation at the site)

(Continued from page 2)

DMA P is comprised of proposed asphalt parking and drive aisle, as well as an existing landscaped slope and patio adjacent to the existing church building. BMP strategies for DMA P will consist of a detention system combined with a biofiltration BMP (BF1). An ADS Stormtech system has been sized to detain the required volume from DMA P to address hydromodification. In addition to the Stormtech detention system, a biofiltration BMP has been sized to biofilter 1.5 times the DCV. Overflow for the system will be routed to an existing 18" storm drain to College Boulevard. This design generally maintains the existing hydrology patterns.

Form I-6 Page 3 of 14
Structural BMP Summary Information **(Copy this page as needed to provide information for each individual proposed structural BMP)**
Structural BMP ID No.: DET 1
Construction Plan Sheet No.: To be completed with Final Design
Type of structural BMP: ☐Retention by harvest and use (HU-1) ☐Retention by infiltration basin (INF-1) ☐Retention by bioretention (INF-2) ☐Retention by permeable pavement (INF-3) ☐Partial retention by biofiltration with partial retention (PR-1) ☐Biofiltration (BF-1) ☐Flow-thru treatment control with prior lawful approval to meet earlier PDP requirements (provide BMP type/description in discussion section below) ☐Flow-thru treatment control included as pre-treatment/forebay for an onsite retention or biofiltration BMP (provide BMP type/description and indicate which onsite retention or biofiltration BMP it serves in discussion section below) ☐Flow-thru treatment control with alternative compliance (provide BMP type/description in discussion section below) ☒Detention pond or vault for hydromodification management ☐Other (describe in discussion section below)
Purpose: ☐Pollutant control only ☒Hydromodification control only ☐Combined pollutant control and hydromodification control ☐Pre-treatment/forebay for another structural BMP ☐Other (describe in discussion section below)

Who will certify construction of this BMP? Provide name and contact information for the party responsible to sign BMP verification forms if required by the [City Engineer] (See Section 1.12 of the manual)	To be completed with Final Design
Who will be the final owner of this BMP?	To be completed with Final Design
Who will maintain this BMP into perpetuity?	To be completed with Final Design
What is the funding mechanism for maintenance?	To be completed with Final Design

Structural BMP Summary Information

(Copy this page as needed to provide information for each individual proposed structural BMP)

Discussion (as needed):

ADS Stormtech MC-4500 detention system. Volume capacity of 24,000 cubic-feet. Volume designed for hydromodification requirements for DMA 1A, DMA 1B, DMA 2, and DMA 3B, as well as for peak flow requirements.

Form I-6 Page 5 of 14
Structural BMP Summary Information **(Copy this page as needed to provide information for each individual proposed structural BMP)**
Structural BMP ID No.: DET 2
Construction Plan Sheet No.: To be completed with Final Design
Type of structural BMP: ☐Retention by harvest and use (HU-1) ☐Retention by infiltration basin (INF-1) ☐Retention by bioretention (INF-2) ☐Retention by permeable pavement (INF-3) ☐Partial retention by biofiltration with partial retention (PR-1) ☐Biofiltration (BF-1) ☐Flow-thru treatment control with prior lawful approval to meet earlier PDP requirements (provide BMP type/description in discussion section below) ☐Flow-thru treatment control included as pre-treatment/forebay for an onsite retention or biofiltration BMP (provide BMP type/description and indicate which onsite retention or biofiltration BMP it serves in discussion section below) ☐Flow-thru treatment control with alternative compliance (provide BMP type/description in discussion section below) ☒Detention pond or vault for hydromodification management ☐Other (describe in discussion section below)
Purpose: ☐Pollutant control only ☒Hydromodification control only ☐Combined pollutant control and hydromodification control ☐Pre-treatment/forebay for another structural BMP ☐Other (describe in discussion section below)

Who will certify construction of this BMP? Provide name and contact information for the party responsible to sign BMP verification forms if required by the [City Engineer] (See Section 1.12 of the manual)	To be completed with Final Design
Who will be the final owner of this BMP?	To be completed with Final Design
Who will maintain this BMP into perpetuity?	To be completed with Final Design
What is the funding mechanism for maintenance?	To be completed with Final Design

Structural BMP Summary Information

(Copy this page as needed to provide information for each individual proposed structural BMP)

Discussion (as needed):

ADS Stormtech MC-4500 detention system. Volume capacity of 12,800 cubic-feet. Volume designed for hydromodification requirements for DMA P, as well as for peak flow requirements.

Form I-6 Page 7 of 14	
Structural BMP Summary Information **(Copy this page as needed to provide information for each individual proposed structural BMP)**	
Structural BMP ID No.: BIO-1	
Construction Plan Sheet No.: To be completed with Final Design	
Type of structural BMP: ☐Retention by harvest and use (HU-1) ☐Retention by infiltration basin (INF-1) ☐Retention by bioretention (INF-2) ☐Retention by permeable pavement (INF-3) ☐Partial retention by biofiltration with partial retention (PR-1) ☒Biofiltration (BF-1) ☐Flow-thru treatment control with prior lawful approval to meet earlier PDP requirements (provide BMP type/description in discussion section below) ☐Flow-thru treatment control included as pre-treatment/forebay for an onsite retention or biofiltration BMP (provide BMP type/description and indicate which onsite retention or biofiltration BMP it serves in discussion section below) ☐Flow-thru treatment control with alternative compliance (provide BMP type/description in discussion section below) ☐Detention pond or vault for hydromodification management ☐Other (describe in discussion section below)	
Purpose: ☒Pollutant control only ☐Hydromodification control only ☐Combined pollutant control and hydromodification control ☐Pre-treatment/forebay for another structural BMP ☐Other (describe in discussion section below)	
Who will certify construction of this BMP? Provide name and contact information for the party responsible to sign BMP verification forms if required by the [City Engineer] (See Section 1.12 of the manual)	To be completed with Final Design
Who will be the final owner of this BMP?	To be completed with Final Design
Who will maintain this BMP into perpetuity?	To be completed with Final Design
What is the funding mechanism for maintenance?	To be completed with Final Design

Structural BMP Summary Information

(Copy this page as needed to provide information for each individual proposed structural BMP)

Discussion (as needed):

A biofiltration BMP to treat DMA 1A with a footprint of 1,576 square feet that provides a biofiltered volume of at least 3,973 cubic feet.

Form I-6 Page 9 of 14	
Structural BMP Summary Information **(Copy this page as needed to provide information for each individual proposed structural BMP)**	
Structural BMP ID No.: BIO-2	
Construction Plan Sheet No.: To be completed with Final Design	
Type of structural BMP: ☐Retention by harvest and use (HU-1) ☐Retention by infiltration basin (INF-1) ☐Retention by bioretention (INF-2) ☐Retention by permeable pavement (INF-3) ☐Partial retention by biofiltration with partial retention (PR-1) ☒Biofiltration (BF-1) ☐Flow-thru treatment control with prior lawful approval to meet earlier PDP requirements (provide BMP type/description in discussion section below) ☐Flow-thru treatment control included as pre-treatment/forebay for an onsite retention or biofiltration BMP (provide BMP type/description and indicate which onsite retention or biofiltration BMP it serves in discussion section below) ☐Flow-thru treatment control with alternative compliance (provide BMP type/description in discussion section below) ☐Detention pond or vault for hydromodification management ☐Other (describe in discussion section below)	
Purpose: ☒Pollutant control only ☐Hydromodification control only ☐Combined pollutant control and hydromodification control ☐Pre-treatment/forebay for another structural BMP ☐Other (describe in discussion section below)	
Who will certify construction of this BMP? Provide name and contact information for the party responsible to sign BMP verification forms if required by the [City Engineer] (See Section 1.12 of the manual)	To be completed with Final Design
Who will be the final owner of this BMP?	To be completed with Final Design
Who will maintain this BMP into perpetuity?	To be completed with Final Design
What is the funding mechanism for maintenance?	To be completed with Final Design

Structural BMP Summary Information

(Copy this page as needed to provide information for each individual proposed structural BMP)

Discussion (as needed):

A biofiltration BMP to treat DMA 1B with a footprint of 670 square feet that provides a biofiltered volume of at least 1,670 cubic feet.

Form I-6 Page 11 of 14
Structural BMP Summary Information **(Copy this page as needed to provide information for each individual proposed structural BMP)**
Structural BMP ID No.: BIO-3
Construction Plan Sheet No.: To be completed with Final Design
Type of structural BMP: ☐Retention by harvest and use (HU-1) ☐Retention by infiltration basin (INF-1) ☐Retention by bioretention (INF-2) ☐Retention by permeable pavement (INF-3) ☐Partial retention by biofiltration with partial retention (PR-1) ☒Biofiltration (BF-1) ☐Flow-thru treatment control with prior lawful approval to meet earlier PDP requirements (provide BMP type/description in discussion section below) ☐Flow-thru treatment control included as pre-treatment/forebay for an onsite retention or biofiltration BMP (provide BMP type/description and indicate which onsite retention or biofiltration BMP it serves in discussion section below) ☐Flow-thru treatment control with alternative compliance (provide BMP type/description in discussion section below) ☐Detention pond or vault for hydromodification management ☐Other (describe in discussion section below)
Purpose: ☒Pollutant control only ☐Hydromodification control only ☐Combined pollutant control and hydromodification control ☐Pre-treatment/forebay for another structural BMP ☐Other (describe in discussion section below)

Who will certify construction of this BMP? Provide name and contact information for the party responsible to sign BMP verification forms if required by the [City Engineer] (See Section 1.12 of the manual)	To be completed with Final Design
Who will be the final owner of this BMP?	To be completed with Final Design
Who will maintain this BMP into perpetuity?	To be completed with Final Design
What is the funding mechanism for maintenance?	To be completed with Final Design

Structural BMP Summary Information

(Copy this page as needed to provide information for each individual proposed structural BMP)

Discussion (as needed):

A biofiltration BMP to treat DMA 2 with a footprint of 714 square feet that provides a biofiltered volume of at least 1,796 cubic feet.

Form I-6 Page 13 of 14	
Structural BMP Summary Information **(Copy this page as needed to provide information for each individual proposed structural BMP)**	
Structural BMP ID No.: BIO-4	
Construction Plan Sheet No.: To be completed with Final Design	
Type of structural BMP: ☐Retention by harvest and use (HU-1) ☐Retention by infiltration basin (INF-1) ☐Retention by bioretention (INF-2) ☐Retention by permeable pavement (INF-3) ☐Partial retention by biofiltration with partial retention (PR-1) ☒Biofiltration (BF-1) ☐Flow-thru treatment control with prior lawful approval to meet earlier PDP requirements (provide BMP type/description in discussion section below) ☐Flow-thru treatment control included as pre-treatment/forebay for an onsite retention or biofiltration BMP (provide BMP type/description and indicate which onsite retention or biofiltration BMP it serves in discussion section below) ☐Flow-thru treatment control with alternative compliance (provide BMP type/description in discussion section below) ☐Detention pond or vault for hydromodification management ☐Other (describe in discussion section below)	
Purpose: ☒Pollutant control only ☐Hydromodification control only ☐Combined pollutant control and hydromodification control ☐Pre-treatment/forebay for another structural BMP ☐Other (describe in discussion section below)	
Who will certify construction of this BMP? Provide name and contact information for the party responsible to sign BMP verification forms if required by the [City Engineer] (See Section 1.12 of the manual)	To be completed with Final Design
Who will be the final owner of this BMP?	To be completed with Final Design
Who will maintain this BMP into perpetuity?	To be completed with Final Design
What is the funding mechanism for maintenance?	To be completed with Final Design

Structural BMP Summary Information

(Copy this page as needed to provide information for each individual proposed structural BMP)

Discussion (as needed):

A biofiltration BMP to treat DMA 3B with a footprint of 69 square feet that provides a biofiltered volume of at least 169 cubic feet.

Form I-6 Page 13 of 14	
Structural BMP Summary Information **(Copy this page as needed to provide information for each individual proposed structural BMP)**	
Structural BMP ID No.: BIO-5	
Construction Plan Sheet No.: To be completed with Final Design	
Type of structural BMP: ☐Retention by harvest and use (HU-1) ☐Retention by infiltration basin (INF-1) ☐Retention by bioretention (INF-2) ☐Retention by permeable pavement (INF-3) ☐Partial retention by biofiltration with partial retention (PR-1) ☒Biofiltration (BF-1) ☐Flow-thru treatment control with prior lawful approval to meet earlier PDP requirements (provide BMP type/description in discussion section below) ☐Flow-thru treatment control included as pre-treatment/forebay for an onsite retention or biofiltration BMP (provide BMP type/description and indicate which onsite retention or biofiltration BMP it serves in discussion section below) ☐Flow-thru treatment control with alternative compliance (provide BMP type/description in discussion section below) ☐Detention pond or vault for hydromodification management ☐Other (describe in discussion section below)	
Purpose: ☒Pollutant control only ☐Hydromodification control only ☐Combined pollutant control and hydromodification control ☐Pre-treatment/forebay for another structural BMP ☐Other (describe in discussion section below)	
Who will certify construction of this BMP? Provide name and contact information for the party responsible to sign BMP verification forms if required by the [City Engineer] (See Section 1.12 of the manual)	To be completed with Final Design
Who will be the final owner of this BMP?	To be completed with Final Design
Who will maintain this BMP into perpetuity?	To be completed with Final Design
What is the funding mechanism for maintenance?	To be completed with Final Design

Structural BMP Summary Information

(Copy this page as needed to provide information for each individual proposed structural BMP)

Discussion (as needed):

A biofiltration BMP to treat DMA P with a footprint of 1,870 square feet that provides a biofiltered volume of at least 4,682 cubic feet.

	City of Oceanside 300 N Coast Highway Oceanside, CA 92054	**Permanent BMP Construction** **Self Certification Form**	February 2016

Date Prepared: Click here to enter text.	Project No.: Click here to enter text.
Project Applicant: Click here to enter text.	Phone: Click here to enter text.
Project Address: Click here to enter text.	
Project Engineer: Click here to enter text.	Phone: Click here to enter text.

The purpose of this form is to verify that the site improvements for the project, identified above, have been constructed in conformance with the approved Storm Water Quality Management Plan (SWQMP) documents and drawings.

This form must be completed by the engineer and installing contractor and submitted prior to final inspection of the construction permit. Completion and submittal of this form is required for all new development and redevelopment projects in order to comply with the City's Storm Water ordinances and NDPES Permit Order No. R9-2013-0001. Final inspection for occupancy and/or release of grading or public improvement bonds may be delayed if this form is not submitted and approved by the City of Oceanside.

ENGINEER'S CERTIFICATION:

As the professional in responsible charge for the design of the above project, I certify that I have inspected all constructed Low Impact Development (LID) site design, source control and treatment control BMP's required per the approved SWQMP and Construction Permit No. Click here to enter text.; and that said BMP's have been constructed in compliance with the approved plans and all applicable specifications, permits, ordinances and Order No. R9-2013-0001 of the San Diego Regional Water Quality Control Board.

I understand that this BMP certification statement does not constitute an operation and maintenance verification.

Signature: _____

Date of Signature: _ Click here to enter text.__

Printed Name: _ Click here to enter text._____

Title: _ Click here to enter text._____

Phone No. _ Click here to enter text. _____

Engineer's Stamp

CONTRACTOR'S CERTIFICATION:

As the professional in responsible charge for construction of the above project, I certify that all constructed Low Impact Development (LID) site design, source control and treatment control BMP's required per the approved SWQMP and Construction Permit No. Click here to enter text.; have been constructed in compliance with the approved plans and all applicable specifications, permits, and ordinances.

I understand that this BMP certification statement does not constitute an operation and maintenance verification.

Signature: _____

Date of Signature: _ Click here to enter text.__

Printed Name: _ Click here to enter text._____

Title: _ Click here to enter text._____

Phone No. _ Click here to enter text. _____

ATTACHMENT 1

BACKUP FOR PDP POLLUTANT CONTROL BMPS

This is the cover sheet for Attachment 1.

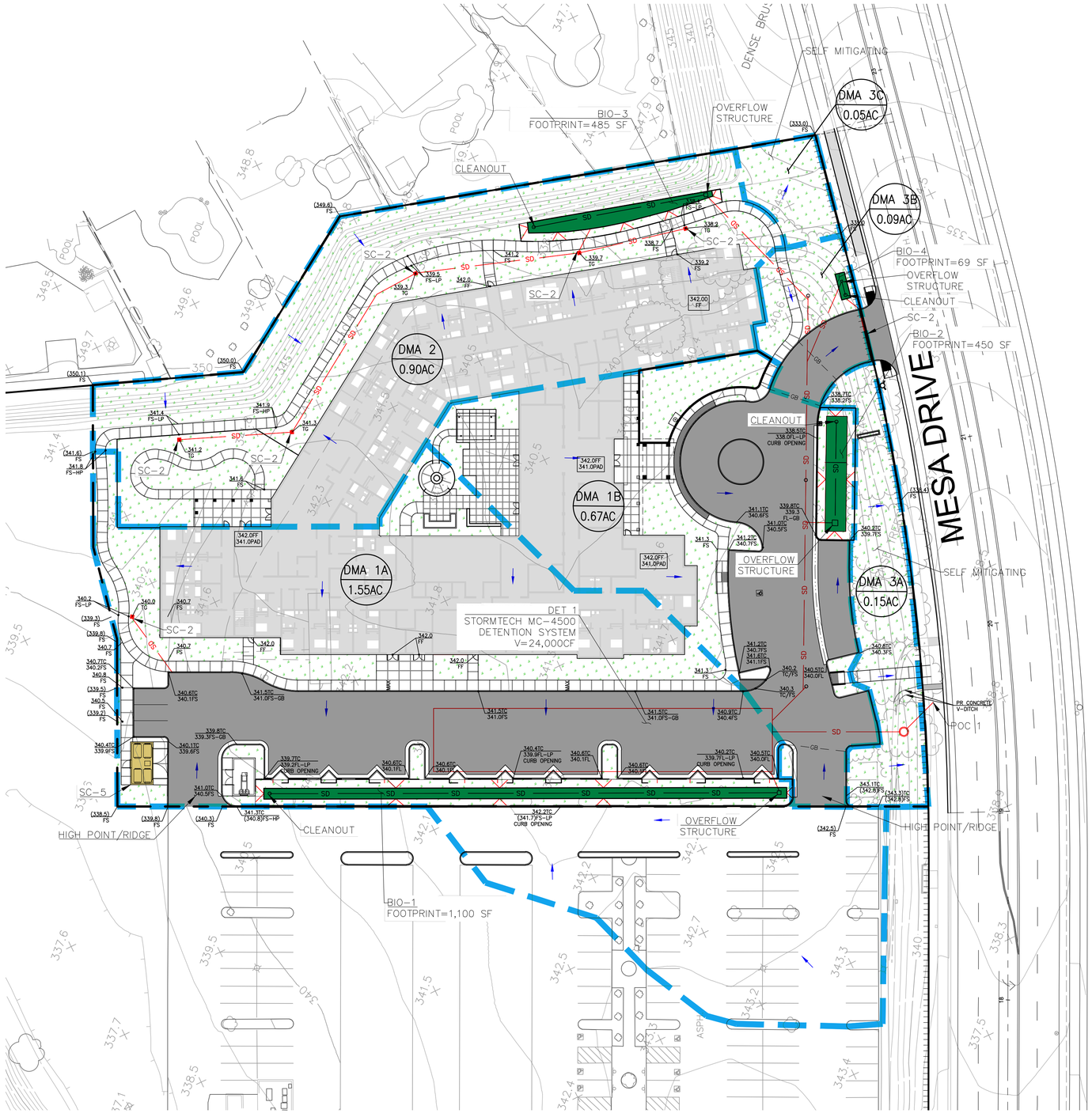
Indicate which Items are Included:

Attachment Sequence	Contents	Checklist
Attachment 1a	DMA Exhibit (Required) See DMA Exhibit Checklist.	☒Included
Attachment 1b	Tabular Summary of DMAs Showing DMA ID matching DMA Exhibit, DMA Area, and DMA Type (Required)* *Provide table in this Attachment OR on DMA Exhibit in Attachment 1a	☒Included on DMA Exhibit in Attachment 1a ☐Included as Attachment 1b, separate from DMA Exhibit
Attachment 1c	Design Capture Volume Worksheet	☒Included
Attachment 1d	Form I-7, Harvest and Use Feasibility Screening Checklist (Required unless the entire project will use infiltration BMPs) Refer to Appendix B.3-1 of the BMP Design Manual to complete Form I-7.	☒Included ☐Not included because the entire project will use infiltration BMPs
Attachment 1e	Form I-8, Categorization of Infiltration Feasibility Condition (Required unless the project will use harvest and use BMPs) Refer to Appendices C and D of the BMP Design Manual to complete Form I-8.	☒Included ☐Not included because the entire project will use harvest and use BMPs
Attachment 1f	Pollutant Control BMP Design Worksheets / Calculations (Required) Refer to Appendices B and E of the BMP Design Manual for structural pollutant control BMP design guidelines	☒Included

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, and size/detail)



ABBREVIATIONS:

AC	ACRES
CFS	CUBIC FEET PER SECOND
FG	FINISHED GROUND
FS	FINISH SURFACE
L	LENGTH

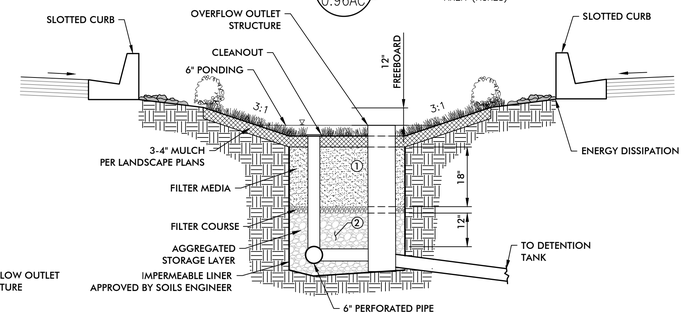
HYDROLOGIC SITE DATA

SOIL GROUP: C & D
ASSISTED LIVING SITE AREA: 3.39 AC
DEPTH TO GROUNDWATER: +20'

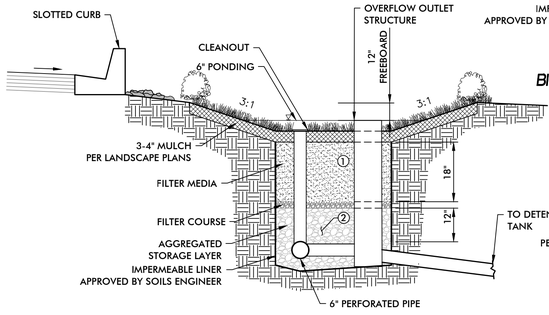
DMA	DRAINAGE AREA (ACRES)	85TH PERCENTILE (d) (INCHES)	WEIGHTED RUNOFF FACTOR (C)	DCV (CUBIC-FEET)	BIOFILTRATION VOLUME (1.5XDCV)	MINIMUM BMP FOOTPRINT (SQUARE-FEET)	BMP FOOTPRINT PROVIDED (SQUARE-FEET)
DMA 1A	1.55	0.64	0.78	2,809	3,973	1,576	1,579
DMA 1B	0.67	0.64	076	1,181	1,670	664	670
DMA 2	0.90	0.64	0.61	1,270	1,796	714	720
DMA 3A	0.15	0.64	0.32	--	--	--	--
DMA 3B	0.09	0.64	0.59	123	169	69	69
DMA 3C	0.05	0.64	0.30	--	--	--	--

LEGEND:

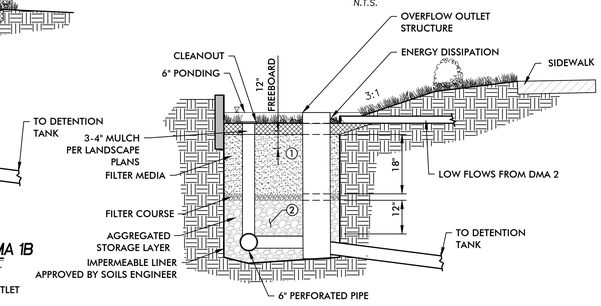
- RIGHT-OF-WAY LINE
- CENTERLINE
- DMA BOUNDARY
- LANDSCAPE AREA
- BIORETENTION TREATMENT AREA
- AC PAVEMENT
- ROOF
- WALK
- STORM DRAIN STENCILING & MAINTENANCE (SC-2)
- PROPOSED TRASH ENCLOSURE (SC-5)
- FLOW DIRECTION
- DMA 1 / 0.96AC — SUBAREA DESIGNATION / AREA (ACRES)



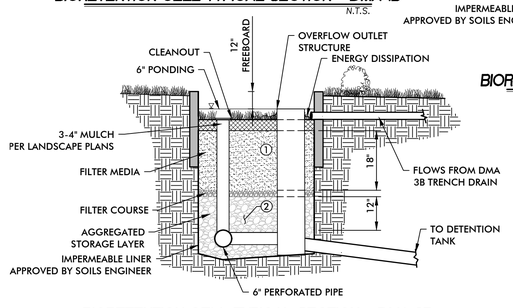
BIORETENTION CELL TYPICAL SECTION - DMA 1A
N.T.S.



BIORETENTION CELL TYPICAL SECTION - DMA 1B
N.T.S.



BIORETENTION CELL TYPICAL SECTION - DMA 2
N.T.S.



BIORETENTION CELL TYPICAL SECTION - DMA 3B
N.T.S.

BIORETENTION & STORM WATER PLANTER NOTES:

① 18" PLANTING MEDIA THAT IS SUFFICIENTLY PERMEABLE TO ACHIEVE A LONG TERM, IN-PLACE FILTRATION RATE OF AT LEAST 5 INCHES PER HOUR AND SUPPORT VIGOROUS PLANT GROWTH. PLANTING MEDIA SHALL CONSIST OF THE FOLLOWING MIXTURE OF FINE SAND AND COMPOST, MEASURED ON A VOLUME BASIS: 70%-85% SAND, AND 15%-30% COMPOST. SEE LANDSCAPE PLANS FOR ADDITIONAL DETAILS ON SOIL/PLANTING MIX.

SAND SHALL BE FREE OF WOOD, WASTE, COATING SUCH AS CLAY, STONE DUST, CARBONATE, ETC. OR ANY OTHER DELETERIOUS MATERIAL. ALL AGGREGATE PASSING THE NO. 200 SIEVE SHALL BE NON-PLASTIC. SAND FOR PLANTING MEDIA SHALL BE ANALYZED BY AN ACCREDITED LAB USING ASTM D 422, AND COMPLY WITH GRADATION REQUIREMENTS PER SPECIFICATIONS INCLUDED IN LANDSCAPE PLANS.

COMPOST SHALL BE A WELL DECOMPOSED, STABLE, WEED-FREE ORGANIC MATTER SOURCE DERIVED FROM WASTE MATERIALS CERTIFIED THROUGH USCC SEAL OF TESTING ASSURANCE (STA) PROGRAM. ORGANIC MATTER CONTENT SHALL BE 35%-75% BY DRY WEIGHT, AND PH BETWEEN 6.0 AND 7.5.

② UNDERDRAIN GRAVEL CLASS 2 PERMEABLE, PER CALTRANS SPECIFICATION 68-2.02F(3). AT LEAST 6" OF WASHED AGGREGATE MUST BE PLACED BELOW, TO THE TOP, AND TO THE SIDES OF THE UNDERDRAIN PIPE(S).

30' 0' 15' 30'
SCALE: 1" = 30'

PRELIMINARY DMA EXHIBIT

SUNRISE SENIOR LIVING OF OCEANSIDE
4700 MESA DR

SUNRISE SENIOR LIVING

FUSCOE ENGINEERING
600 Wilshire Blvd., Suite 1470, Los Angeles, California 90017
tel 213.988.8802 ◦ fax 213.988.8803 ◦ www.fuscoe.com

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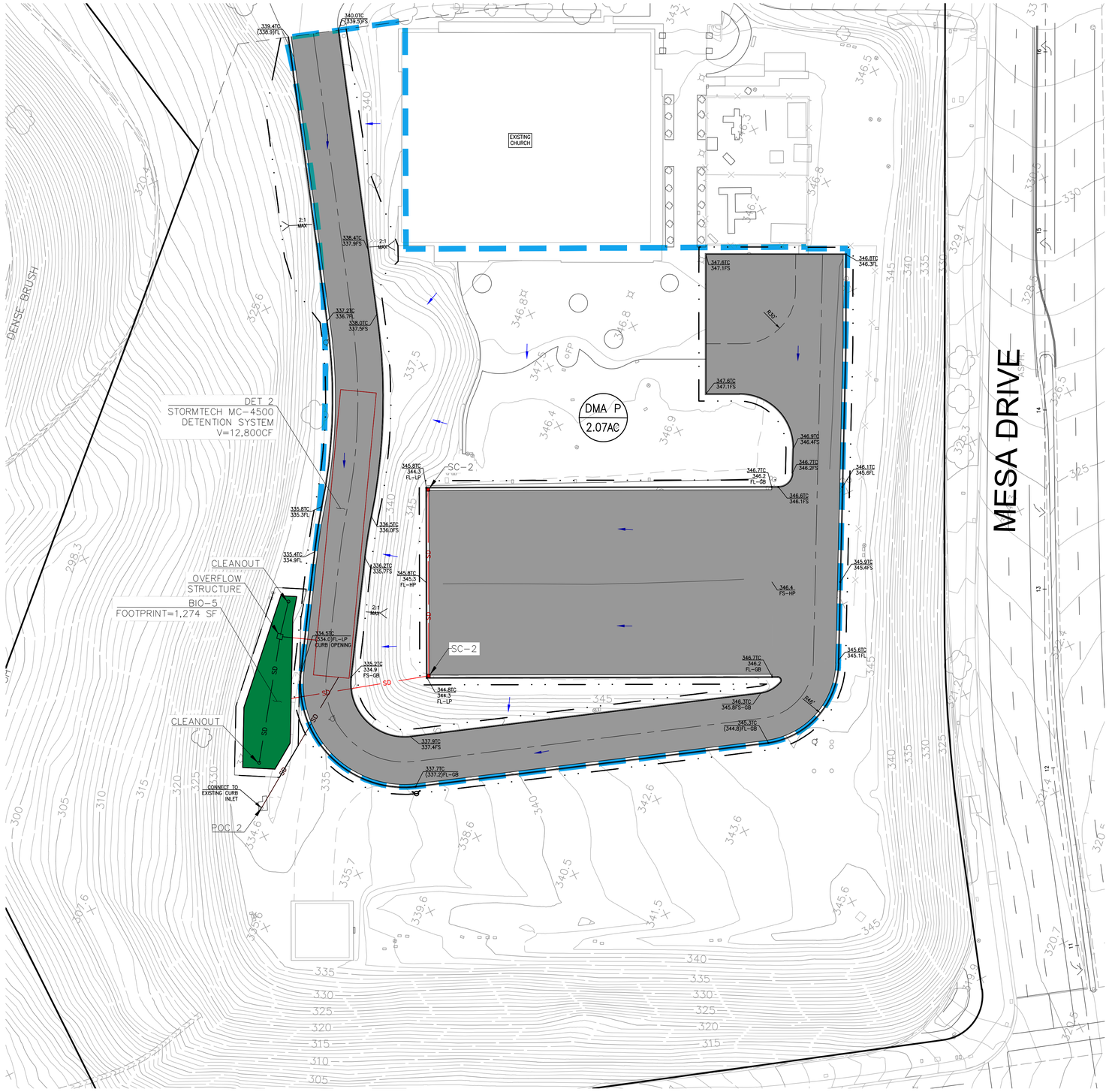


HYDROLOGIC SITE DATA

SOIL GROUP: C & D
WESTERN PARKING SITE AREA: 2.07 AC
DEPTH TO GROUNDWATER: +20'

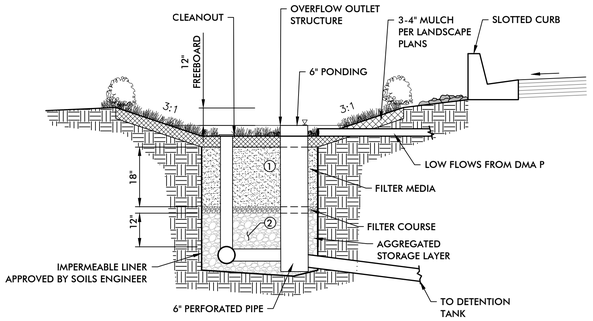
ABBREVIATIONS:

AC	ACRES
CFS	CUBIC FEET PER SECOND
FG	FINISHED GROUND
FS	FINISH SURFACE
L	LENGTH

LEGEND:

- RIGHT-OF-WAY LINE
- CENTERLINE
- DMA BOUNDARY
- LANDSCAPE AREA
- AC PAVEMENT
- BIOFILTRATION BMP
- FLOW DIRECTION
- CATCH BASIN STENCILING
- DMA 1 / 0.96AC — SUBAREA DESIGNATION / AREA (ACRES)

DMA	DRAINAGE AREA (ACRES)	85TH PERCENTILE (d) (INCHES)	WEIGHTED RUNOFF FACTOR (C)	DCV (CUBIC-FEET)	BIOFILTRATION VOLUME (1.5XDCV)	MINIMUM BMP FOOTPRINT (SQUARE-FEET)	BMP FOOTPRINT PROVIDED (SQUARE-FEET)
DMA P	2.07	0.64	0.69	3,311	4,682	1,862	1,880



BIORETENTION CELL TYPICAL SECTION - DMA P
N.T.S.

BIORETENTION & STORM WATER PLANTER NOTES:

① 18" PLANTING MEDIA THAT IS SUFFICIENTLY PERMEABLE TO ACHIEVE A LONG TERM, IN-PLACE FILTRATION RATE OF AT LEAST 5 INCHES PER HOUR AND SUPPORT VIGOROUS PLANT GROWTH. PLANTING MEDIA SHALL CONSIST OF THE FOLLOWING MIXTURE OF FINE SAND AND COMPOST, MEASURED ON A VOLUME BASIS: 70%-85% SAND, AND 15%-30% COMPOST. SEE LANDSCAPE PLANS FOR ADDITIONAL DETAILS ON SOIL/PLANTING MIX.

SAND SHALL BE FREE OF WOOD, WASTE, COATING SUCH AS CLAY, STONE DUST, CARBONATE, ETC. OR ANY OTHER DELETERIOUS MATERIAL. ALL AGGREGATE PASSING THE NO. 200 SIEVE SHALL BE NON-PLASTIC. SAND FOR PLANTING MEDIA SHALL BE ANALYZED BY AN ACCREDITED LAB USING ASTM D 422, AND COMPLY WITH GRADATION REQUIREMENTS PER SPECIFICATIONS INCLUDED IN LANDSCAPE PLANS.

COMPOST SHALL BE A WELL DECOMPOSED, STABLE, WEED-FREE ORGANIC MATTER SOURCE DERIVED FROM WASTE MATERIALS CERTIFIED THROUGH USCC SEAL OF TESTING ASSURANCE (STA) PROGRAM. ORGANIC MATTER CONTENT SHALL BE 35%-75% BY DRY WEIGHT, AND PH BETWEEN 6.0 AND 7.5.

② UNDERDRAIN GRAVEL CLASS 2 PERMEABLE, PER CALTRANS SPECIFICATION 68-2.02F(3). AT LEAST 6" OF WASHED AGGREGATE MUST BE PLACED BELOW, TO THE TOP, AND TO THE SIDES OF THE UNDERDRAIN PIPE(S).

30' 0' 15' 30'
SCALE: 1" = 30'

PRELIMINARY LOWER CHURCH PARKING EXHIBIT

SUNRISE SENIOR LIVING OF OCEANSIDE
4700 MESA DR

SUNRISE SENIOR LIVING

FUSCOE ENGINEERING
600 Wilshire Blvd., Suite 1470, Los Angeles, California 90017
tel 213.988.8802 ◦ fax 213.988.8803 ◦ www.fuscoe.com

Placeholder – **Tabular Summary of DMAs (if separate from DMA Exhibit)**

Leave placeholder intact if not applicable.

☒Not Applicable – Tabular Summary included on DMA Exhibit

FUSCOE ENGINEERING
6390 Greenwich Drive, Suite 170
San Diego, California 92122
tel 858.554.1500 ◦ fax 858.597.0335
www.fuscoe.com

C-Factor Calculations

6/2/2020

AREA:	**DMA 1A**			
	Area =	1.55	ac	
	Area Impervious =	1.24	ac	AC Pavement, Roofs, & Walks
	Area Pervious =	0.31	ac	Landscape
	C factor =	0.30		Landscape & Type D Soil
	C factor =	0.90		Imperivous Areas
	Cweighted =	0.78		
AREA:	**DMA 1B**			
	Area =	0.67	ac	
	Area Impervious =	0.52	ac	AC Pavement, Roofs, & Walks
	Area Pervious =	0.15	ac	Landscape
	C factor =	0.30		Landscape & Type D Soil
	C factor =	0.90		Imperivous Areas
	Cweighted =	0.76		
AREA:	**DMA 2**			
	Area =	0.90	ac	
	Area Impervious =	0.46	ac	AC Pavement & Walks
	Area Pervious =	0.44	ac	Landscape
	C factor =	0.90		Roof & Walks
	C factor =	0.30		Landscape & Type D Soil
	Cweighted =	0.61		
AREA:	**DMA 3A**			
	Area =	0.15	ac	
	Area Impervious =	0.01	ac	Walk
	Area Pervious =	0.15	ac	Landscape
	C factor =	0.90		Impervious
	C factor =	0.30		Landscape & Type D Soil
	Cweighted =	0.32		
AREA:	**DMA 3B (DRIVEWAY)**			
	Area =	0.09	ac	
	Area Impervious =	0.04	ac	Walk
	Area Pervious =	0.05	ac	Landscape
	C factor =	0.90		Impervious
	C factor =	0.30		Landscape & Type D Soil
	Cweighted =	0.59		
AREA:	**DMA 3C**			
	Area =	0.05	ac	
	Area Impervious =	0.00	ac	Walk
	Area Pervious =	0.05	ac	Landscape
	C factor =	0.90		Impervious
	C factor =	0.30		Landscape & Type D Soil
	Cweighted =	0.30		
AREA:	**OVERALL ASSISTED LIVING SITE**			
	Area =	3.40	ac	
	Area Impervious =	2.26	ac	AC Pavement, Roofs, & Walks
	Area Pervious =	1.14	ac	Landscape
	C factor =	0.30		Landscape & Type D Soil
	C factor =	0.90		Imperivous Areas
	Cweighted =	0.70		
AREA:	**LOWER PARKING**			
	Area =	2.07	ac	
	Area Impervious =	1.33	ac	AC Pavement, Roofs, & Walks
	Area Pervious =	0.74	ac	Landscape
	C factor =	0.30		Landscape & Type D Soil
	C factor =	0.90		Imperivous Areas
	Cweighted =	0.69		

Design Capture Volume – DMA 1A		Worksheet B-2.1		
1	85th percentile 24-hr storm depth from Figure B.1-1	d=	0.64	inches
2	Area tributary to BMP (s)	A=	1.55	acres
3	Area weighted runoff factor (estimate using Appendix B.1.1 and B.2.1)	C=	0.78	unitless
4	Street trees volume reduction	TCV=	0	cubic-feet
5	Rain barrels volume reduction	RCV=	0	cubic-feet
6	Calculate DCV = (3630 x C x d x A) – TCV - RCV	DCV=	2,807	cubic-feet

Design Capture Volume – DMA 1B		Worksheet B-2.1		
1	85th percentile 24-hr storm depth from Figure B.1-1	d=	0.64	inches
2	Area tributary to BMP (s)	A=	0.67	acres
3	Area weighted runoff factor (estimate using Appendix B.1.1 and B.2.1)	C=	0.76	unitless
4	Street trees volume reduction	TCV=	0	cubic-feet
5	Rain barrels volume reduction	RCV=	0	cubic-feet
6	Calculate DCV = (3630 x C x d x A) – TCV - RCV	DCV=	1,181	cubic-feet

Design Capture Volume – DMA 2		Worksheet B-2.1		
1	85th percentile 24-hr storm depth from Figure B.1-1	d=	0.64	inches
2	Area tributary to BMP (s)	A=	0.90	acres
3	Area weighted runoff factor (estimate using Appendix B.1.1 and B.2.1)	C=	0.61	unitless
4	Street trees volume reduction	TCV=	0	cubic-feet
5	Rain barrels volume reduction	RCV=	0	cubic-feet
6	Calculate DCV = (3630 x C x d x A) – TCV - RCV	DCV=	1,270	cubic-feet

Design Capture Volume – DMA 3B		Worksheet B-2.1		
1	85th percentile 24-hr storm depth from Figure B.1-1	d=	0.64	inches
2	Area tributary to BMP (s)	A=	0.09	acres
3	Area weighted runoff factor (estimate using Appendix B.1.1 and B.2.1)	C=	0.59	unitless
4	Street trees volume reduction	TCV=	0	cubic-feet
5	Rain barrels volume reduction	RCV=	0	cubic-feet
6	Calculate DCV = (3630 x C x d x A) – TCV - RCV	DCV=	123	cubic-feet

Design Capture Volume – DMA P		Worksheet B-2.1		
1	85th percentile 24-hr storm depth from Figure B.1-1	d=	0.64	inches
2	Area tributary to BMP (s)	A=	2.07	acres
3	Area weighted runoff factor (estimate using Appendix B.1.1 and B.2.1)	C=	0.69	unitless
4	Street trees volume reduction	TCV=	0	cubic-feet
5	Rain barrels volume reduction	RCV=	0	cubic-feet
6	Calculate DCV = (3630 x C x d x A) – TCV - RCV	DCV=	3,311	cubic-feet

Harvest and Use Feasibility Checklist	Form I-7

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

x Toilet and urinal flushing
x Landscape irrigation
☐ Other:_____

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

Total landscape area for the project site is approximately 1.07 acres. Per Table B.3-3, 36-hour Planning Level Irrigation Demand for a one-acre of irrigated land for a "Hydrozone of Moderate Plant Water Use" is approximately 1,470 gallons (196.26 cubic feet) per irrigated acre per 36 hour period. The total irrigated 36-hour demand for the irrigated 1.07 acres is 1,573 gallons **(210 cubic feet).**

3. Calculate the DCV using worksheet B-2.1.

DCV = 4,614 (cubic feet)

Toilet Water Usage Demand

Total Use per Resident (per table B.3-1): 9.3 gal/day/unit

Residential Units in Development: 95 units

Total Use per Day: 883.5 gallons/day (118.0 CF/day)

Total Use per 36-hour Period: **386.9 CF/36 hours**

3a. Is the 36 hour demand greater than or equal to the DCV?	3b. Is the 36 hour demand greater than 0.25DCV but less than the full DCV?	3c. Is the 36 hour demand less than 0.25DCV?
☐ Yes / ☒ No ⇨ ⇩	☐ Yes / ☒ No ⇨ ⇩	☒ Yes ⇩
Harvest and use appears to be feasible. Conduct more detailed evaluation and sizing calculations to confirm that DCV can be used at an adequate rate to meet drawdown criteria.	Harvest and use may be feasible. Conduct more detailed evaluation and sizing calculations to determine feasibility. Harvest and use may only be able to be used for a portion of the site, or (optionally) the storage may need to be upsized to meet long term capture targets while draining in longer than 36 hours.	Harvest and use is considered to be infeasible. 0.25DCV = 1,153.5 CF > 386.9 CF

Is harvest and use feasible based on further evaluation?

☐ Yes, refer to Appendix E to select and size harvest and use BMPs.

☒ No, select alternate BMPs.

Categorization of Infiltration Feasibility Condition	Form I-8

Part 1 - Full Infiltration Feasibility Screening Criteria

Would infiltration of the full design volume be feasible from a physical perspective without any undesirable consequences that cannot be reasonably mitigated?

Criteria	Screening Question	Yes	No
1	Is the estimated reliable infiltration rate below proposed facility locations greater than 0.5 inches per hour? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.2 and Appendix D.		X

Provide basis:

Based on the USDA Web Soil Survey website, the underlying soils are classified as Diablo Clay (DaC, DaD, and DaE2) and Las Flores loamy fine sand (LeC2) which belong to Hydrologic Soil Groups C and D, which are generally not considered suitable for infiltration BMP's. The existing compacted fill should be classified as Hydrologic Soil Group D, which is not suitable for infiltration BMP's. Information collected from the USDA website is attached. Infiltration BMP's supported on compacted fill are not recommended due to the potential for heaving of the expansive soils, settlement of granular soils, and lateral water migration that may adversely impact adjacent structures and private and public improvements. Infiltration BMP's near descending slopes are not recommended due to the potential for instability and a horizontal setback equivalent to the height of slope for natural slopes and 1.5 times the height of a fill slope are recommended. The underlying Santiago Formation is moderately to highly expansive. Infiltration BMP's supported on expansive soils are not recommended due to the increased potential for distress to adjacent structures and improvements.

2	Can infiltration greater than 0.5 inches per hour be allowed without increasing risk of geotechnical hazards (slope stability, groundwater mounding, utilities, or other factors) that cannot be mitigated to an acceptable level? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.2.		X

Provide basis: Fill over natural slopes exist on the north side of the property. A cut slope is shown on the southwestern portion of the property. Full infiltration adjacent to descending slopes is not recommended due to slope instability and daylight water seepage issues. Setbacks of 1.5 times the fill slope height, or 1 times the height of cut or natural slopes would be required to lower this risk. However, the underlying fill and Santiago Formation is moderately to highly expansive. Infiltration BMP's supported on highly expansive soils are not recommended due to the increased potential for heaving and distress to adjacent public and private improvements.

Form I-8 Page 2 of 4			
Criteria	**Screening Question**	**Yes**	**No**
3	Can infiltration greater than 0.5 inches per hour be allowed without increasing risk of groundwater contamination (shallow water table, storm water pollutants or other factors) that cannot be mitigated to an acceptable level? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.3.	X	
Provide basis: Groundwater is not located within 10 feet from the proposed infiltration BMP. Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability.			
4	Can infiltration greater than 0.5 inches per hour be allowed without causing potential water balance issues such as change of seasonality of ephemeral streams or increased discharge of contaminated groundwater to surface waters? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.3.	X	
Provide basis: It is our opinion there are no adverse impacts to water balance impacts to stream flow, or impacts on any downstream water rights. It should be noted that researching downstream water rights or evaluating water balance issues to stream flows is beyond the scope of the geotechnical consultant. Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability.			
Part 1 Result*	If all answers to rows 1 - 4 are "Yes" a full infiltration design is potentially feasible. The feasibility screening category is Full Infiltration If any answer from row 1-4 is "No", infiltration may be possible to some extent but would not generally be feasible or desirable to achieve a "full infiltration" design. Proceed to Part 2		No

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

Part 2 – Partial Infiltration vs. No Infiltration Feasibility Screening Criteria
Would infiltration of water in any appreciable amount be physically feasible without any negative consequences that cannot be reasonably mitigated?

Criteria	Screening Question	Yes	No
5	Do soil and geologic conditions allow for infiltration in any appreciable rate or volume? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.2 and Appendix D.		X

Provide basis:

Based on the USDA Web Soil Survey website, the underlying soils are classified as Diablo Clay (DaC, DaD, and DaE2) and Las Flores loamy fine sand (LeC2) which belong to Hydrologic Soil Groups C and D, which are generally not considered suitable for infiltration BMP's. The existing compacted fill should be classified as Hydrologic Soil Group D, which is not suitable for infiltration BMP's. Information collected from the USDA website is attached. Infiltration BMP's supported on compacted fill are not recommended due to the potential for heaving of the expansive soils, settlement of granular soils, and lateral water migration that may adversely impact adjacent structures and private and public improvements. Infiltration BMP's near descending slopes are not recommended due to the potential for instability and a horizontal setback equivalent to the height of slope for natural slopes and 1.5 times the height of a fill slope are recommended. The underlying Santiago Formation is moderately to highly expansive. Infiltration BMP's supported on expansive soils are not recommended due to the increased potential for distress to adjacent structures and improvements.

6	Can Infiltration in any appreciable quantity be allowed without increasing risk of geotechnical hazards (slope stability, groundwater mounding, utilities, or other factors) that cannot be mitigated to an acceptable level? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.2.		X

Provide basis:

It is our opinion that infiltration BMP's supported by compacted fill or highly expansive soil should be avoided to prevent distress to adjacent structures and improvements.

Fill over natural slopes exist on the north side of the property. A cut slope is shown on the southwestern portion of the property. Full infiltration adjacent to descending slopes is not recommended due to slope instability and daylight water seepage issues. Setbacks of 1.5 times the fill slope height, or 1 times the height of cut or natural slopes would be required to lower this risk. A minimum 10 foot setback would be required for any structures or utilities. However, the underlying fill and Santiago Formation is moderately to highly expansive. Infiltration BMP's supported on highly expansive soils are not recommended due to the increased potential for heaving and distress to adjacent public and private improvements.

Form I-8 Page 4 of 4			
Criteria	**Screening Question**	**Yes**	**No**
7	Can Infiltration in any appreciable quantity be allowed without posing significant risk for groundwater related concerns (shallow water table, storm water pollutants or other factors)? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.3.	X	
Provide basis: Groundwater is not located within approximately 10 feet from the bottom of the proposed basins. Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability and why it was not feasible to mitigate low infiltration rates.			
8	Can infiltration be allowed without violating downstream water rights? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.3.	X	
Provide basis: Geocon is not aware of any downstream water rights that would be affected by incidental infiltration of storm water. Researching downstream water rights is beyond the scope of the geotechnical consultant. Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability and why it was not feasible to mitigate low infiltration rates.			
Part 2 Result*	If all answers from row 1-4 are yes then partial infiltration design is potentially feasible. The feasibility screening category is Partial Infiltration If any answer from row 5-8 is no, then infiltration of any volume is considered to be infeasible within the drainage area. The feasibility screening category is No Infiltration.	**No Infiltration**	

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

Simple Sizing Method for Biofiltration BMPs (DMA 1A)		Worksheet B.5-1 (Page 1 of 2)	
1	Remaining DCV after implementing retention BMPs	2,809	cubic-feet
Partial Retention			
2	Infiltration rate from Worksheet D.5-1 if partial infiltration is feasible	N/A	in/hr.
3	Allowable drawdown time for aggregate storage below the underdrain	36	hours
4	Depth of runoff that can be infiltrated [Line 2 x Line 3]	0	inches
5	Aggregate pore space	0.40	in/in
6	Required depth of gravel below the underdrain [Line 4/ Line 5]	0	inches
7	Assumed surface area of the biofiltration BMP	1,067	sq-ft
8	Media retained pore storage	0.1	in/in
9	Volume retained by BMP [[Line 4 + (Line 12 x Line 8)]/12] x Line 7	160	cubic-feet
10	DCV that requires biofiltration [Line 1 – Line 9]	2,649	cubic-feet
BMP Parameters			
11	Surface Ponding [6 inch minimum, 12 inch maximum]	6	inches
12	Media Thickness [18 inches minimum], also add mulch layer thickness to this line for sizing calculations	18	inches
13	Aggregate Storage above underdrain invert (12 inches typical) – use 0 inches for sizing if the aggregate is not over the entire bottom surface area	12	inches
14	Media available pore space	0.2	in/in
15	Media filtration rate to be used for sizing (5 in/hr. with no outlet control; if the filtration rate is controlled by the outlet use the outlet controlled rate)	5	in/hr.
Baseline Calculations			
16	Allowable Routing Time for sizing	6	hours
17	Depth filtered during storm [Line 15 x Line 16]	30	inches
18	Depth of Detention Storage [Line 11 + (Line 12 x Line 14) + (Line 13 x Line 5)]	14.4	inches
19	Total Depth Treated [Line 17 + Line 18]	44.4	inches

Simple Sizing Method for Biofiltration BMPs (cont.)		Worksheet B.5-1 (Page 2 of 2)	
Option 1 – Biofilter 1.5 times the DCV			
20	Required biofiltered volume [1.5 x Line 10]	3,949	cubic-feet
21	Required Footprint [Line 20/ Line 19] x 12	1,074	sq-ft
Option 2 - Store 0.75 of remaining DCV in pores and ponding			
22	Required Storage (surface + pores) Volume [0.75 x Line 10]	1,986	cubic-feet
23	Required Footprint [Line 22/ Line 18] x 12	1,655	sq-ft
Footprint of the BMP			
24	Area draining to the BMP	67,343	sq-ft
25	Adjusted Runoff Factor for drainage area (Refer to Appendix B.1 and B.2)	0.78	
26	BMP Footprint Sizing Factor (Default 0.03 or an alternative minimum footprint sizing factor from Worksheet B.5-2, Line 11)	0.03	unitless
27	Minimum BMP Footprint [Line 24 x Line 25 x Line 26]	1,576	sq-ft
28	Footprint of the BMP = Maximum(Minimum(Line 21, Line 23), Line 27)	1,580	sq-ft
Check for Volume Reduction [Not applicable for No Infiltration Condition]			
29	Calculate the fraction of the DCV retained by the BMP [Line 9/ Line 1]	N/A	unitless
30	Minimum required fraction of DCV retained for partial infiltration condition	0.375	unitless
31	Is the retained DCV > 0.375? If the answer is no increase the footprint sizing factor in Line 26 until the answer is yes for this criterion.	☐ Yes	☐ No

Note:

1. Line 7 is used to estimate the amount of volume retained by the BMP. Update assumed surface area in Line 7 until its equivalent to the required biofiltration footprint (either Line 21 or Line 23)
2. The DCV fraction of 0.375 is based on a 40% average annual percent capture and a 36-hour drawdown time.
3. The increase in footprint for volume reduction can be optimized using the approach presented in Appendix B.5.2. The optimized footprint cannot be smaller than the alternative minimum footprint sizing factor from Worksheet B.5-2.
4. If the proposed biofiltration BMP footprint is smaller than the alternative minimum footprint sizing factor from Worksheet B.5-2, but satisfies Option 1 or Option 2 sizing, it is considered a compact biofiltration BMP and may be allowed at the discretion of the City Engineer, if it meets the requirements in Appendix F.

Simple Sizing Method for Biofiltration BMPs (DMA 1B)		Worksheet B.5-1 (Page 1 of 2)	
1	Remaining DCV after implementing retention BMPs	1,181	cubic-feet
Partial Retention			
2	Infiltration rate from Worksheet D.5-1 if partial infiltration is feasible	N/A	in/hr.
3	Allowable drawdown time for aggregate storage below the underdrain	36	hours
4	Depth of runoff that can be infiltrated [Line 2 x Line 3]	0	inches
5	Aggregate pore space	0.40	in/in
6	Required depth of gravel below the underdrain [Line 4/ Line 5]	0	inches
7	Assumed surface area of the biofiltration BMP	450	sq-ft
8	Media retained pore storage	0.1	in/in
9	Volume retained by BMP [[Line 4 + (Line 12 x Line 8)]/12] x Line 7	68	cubic-feet
10	DCV that requires biofiltration [Line 1 – Line 9]	1,113	cubic-feet
BMP Parameters			
11	Surface Ponding [6 inch minimum, 12 inch maximum]	6	inches
12	Media Thickness [18 inches minimum], also add mulch layer thickness to this line for sizing calculations	18	inches
13	Aggregate Storage above underdrain invert (12 inches typical) – use 0 inches for sizing if the aggregate is not over the entire bottom surface area	12	inches
14	Media available pore space	0.2	in/in
15	Media filtration rate to be used for sizing (5 in/hr. with no outlet control; if the filtration rate is controlled by the outlet use the outlet controlled rate)	5	in/hr.
Baseline Calculations			
16	Allowable Routing Time for sizing	6	hours
17	Depth filtered during storm [Line 15 x Line 16]	30	inches
18	Depth of Detention Storage [Line 11 + (Line 12 x Line 14) + (Line 13 x Line 5)]	14.4	inches
19	Total Depth Treated [Line 17 + Line 18]	44.4	inches

Simple Sizing Method for Biofiltration BMPs (cont.)		Worksheet B.5-1 (Page 2 of 2)	
Option 1 – Biofilter 1.5 times the DCV			
20	Required biofiltered volume [1.5 x Line 10]	1,670	cubic-feet
21	Required Footprint [Line 20/ Line 19] x 12	451	sq-ft
Option 2 - Store 0.75 of remaining DCV in pores and ponding			
22	Required Storage (surface + pores) Volume [0.75 x Line 10]	835	cubic-feet
23	Required Footprint [Line 22/ Line 18] x 12	696	sq-ft
Footprint of the BMP			
24	Area draining to the BMP	29,129	sq-ft
25	Adjusted Runoff Factor for drainage area (Refer to Appendix B.1 and B.2)	0.76	
26	BMP Footprint Sizing Factor (Default 0.03 or an alternative minimum footprint sizing factor from Worksheet B.5-2, Line 11)	0.03	unitless
27	Minimum BMP Footprint [Line 24 x Line 25 x Line 26]	664	sq-ft
28	Footprint of the BMP = Maximum(Minimum(Line 21, Line 23), Line 27)	670	sq-ft
Check for Volume Reduction [Not applicable for No Infiltration Condition]			
29	Calculate the fraction of the DCV retained by the BMP [Line 9/ Line 1]	N/A	unitless
30	Minimum required fraction of DCV retained for partial infiltration condition	0.375	unitless
31	Is the retained DCV > 0.375? If the answer is no increase the footprint sizing factor in Line 26 until the answer is yes for this criterion.	☐ Yes	☐ No

Note:

1. Line 7 is used to estimate the amount of volume retained by the BMP. Update assumed surface area in Line 7 until its equivalent to the required biofiltration footprint (either Line 21 or Line 23)
2. The DCV fraction of 0.375 is based on a 40% average annual percent capture and a 36-hour drawdown time.
3. The increase in footprint for volume reduction can be optimized using the approach presented in Appendix B.5.2. The optimized footprint cannot be smaller than the alternative minimum footprint sizing factor from Worksheet B.5-2.
4. If the proposed biofiltration BMP footprint is smaller than the alternative minimum footprint sizing factor from Worksheet B.5-2, but satisfies Option 1 or Option 2 sizing, it is considered a compact biofiltration BMP and may be allowed at the discretion of the City Engineer, if it meets the requirements in Appendix F.

Simple Sizing Method for Biofiltration BMPs (DMA 2)		Worksheet B.5-1 (Page 1 of 2)	
1	Remaining DCV after implementing retention BMPs	1,270	cubic-feet
Partial Retention			
2	Infiltration rate from Worksheet D.5-1 if partial infiltration is feasible	N/A	in/hr.
3	Allowable drawdown time for aggregate storage below the underdrain	36	hours
4	Depth of runoff that can be infiltrated [Line 2 x Line 3]	0	inches
5	Aggregate pore space	0.40	in/in
6	Required depth of gravel below the underdrain [Line 4/ Line 5]	0	inches
7	Assumed surface area of the biofiltration BMP	485	sq-ft
8	Media retained pore storage	0.1	in/in
9	Volume retained by BMP [[Line 4 + (Line 12 x Line 8)]/12] x Line 7	73	cubic-feet
10	DCV that requires biofiltration [Line 1 – Line 9]	1,197	cubic-feet
BMP Parameters			
11	Surface Ponding [6 inch minimum, 12 inch maximum]	6	inches
12	Media Thickness [18 inches minimum], also add mulch layer thickness to this line for sizing calculations	18	inches
13	Aggregate Storage above underdrain invert (12 inches typical) – use 0 inches for sizing if the aggregate is not over the entire bottom surface area	12	inches
14	Media available pore space	0.2	in/in
15	Media filtration rate to be used for sizing (5 in/hr. with no outlet control; if the filtration rate is controlled by the outlet use the outlet controlled rate)	5	in/hr.
Baseline Calculations			
16	Allowable Routing Time for sizing	6	hours
17	Depth filtered during storm [Line 15 x Line 16]	30	inches
18	Depth of Detention Storage [Line 11 + (Line 12 x Line 14) + (Line 13 x Line 5)]	14.4	inches
19	Total Depth Treated [Line 17 + Line 18]	44.4	inches

Simple Sizing Method for Biofiltration BMPs (cont.)		Worksheet B.5-1 (Page 2 of 2)	
Option 1 – Biofilter 1.5 times the DCV			
20	Required biofiltered volume [1.5 x Line 10]	1,796	cubic-feet
21	Required Footprint [Line 20/ Line 19] x 12	485	sq-ft
Option 2 - Store 0.75 of remaining DCV in pores and ponding			
22	Required Storage (surface + pores) Volume [0.75 x Line 10]	898	cubic-feet
23	Required Footprint [Line 22/ Line 18] x 12	748	sq-ft
Footprint of the BMP			
24	Area draining to the BMP	39,034	sq-ft
25	Adjusted Runoff Factor for drainage area (Refer to Appendix B.1 and B.2)	0.61	
26	BMP Footprint Sizing Factor (Default 0.03 or an alternative minimum footprint sizing factor from Worksheet B.5-2, Line 11)	0.03	unitless
27	Minimum BMP Footprint [Line 24 x Line 25 x Line 26]	714	sq-ft
28	Footprint of the BMP = Maximum(Minimum(Line 21, Line 23), Line 27)	720	sq-ft
Check for Volume Reduction [Not applicable for No Infiltration Condition]			
29	Calculate the fraction of the DCV retained by the BMP [Line 9/ Line 1]	N/A	unitless
30	Minimum required fraction of DCV retained for partial infiltration condition	0.375	unitless
31	Is the retained DCV > 0.375? If the answer is no increase the footprint sizing factor in Line 26 until the answer is yes for this criterion.	☐ Yes	☐ No

Note:

1. Line 7 is used to estimate the amount of volume retained by the BMP. Update assumed surface area in Line 7 until its equivalent to the required biofiltration footprint (either Line 21 or Line 23)
2. The DCV fraction of 0.375 is based on a 40% average annual percent capture and a 36-hour drawdown time.
3. The increase in footprint for volume reduction can be optimized using the approach presented in Appendix B.5.2. The optimized footprint cannot be smaller than the alternative minimum footprint sizing factor from Worksheet B.5-2.
4. If the proposed biofiltration BMP footprint is smaller than the alternative minimum footprint sizing factor from Worksheet B.5-2, but satisfies Option 1 or Option 2 sizing, it is considered a compact biofiltration BMP and may be allowed at the discretion of the City Engineer, if it meets the requirements in Appendix F.

Simple Sizing Method for Biofiltration BMPs (DMA 3B)		Worksheet B.5-1 (Page 1 of 2)	
1	Remaining DCV after implementing retention BMPs	123	cubic-feet
Partial Retention			
2	Infiltration rate from Worksheet D.5-1 if partial infiltration is feasible	N/A	in/hr.
3	Allowable drawdown time for aggregate storage below the underdrain	36	hours
4	Depth of runoff that can be infiltrated [Line 2 x Line 3]	0	inches
5	Aggregate pore space	0.40	in/in
6	Required depth of gravel below the underdrain [Line 4/ Line 5]	0	inches
7	Assumed surface area of the biofiltration BMP	69	sq-ft
8	Media retained pore storage	0.1	in/in
9	Volume retained by BMP [[Line 4 + (Line 12 x Line 8)]/12] x Line 7	10	cubic-feet
10	DCV that requires biofiltration [Line 1 – Line 9]	113	cubic-feet
BMP Parameters			
11	Surface Ponding [6 inch minimum, 12 inch maximum]	6	inches
12	Media Thickness [18 inches minimum], also add mulch layer thickness to this line for sizing calculations	18	inches
13	Aggregate Storage above underdrain invert (12 inches typical) – use 0 inches for sizing if the aggregate is not over the entire bottom surface area	12	inches
14	Media available pore space	0.2	in/in
15	Media filtration rate to be used for sizing (5 in/hr. with no outlet control; if the filtration rate is controlled by the outlet use the outlet controlled rate)	5	in/hr.
Baseline Calculations			
16	Allowable Routing Time for sizing	6	hours
17	Depth filtered during storm [Line 15 x Line 16]	30	inches
18	Depth of Detention Storage [Line 11 + (Line 12 x Line 14) + (Line 13 x Line 5)]	14.4	inches
19	Total Depth Treated [Line 17 + Line 18]	44.4	inches

Simple Sizing Method for Biofiltration BMPs (cont.)		Worksheet B.5-1 (Page 2 of 2)	
Option 1 – Biofilter 1.5 times the DCV			
20	Required biofiltered volume [1.5 x Line 10]	169	cubic-feet
21	Required Footprint [Line 20/ Line 19] x 12	36	sq-ft
Option 2 - Store 0.75 of remaining DCV in pores and ponding			
22	Required Storage (surface + pores) Volume [0.75 x Line 10]	85	cubic-feet
23	Required Footprint [Line 22/ Line 18] x 12	38	sq-ft
Footprint of the BMP			
24	Area draining to the BMP	3,915	sq-ft
25	Adjusted Runoff Factor for drainage area (Refer to Appendix B.1 and B.2)	0.59	
26	BMP Footprint Sizing Factor (Default 0.03 or an alternative minimum footprint sizing factor from Worksheet B.5-2, Line 11)	0.03	unitless
27	Minimum BMP Footprint [Line 24 x Line 25 x Line 26]	69	sq-ft
28	Footprint of the BMP = Maximum(Minimum(Line 21, Line 23), Line 27)	69	sq-ft
Check for Volume Reduction [Not applicable for No Infiltration Condition]			
29	Calculate the fraction of the DCV retained by the BMP [Line 9/ Line 1]	N/A	unitless
30	Minimum required fraction of DCV retained for partial infiltration condition	0.375	unitless
31	Is the retained DCV > 0.375? If the answer is no increase the footprint sizing factor in Line 26 until the answer is yes for this criterion.	☐ Yes	☐ No

Note:

1. Line 7 is used to estimate the amount of volume retained by the BMP. Update assumed surface area in Line 7 until its equivalent to the required biofiltration footprint (either Line 21 or Line 23)
2. The DCV fraction of 0.375 is based on a 40% average annual percent capture and a 36-hour drawdown time.
3. The increase in footprint for volume reduction can be optimized using the approach presented in Appendix B.5.2. The optimized footprint cannot be smaller than the alternative minimum footprint sizing factor from Worksheet B.5-2.
4. If the proposed biofiltration BMP footprint is smaller than the alternative minimum footprint sizing factor from Worksheet B.5-2, but satisfies Option 1 or Option 2 sizing, it is considered a compact biofiltration BMP and may be allowed at the discretion of the City Engineer, if it meets the requirements in Appendix F.

Simple Sizing Method for Biofiltration BMPs (DMA P)		Worksheet B.5-1 (Page 1 of 2)	
1	Remaining DCV after implementing retention BMPs	3,311	cubic-feet
Partial Retention			
2	Infiltration rate from Worksheet D.5-1 if partial infiltration is feasible	N/A	in/hr.
3	Allowable drawdown time for aggregate storage below the underdrain	36	hours
4	Depth of runoff that can be infiltrated [Line 2 x Line 3]	0	inches
5	Aggregate pore space	0.40	in/in
6	Required depth of gravel below the underdrain [Line 4/ Line 5]	0	inches
7	Assumed surface area of the biofiltration BMP	1,265	sq-ft
8	Media retained pore storage	0.1	in/in
9	Volume retained by BMP [[Line 4 + (Line 12 x Line 8)]/12] x Line 7	190	cubic-feet
10	DCV that requires biofiltration [Line 1 – Line 9]	3,121	cubic-feet
BMP Parameters			
11	Surface Ponding [6 inch minimum, 12 inch maximum]	6	inches
12	Media Thickness [18 inches minimum], also add mulch layer thickness to this line for sizing calculations	18	inches
13	Aggregate Storage above underdrain invert (12 inches typical) – use 0 inches for sizing if the aggregate is not over the entire bottom surface area	12	inches
14	Media available pore space	0.2	in/in
15	Media filtration rate to be used for sizing (5 in/hr. with no outlet control; if the filtration rate is controlled by the outlet use the outlet controlled rate)	5	in/hr.
Baseline Calculations			
16	Allowable Routing Time for sizing	6	hours
17	Depth filtered during storm [Line 15 x Line 16]	30	inches
18	Depth of Detention Storage [Line 11 + (Line 12 x Line 14) + (Line 13 x Line 5)]	14.4	inches
19	Total Depth Treated [Line 17 + Line 18]	44.4	inches

Simple Sizing Method for Biofiltration BMPs (cont.)		Worksheet B.5-1 (Page 2 of 2)	
Option 1 – Biofilter 1.5 times the DCV			
20	Required biofiltered volume [1.5 x Line 10]	4,682	cubic-feet
21	Required Footprint [Line 20/ Line 19] x 12	1,265	sq-ft
Option 2 - Store 0.75 of remaining DCV in pores and ponding			
22	Required Storage (surface + pores) Volume [0.75 x Line 10]	2,341	cubic-feet
23	Required Footprint [Line 22/ Line 18] x 12	1,951	sq-ft
Footprint of the BMP			
24	Area draining to the BMP	89,967	sq-ft
25	Adjusted Runoff Factor for drainage area (Refer to Appendix B.1 and B.2)	0.67	
26	BMP Footprint Sizing Factor (Default 0.03 or an alternative minimum footprint sizing factor from Worksheet B.5-2, Line 11)	0.03	unitless
27	Minimum BMP Footprint [Line 24 x Line 25 x Line 26]	1,862	sq-ft
28	Footprint of the BMP = Maximum(Minimum(Line 21, Line 23), Line 27)	1,870	sq-ft
Check for Volume Reduction [Not applicable for No Infiltration Condition]			
29	Calculate the fraction of the DCV retained by the BMP [Line 9/ Line 1]	N/A	unitless
30	Minimum required fraction of DCV retained for partial infiltration condition	0.375	unitless
31	Is the retained DCV > 0.375? If the answer is no increase the footprint sizing factor in Line 26 until the answer is yes for this criterion.	☐ Yes	☐ No

Note:

1. Line 7 is used to estimate the amount of volume retained by the BMP. Update assumed surface area in Line 7 until its equivalent to the required biofiltration footprint (either Line 21 or Line 23)
2. The DCV fraction of 0.375 is based on a 40% average annual percent capture and a 36-hour drawdown time.
3. The increase in footprint for volume reduction can be optimized using the approach presented in Appendix B.5.2. The optimized footprint cannot be smaller than the alternative minimum footprint sizing factor from Worksheet B.5-2.
4. If the proposed biofiltration BMP footprint is smaller than the alternative minimum footprint sizing factor from Worksheet B.5-2, but satisfies Option 1 or Option 2 sizing, it is considered a compact biofiltration BMP and may be allowed at the discretion of the City Engineer, if it meets the requirements in Appendix F.

Biofiltration BMP Drawdown Time*		
Ponding Depth (all BMPs)	6	inches
Media Filtration Rate	5	inches/hour
Drawdown Time	**1.2**	**hours**

Note:

*Ponding depth and media filtration rate is the same for all 5 bioretention BMPs on the project site

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.

Indicate which Items are Included:

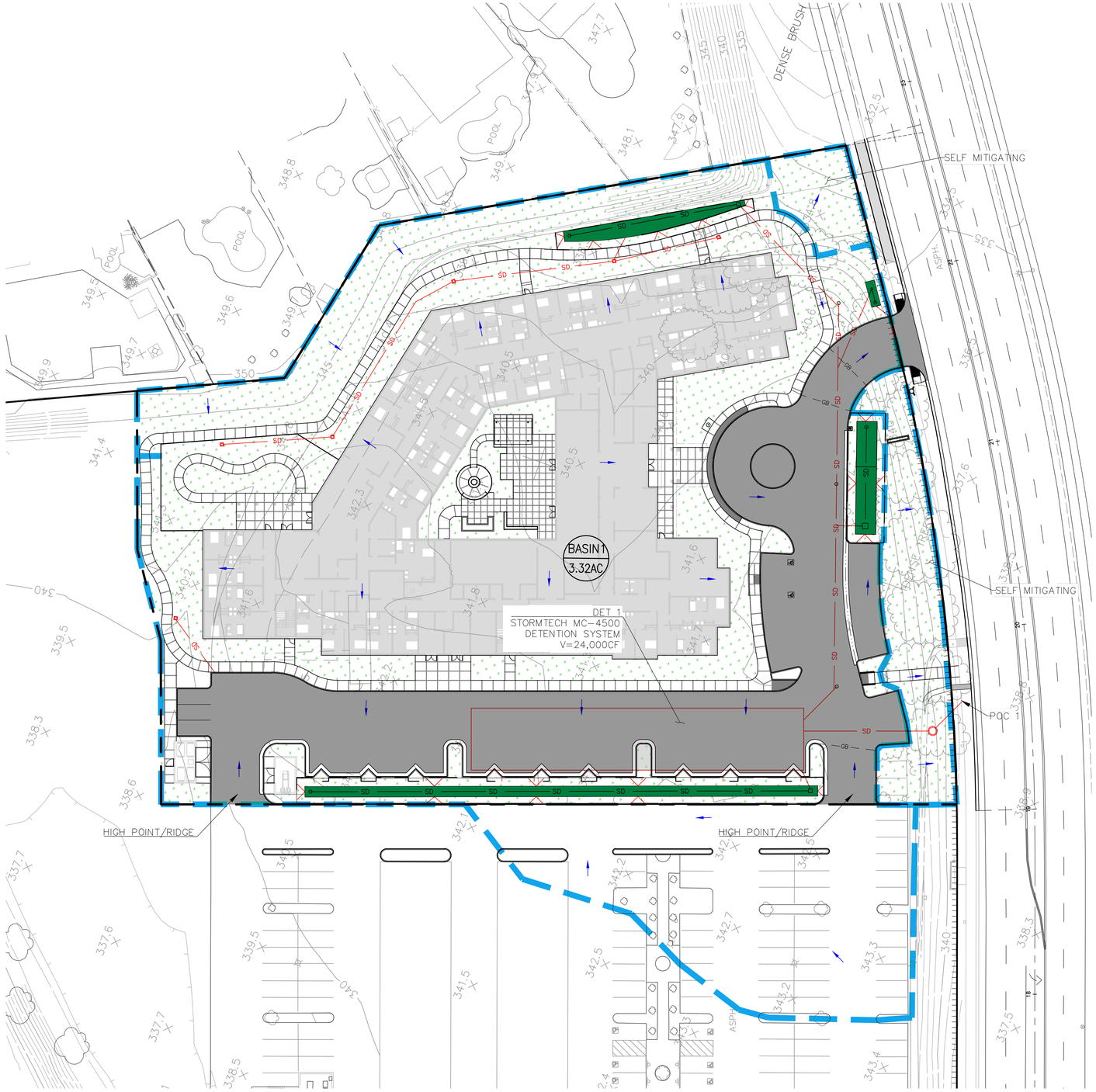
Attachment Sequence	Contents	Checklist
Attachment 2a	Hydromodification Management Exhibit (Required)	☒Included See Hydromodification Management Exhibit Checklist.
Attachment 2b	Management of Critical Coarse Sediment Yield Areas (WMAA Exhibit is required, additional analyses are optional) See Section 6.2 of the BMP Design Manual.	☒Exhibit showing project drainage boundaries marked on WMAA Critical Coarse Sediment Yield Area Map (Required) Optional analyses for Critical Coarse Sediment Yield Area Determination ☒6.2.1 Verification of Geomorphic Landscape Units Onsite ☒6.2.2 Downstream Systems Sensitivity to Coarse Sediment ☐6.2.3 Optional Additional Analysis of Potential Critical Coarse Sediment Yield Areas Onsite
Attachment 2c	Geomorphic Assessment of Receiving Channels (Optional) See Section 6.3.4 of the BMP Design Manual.	☒Not performed ☐Included ☐Submitted as separate stand-alone document
Attachment 2d	Flow Control Facility Design and Structural BMP Drawdown Calculations (Required) Overflow Design Summary for each structural BMP See Chapter 6 and Appendix G of the BMP Design Manual	☒Included ☐Submitted as separate stand-alone document
Attachment 2e	Vector Control Plan (Required when structural BMPs will not drain in 96 hours)	☐Included ☒Not required because BMPs will drain in less than 96 hours

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

The Hydromodification Management Exhibit must identify:

☒Underlying hydrologic soil group
☒Approximate depth to groundwater
☐Existing natural hydrologic features (watercourses, seeps, springs, wetlands)
☐Critical coarse sediment yield areas to be protected
☒Existing topography
☒Existing and proposed site drainage network and connections to drainage offsite
☒Proposed grading
☒Proposed impervious features
☒Proposed design features and surface treatments used to minimize imperviousness
☒Point(s) of Compliance (POC) for Hydromodification Management
☒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)

Please provide the Exhibit in 24”x36” format with map pocket, wet date, and stamp.



LEGEND:

- RIGHT-OF-WAY LINE
- CENTERLINE
- DMA BOUNDARY
- LANDSCAPE AREA
- AC PAVEMENT
- ROOF
- WALK
- DMA 1 / 0.96AC — SUBAREA DESIGNATION / AREA (ACRES)

HYDROLOGIC SITE DATA

SOIL GROUP: C & D
SITE AREA: 3.39 AC
DEPTH TO GROUNDWATER: +20'

ABBREVIATIONS:

AC	ACRES
CFS	CUBIC FEET PER SECOND
FG	FINISHED GROUND
FS	FINISH SURFACE
L	LENGTH

BASIN 1 - HYDROMODIFICATION SIZING

AREAS DRAINING TO BMP						SIZING FACTORS			MINIMUM BMP SIZE		
DMA NAME	AREA (SF)	SOIL TYPE	PRE-PROJECT SLOPE	POST PROJECT SURFACE TYPE	RUNOFF FACTOR	SURFACE AREA	SURFACE VOLUME	SUBSURFACE VOLUME	SURFACE AREA (SF)	SURFACE VOLUME (CF)	SUBSURFACE VOLUME (CF)
DMA 1	100,103	D	FLAT	MIXED	0.80	N/A	0.12	N/A	N/A	9,850	N/A
DMA 2	40,552	D	FLAT	MIXED	0.60	N/A	0.12	N/A	N/A	2,725	N/A
DMA 3B	3,915	C	STEEP	MIXED	0.50	N/A	0.14	N/A	N/A	291	N/A
TOTAL DMA AREA	144,570									12,866	

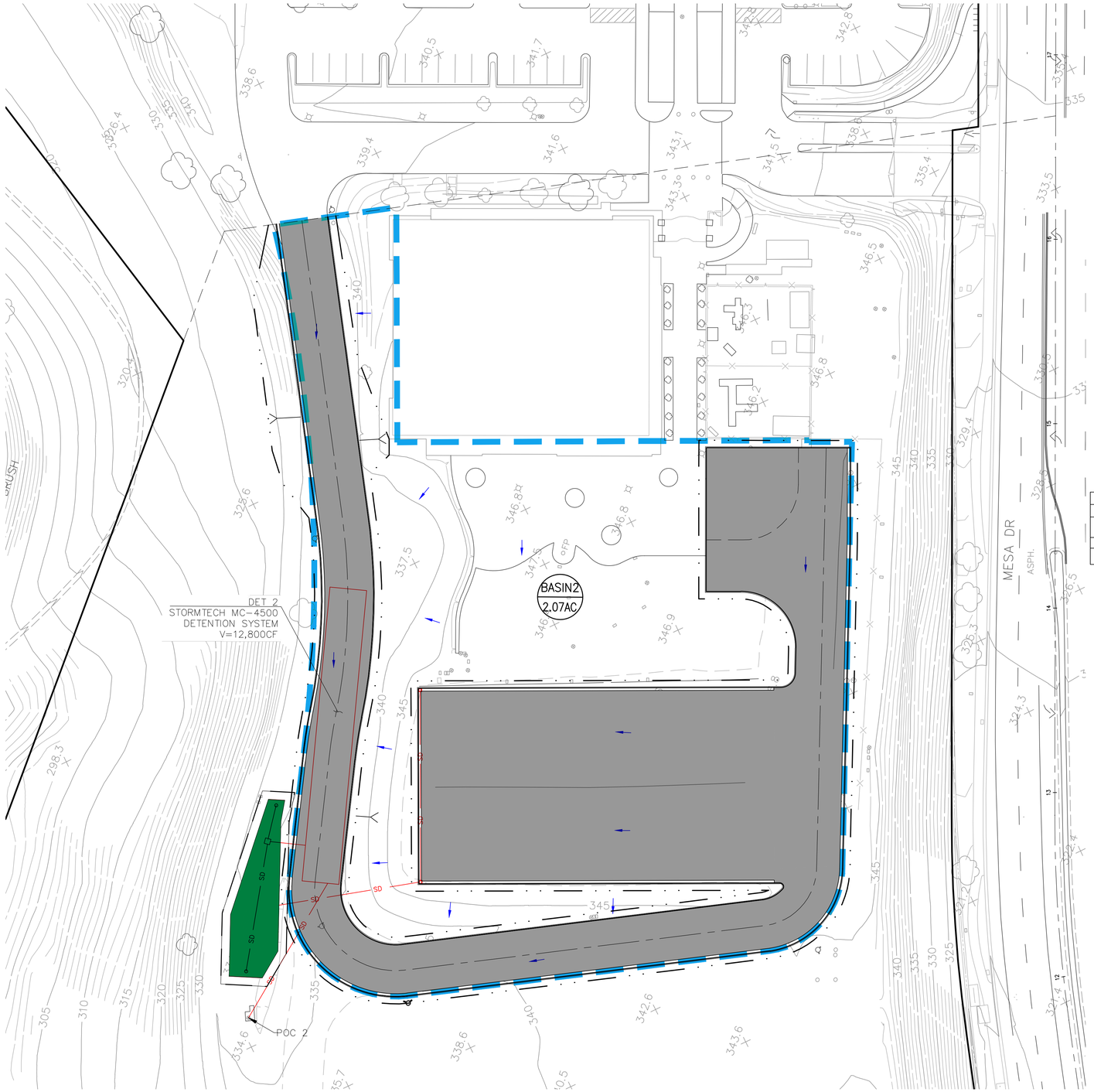
30' 0' 15' 30'
SCALE: 1" = 30'

PRELIMINARY HYDROMODIFICATION EXHIBIT

SUNRISE SENIOR LIVING OF OCEANSIDE
4700 MESA DR

SUNRISE SENIOR LIVING

FUSCOE ENGINEERING
600 Wilshire Blvd., Suite 1470, Los Angeles, California 90017
tel 213.988.8802 ◦ fax 213.988.8803 ◦ www.fuscoe.com



LEGEND:

- RIGHT-OF-WAY LINE
- CENTERLINE
- DMA BOUNDARY
- LANDSCAPE AREA
- AC PAVEMENT
- DMA 1 / 0.96AC — SUBAREA DESIGNATION / AREA (ACRES)

HYDROLOGIC SITE DATA

SOIL GROUP: C & D
SITE AREA: 2.07 AC
DEPTH TO GROUNDWATER: +20'

ABBREVIATIONS:

AC	ACRES
CFS	CUBIC FEET PER SECOND
FG	FINISHED GROUND
FS	FINISH SURFACE
L	LENGTH

BASIN 2 - HYDROMODIFICATION SIZING

AREAS DRAINING TO BMP						SIZING FACTORS			MINIMUM BMP SIZE		
DMA NAME	AREA (SF)	SOIL TYPE	PRE-PROJECT SLOPE	POST PROJECT SURFACE TYPE	RUNOFF FACTOR	SURFACE AREA	SURFACE VOLUME	SUBSURFACE VOLUME	SURFACE AREA (SF)	SURFACE VOLUME (CF)	SUBSURFACE VOLUME (CF)
DMA P	89,966	C	FLAT	MIXED	0.70	N/A	0.14	N/A	N/A	8,565	N/A
TOTAL DMA AREA	89,966									8,565	

30' 0' 15' 30'
SCALE: 1" = 30'

PRELIMINARY HYDROMODIFICATION EXHIBIT

SUNRISE SENIOR LIVING OF OCEANSIDE
4700 MESA DR

SUNRISE SENIOR LIVING

FUSCOE ENGINEERING
600 Wilshire Blvd., Suite 1470, Los Angeles, California 90017
tel 213.988.8802 ◦ fax 213.988.8803 ◦ www.fuscoe.com

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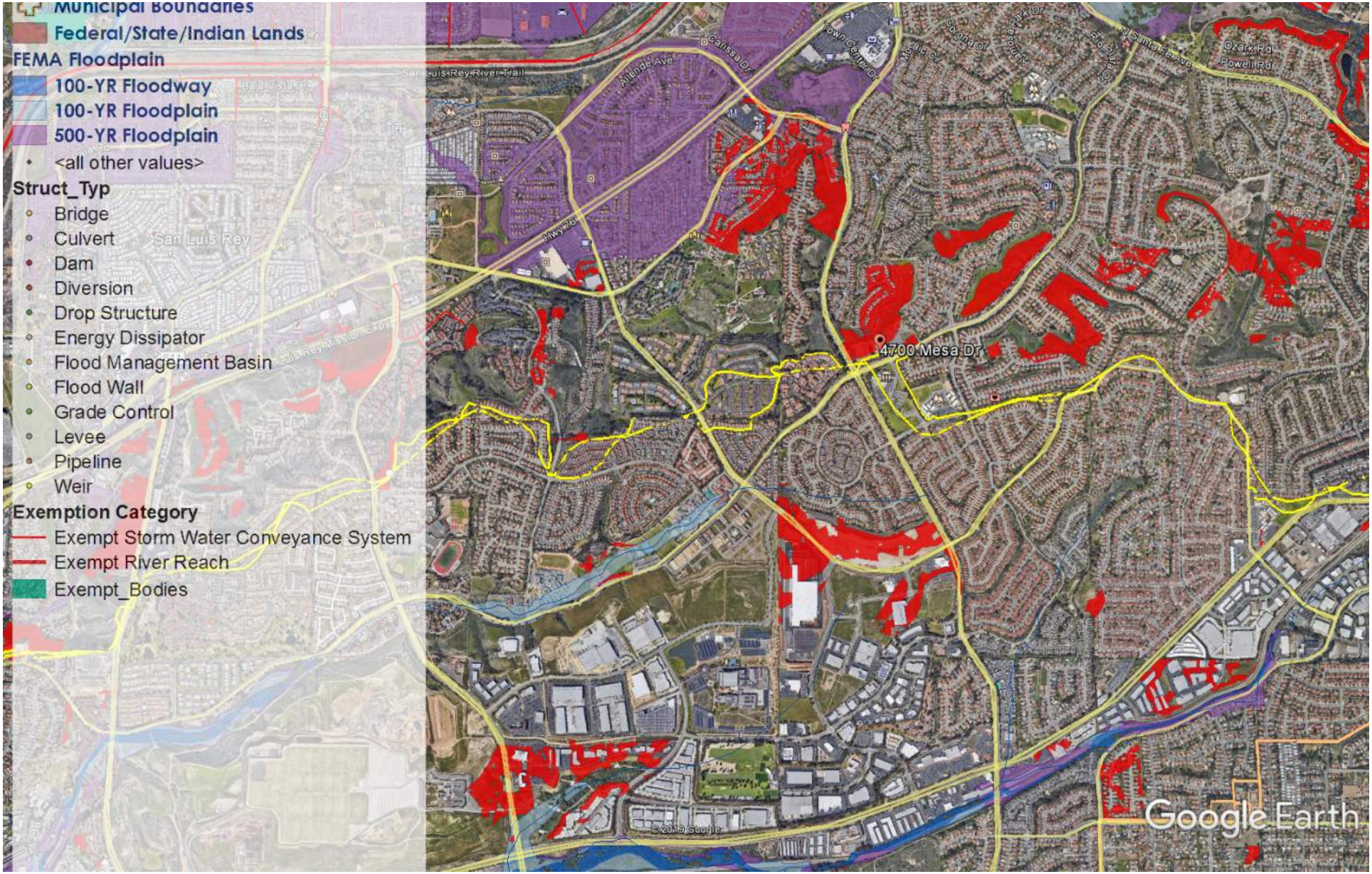
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Dam
Diversion
Drop Structure
Energy Dissipator
Flood Management Basin
Flood Wall
Grade Control
Levee
Pipeline
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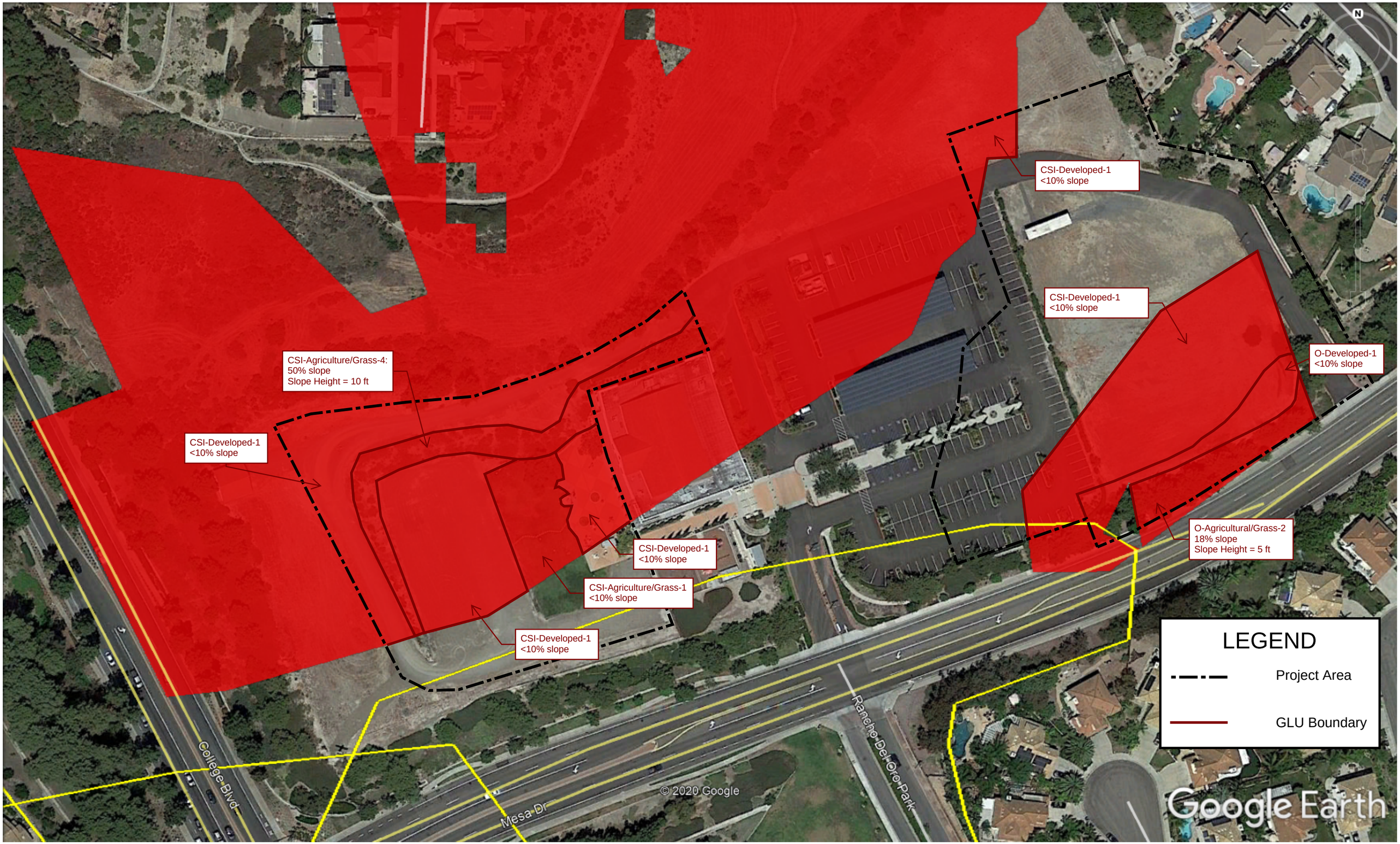
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CSI-Developed-1
<10% slope
CSI-Agriculture/Grass-1
<10% slope
CSI-Developed-1
<10% slope
O-Agricultural/Grass-2
18% slope
Slope Height = 5 ft
LEGEND
Project Area
GLU Boundary
College Blvd
Mesa Dr
Rancho Del Oro Park
© 2020 Google
Google Earth

Downstream Systems Sensitivity to Course Sediment		Form I-10	
When it has been determined that potential critical coarse sediment yield areas exist within the project site, the next step is to determine whether downstream systems would be sensitive to reduction of coarse sediment yield from the project site. Use this form to document the evaluation of downstream systems requirements for preservation of coarse sediment supply.			
Project Name:			
Project Tracking Number / Permit Application Number:			
1	Will the project discharge runoff to a hardened MS4 system (pipe or lined channel) or an un-lined channel?	X Hardened MS4 system	Go to 2
		☐ Un-lined channel	Go to 4
2	Will the hardened MS4 system convey sediment (e.g., a concrete-lined channel with steep slope and cleansing velocity) or sink sediment (e.g., flat slopes, constrictions, treatment BMPs, or ponds with restricted outlets within the system will trap sediment and not allow conveyance of coarse sediment from the project site to an un-lined system).	X Convey	Go to 3
		☐ Sink	Go to 7
3	What kind of receiving water will the hardened MS4 system convey the sediment to?	☐ Un-lined channel	Go to 4
		X Lake ☐ Reservoir ☐ Bay	Go to 7
		☐ Lagoon ☐ Ocean	Go to 6
4	Is the un-lined channel impacted by deposition of sediment? This condition must be documented by the local agency.	☐ Yes	Go to 7
		☐ No	Go to 5

Form I-10 Page 2 of 2	
5	End – Preserve coarse sediment supply to protect un-lined channels from accelerated erosion due to reduction of coarse sediment yield from the project site unless further investigation determines the sediment is not critical to the receiving stream. Sediment that is critical to receiving streams is the sediment that is a significant source of bed material to the receiving stream (bed sediment supply) (see Section 6.2.3 and Appendix H.2 of the manual).
6	End – Provide management measures for preservation of coarse sediment supply (protect beach sand supply).
7	**End – Downstream system does not warrant preservation of coarse sediment supply, no measures for protection of critical coarse sediment yield areas onsite are necessary. Use the space below to describe the basis for this finding for the project.**

Placeholder – **6.2.3 Additional Analysis of Potential Critical Coarse Sediment Yield Areas Onsite** (Optional)

Replace placeholder with required calculations/documentation.

Leave placeholder intact if not applicable.

Not Applicable

Placeholder – **6.3.4 Geomorphic Assessment of Receiving Channels** (Optional)

Replace placeholder with required calculations/documentation.

Leave placeholder intact if not applicable.

Not Applicable

BMP Sizing Spreadsheet V3.0			
Project Name:	Sunrise Oceanside	Hydrologic Unit:	Oceanside
Project Applicant:	orth County Community Partners, L	Rain Gauge:	Oceanside
Jurisdiction:	City of Oceanside	Total Project Area:	147,610
Parcel (APN):	161-511-019	Low Flow Threshold:	0.1Q2
BMP Name:	DET-1	BMP Type:	Cistern
BMP Native Soil Type:	D	BMP Infiltration Rate (in/hr):	NA

Areas Draining to BMP						HMP Sizing Factors	Minimum BMP Size
DMA Name	Area (sf)	Pre Project Soil Type	Pre-Project Slope	Post Project Surface Type	Area Weighted Runoff Factor (Table G.2-1)[1]	Volume	Volume (CF)
DMA 1	96,472	D	Flat	Mixed	0.8	0.12	9377
DMA 2	39,034	D	Flat	Mixed	0.6	0.12	2623
DMA 3B	3,915	C	Steep	Mixed	0.5	0.14	291
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
BMP Tributary Area	139,421					Minimum BMP Size	12291
						Proposed BMP Size*	24000

* Assumes standard configuration

Standard Cistern Depth (Overflow Elevation)	3.5	ft
Provided Cistern Depth (Overflow Elevation)	3.5	ft
Minimum Required Cistern Footprint)	3512	CF

Notes:

1. Runoff factors which are used for hydromodification management flow control (Table G.2-1) are different from the runoff factors used for pollutant control BMP sizing (Table B.1-1). Table references are taken from the San Diego Region Model BMP Design Manu

Describe the BMP's in sufficient detail in your PDP SWQMP to demonstrate the area, volume, and other criteria can be met within the constraints of the site.

BMP's must be adapted and applied to the conditions specific to the development project such as unstable slopes or the lack of available head.
Designated Staff have final review and approval authority over the project design.

This BMP Sizing Spreadsheet has been updated in conformance with the San Diego Region Model BMP Design Manual, April 2018. For questions or concerns please contact the jurisdiction in which your project is located.

BMP Sizing Spreadsheet V3.0			
Project Name:	Sunrise Oceanside	Hydrologic Unit:	Oceanside
Project Applicant:	rth County Community Partners,	Rain Gauge:	Oceanside
Jurisdiction:	City of Oceanside	Total Project Area:	147,610
Parcel (APN):	161-511-019	Low Flow Threshold:	0.1Q2
BMP Name	DET-1	BMP Type:	Cistern

DMA Name	Rain Gauge	Pre-developed Condition		Unit Runoff Ratio (cfs/ac)	DMA Area (ac)	Orifice Flow - $\%Q_2$ (cfs)	Orifice Area (in^2)
		Soil Type	Slope				
DMA 1	Oceanside	D	Flat	0.571	2.215	0.126	**1.87**
DMA 2	Oceanside	D	Flat	0.571	0.896	0.051	**0.76**
DMA 3B	Oceanside	C	Steep	0.499	0.090	0.004	**0.07**

3.50	**0.182**	**2.69**	**1.85**
Max Orifice Head (feet)	**Max Tot. Allowable Orifice Flow (cfs)**	**Max Tot. Allowable Orifice Area (in^2)**	**Max Orifice Diameter (in)**

Provide Hand Calc.	**0.182**	**2.69**	**1.850**
Average outflow during surface drawdown (cfs)	Max Orifice Outflow (cfs)	Actual Orifice Area (in^2)	Selected Orifice Diameter (in)

Drawdown (Hrs)	Provide Hand Calculation

BMP Sizing Spreadsheet V3.0			
Project Name:	Sunrise Oceanside	Hydrologic Unit:	Oceanside
Project Applicant:	orth County Community Partners, L	Rain Gauge:	Oceanside
Jurisdiction:	City of Oceanside	Total Project Area:	147,610
Parcel (APN):	161-511-019	Low Flow Threshold:	0.1Q2
BMP Name:	DET-2	BMP Type:	Cistern
BMP Native Soil Type:	C	BMP Infiltration Rate (in/hr):	NA

Areas Draining to BMP						HMP Sizing Factors	Minimum BMP Size
DMA Name	Area (sf)	Pre Project Soil Type	Pre-Project Slope	Post Project Surface Type	Area Weighted Runoff Factor (Table G.2-1)[1]	Volume	Volume (CF)
DMA P	89,967	C	Flat	Mixed	0.7	0.14	8565
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
BMP Tributary Area	89,967					Minimum BMP Size	8565
						Proposed BMP Size*	12000

* Assumes standard configuration

Standard Cistern Depth (Overflow Elevation)	3.5	ft
Provided Cistern Depth (Overflow Elevation)	3.5	ft
Minimum Required Cistern Footprint)	2447	CF

Notes:

1. Runoff factors which are used for hydromodification management flow control (Table G.2-1) are different from the runoff factors used for pollutant control BMP sizing (Table B.1-1). Table references are taken from the San Diego Region Model BMP Design Manu

Describe the BMP's in sufficient detail in your PDP SWQMP to demonstrate the area, volume, and other criteria can be met within the constraints of the site.

BMP's must be adapted and applied to the conditions specific to the development project such as unstable slopes or the lack of available head.
Designated Staff have final review and approval authority over the project design.

This BMP Sizing Spreadsheet has been updated in conformance with the San Diego Region Model BMP Design Manual, April 2018. For questions or concerns please contact the jurisdiction in which your project is located.

BMP Sizing Spreadsheet V3.0			
Project Name:	Sunrise Oceanside	Hydrologic Unit:	Oceanside
Project Applicant:	rth County Community Partners,	Rain Gauge:	Oceanside
Jurisdiction:	City of Oceanside	Total Project Area:	147,610
Parcel (APN):	161-511-019	Low Flow Threshold:	0.1Q2
BMP Name	DET-2	BMP Type:	Cistern

DMA Name	Rain Gauge	Pre-developed Condition		Unit Runoff Ratio (cfs/ac)	DMA Area (ac)	Orifice Flow - $\%Q_2$ (cfs)	Orifice Area (in^2)
		Soil Type	Slope				
DMA P	Oceanside	C	Flat	0.488	2.065	0.101	**1.49**

3.50	**0.101**	**1.49**	**1.38**
Max Orifice Head (feet)	**Max Tot. Allowable Orifice Flow (cfs)**	**Max Tot. Allowable Orifice Area (in^2)**	**Max Orifice Diameter (in)**

Provide Hand Calc.	**0.101**	**1.50**	**1.380**
Average outflow during surface drawdown (cfs)	Max Orifice Outflow (cfs)	Actual Orifice Area (in^2)	Selected Orifice Diameter (in)

Drawdown (Hrs)	Provide Hand Calculation

Placeholder – **Vector Control Plan** (required when structural BMPs will drain in 96 hours)

Replace placeholder with required documentation.

Leave placeholder intact if not applicable.

Not Applicable

ATTACHMENT 3
STRUCTURAL BMP MAINTENANCE INFORMATION

This is the cover sheet for Attachment 3.

Indicate which Items are Included:

Attachment Sequence	Contents	Checklist
Attachment 3a	Structural BMP Maintenance Thresholds and Actions (Required)	☒Included See Structural BMP Maintenance Information Checklist.
Attachment 3b	Draft Maintenance Agreement (when applicable)	☐Included ☐Not Applicable

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

Preliminary Design / Planning / CEQA level submittal:

- Attachment 3a must identify:

☒Typical maintenance indicators and actions for proposed structural BMP(s) based on Section 7.7 of the BMP Design Manual

- Attachment 3b is not required for preliminary design / planning / CEQA level submittal.

Final Design level submittal:

Attachment 3a must identify:

☐Specific maintenance indicators and actions for proposed structural BMP(s). This shall be based on Section 7.7 of the BMP Design Manual and enhanced to reflect actual proposed components of the structural BMP(s)
☐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
Attachment 3b: For private entity operation and maintenance, Attachment 3b shall include a draft maintenance agreement in the local jurisdiction's standard format (PDP applicant to contact the City Engineer to obtain the current maintenance agreement forms).

CITY OF OCEANSIDE

BEST MANAGEMENT PRACTICES OPERATIONS AND MAINTENANCE PLAN
FOR PRIORITY PROJECTS

PROJECT NAME: SUNRISE SENIOR LIVING OCEANSIDE

PARCEL NUMBER: 161-511-019

PROJECT NUMBER: P20-00001, D20-00002

APPLICANT NAME: NORTH COUNTY COMMUNITY PARTNERS, LLC

DATE: JUNE 8, 2020

Prepared for:

City of Oceanside
Engineering Division
300 North Coast Hwy
Oceanside, CA 92054

Deemed Complete by the City of Oceanside
Engineering Division

Name:_____ Date: _____

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Table of Contents

TABLES

ATTACHMENTS

1. Organizational Chart
2. Training Program
3. BMP Operation and Maintenance Funding Supplemental Information
4. LID BMPs Inspection Form
5. Source Control BMP Inspection Form
6. Site Map
7. Plans and Other Operation and Maintenance Requirements
8. Treatment Control BMP Inspection and Maintenance Checklist(s)
9. Maintenance Schedule
10. Service Agreement
11. Annual Inspection and Maintenance Reporting Form
12. Copy of Storm water facility maintenance Agreement (SWFMA)
13. Annual Maintenance Cost Estimate

I. COMPLIANCE WITH STORMWATER BEST MANAGEMENT PRACTICES MAINTENANCE REQUIREMENTS

All applicants are responsible for ensuring that stormwater best management practices (BMPs) or facilities installed on their property are properly maintained and that they function as designed. Tenants shall be aware of their responsibilities regarding stormwater facility maintenance and need to be familiar with the contents of this Operations and Maintenance Plan (O&M Plan). Applicants have signed and agreed to a Standard Storm Water Facilities Maintenance Agreement with Access Rights and Covenants (SWFMA). All other maintenance agreements between the applicant and their maintenance employees associated with this property shall be included in Attachment 10.

II. DESIGNATION RESPONSIBLE PARTIES

Responsible parties shall be designated and identified in Table 1.

- The Responsible BMP Party is individual, party, or parties that shall have direct responsibility for the maintenance of stormwater controls. This individual shall be the designated contact with City of Oceanside inspectors and should sign self-inspection reports and any correspondence regarding verification of inspections and required maintenance.

- The Duly Authorized Representative is the corporate officer authorized to negotiate and execute any contracts that might be necessary for future changes to operation and maintenance or to implement remedial measures if problems occur.

- The Designated Emergency Respondent is the party responsible for emergencies such as clogged drains, broken irrigation pipes, etc., that would require immediate response should they occur during off-hours.

TABLE 1
OWNERSHIP AND MAINTENANCE

	Name	Address	Phone / Email
Responsible BMP Party (if different than above)	To be completed with Final Design		
Employees reporting to Responsible BMP Party	To be completed with Final Design		
Duly Authorized Representative	To be completed with		

	Final Design		
Designated Emergency Respondent[1]	To be completed with Final Design		

[1] The Designated Emergency Respondent's phone number must be a cellular phone that is reachable 24 hours a day.

Updated contact information must be provided to City of Oceanside immediately whenever a property is sold and whenever designated individuals or contractors change.

A. Maintenance Personnel

Maintenance personnel including Responsible BMP Party, Employees Reporting to Responsible BMP Party, and the Designated Emergency Respondent, must be qualified to properly maintain stormwater BMPs (including treatment and flow-control facilities), especially for restoration or rehabilitation work. Inadequately trained personnel can cause additional problems resulting in additional maintenance costs.

B. Organizational Chart

An organization chart showing the relationships of authority and responsibility between the individuals responsible for maintenance is provided in Attachment 1.

C. Training

Periodic training is conducted by the responsible BMP party for all personnel affiliated with the maintenance of stormwater BMPs. New staff and/or contractors training regarding the purpose, mode of operation, and maintenance requirements for the site's storm water facilities will be provided by the site. Necessary ongoing training for staff and/or contractors will also be provided. The site's Staff Training Program is described in Attachment 2.

TABLE 2 BMP OPERATION AND MAINTENANCE FUNDING	
Sources of Funding	To be completed with Final Design
Budget Category for Expenditures	To be completed with Final Design
Process for establishing Annual O&M Budget	To be completed with Final Design

Process for obtaining unexpected expenditures for major corrective activities	To be completed with Final Design

D. BMP Maintenance Funding

The funding for BMP operation and maintenance shall be described in Table 2; including sources of funds, budget category for expenditures, process for establishing the annual operations and maintenance budget, and process for obtaining authority should unexpected expenditures for major corrective maintenance be required. Any supplemental information, including calculations and documentation shall be included in Attachment 3.

III. LOW IMPACT DEVELOPMENT AND SITE DESIGN BMPS

Low Impact Development (LID) and Site Design BMPs have been incorporated into the project to minimize stormwater impacts. LID BMPs collectively minimize directly connected impervious area and promote infiltration on the project site. Site design BMPs are permanent measures and are similar to LID BMPs.

The LID and Site Design BMPs for the project which require maintenance are identified along with their locations, including Drainage Management Areas (DMAs), in the project SWQMP. A LID Inspection form for the site is provided in Attachment 4. In the event that a project use should change or maintenance considerations may require the site to become amended, Table 22 should be referenced for original site constraints and design guidelines.

IV. SOURCE CONTROL BMPS

Source control BMPs have been selected for the project in order to minimize or prevent pollutant generation. The SWQMP and Table 4 of this O&M identifies the potential pollutant sources and corresponding permanent and operational source controls as well as their locations.

Source control BMPs should be inspected routinely in order to reduce or prevent pollution from accumulating in these areas. Routine inspections of the site's source controls are discussed in the site's maintenance schedule. Source control inspection forms are in Attachment 5.

TABLE 3
SOURCE CONTROL BMPS

Potential Pollutant Sources	Description	Operational BMPs	Location
☒On-site storm drain inlets	• All inlets shall be marked with City of Oceanside storm drain markers	• Maintain and periodically replace inlet markers, as necessary. • Review stormwater pollution prevention information applicable to the site. • Adhere to applicable operational BMPs in Fact Sheet SC-44, "Drainage System Maintenance," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com • Do not allow anyone to discharge anything to storm drains or to store or deposit materials so as to create a potential discharge to storm drains.	Throughout the project site
☒Interior floor drains and elevator shaft sump pumps	• Interior floor drains and elevator shaft sump pumps will be plumbed to sanitary sewer.	• Inspect and maintain drains to prevent blockages and overflow. • Regularly clear all associated cleanouts and hand holes.	Within the proposed senior living facility
☐Interior parking garages	• Parking garage floor drains will be plumbed to the sanitary sewer.	• Inspect and maintain drains to prevent blockages and overflow.	N/A

TABLE 3
SOURCE CONTROL BMPS

Potential Pollutant Sources	Description	Operational BMPs	Location
☒Landscape/ Outdoor Pesticide Use	• Final site landscape plans shall be placed in Attachment 7 and shall be used to maintain the following: ○ Preserve existing native trees, shrubs, and ground cover to the maximum extent possible. ○ Minimize irrigation and runoff, to promote surface infiltration where appropriate, and to minimize the use of fertilizers and pesticides that can contribute to stormwater pollution. ○ Where landscaped areas are used to retain or detain stormwater, maintain and replace, as necessary, plants that are tolerant of saturated soil conditions. ○ Consider using pest-resistant plants, especially adjacent to hardscape. ○ To insure successful establishment, select plants appropriate to site soils, slopes, climate, sun, wind, rain, land use, air movement, ecological consistency, and plant interactions.	• Maintain landscaping using a minimum amount of or no pesticides (consider the use of organic techniques). • Review and adhere to applicable operational BMPs in Fact Sheet SC-41, "Building and Grounds Maintenance," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com • Review IMP information and provide to landscape and maintenance personnel.	Landscaped areas throughout the site
☒Use efficient irrigation systems	• Employ rain shutoff devices to prevent irrigation after precipitation. • Design irrigation systems to each landscape area's specific water requirements. • Use flow reducers or shutoff valves triggered by a pressure drop to control water loss in the event of broken sprinkler heads or lines. • Employ other comparable, equally effective, methods to reduce irrigation water runoff.	• Inspect irrigation system for leaks and/or malfunctions. • Inspect that water usage is consistent with vegetation requirements. • Inspect that irrigation shut-off controls operate correctly.	Landscaped areas throughout the site

TABLE 3 SOURCE CONTROL BMPS			
Potential Pollutant Sources	**Description**	**Operational BMPs**	**Location**
☐Need for future indoor & structural pest control	• Note building design features that discourage entry of pests.	• Review Integrated Pest Management information and provide to other maintenance personnel.	N/A
☐Pools, spas, ponds, decorative fountains, and other water features.	• Plumb pools to the sanitary sewer in accordance with local requirements.	• Review and adhere to applicable operational BMPs in Fact Sheet SC-72, "Fountain and Pool Maintenance," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com	N/A
☒Food service	• Describe the location and features of the designated cleaning area. • Describe the items to be cleaned in this facility and how it has been sized to insure that the largest items can be accommodated.		Within the proposed senior living facility

TABLE 3
SOURCE CONTROL BMPS

Potential Pollutant Sources	Description	Operational BMPs	Location
☐Refuse areas	• State how site refuse will be handled and provide supporting detail to what is shown on plans. • Prohibitive signs shall be posted on or near dumpsters with the words "Do not dump hazardous materials here" or similar. • Any drains from dumpsters, compactors, and bin areas shall be connected to a grease removal device before discharge to sanitary sewer.	• Provide adequate number of receptacles. • Inspect receptacles regularly; repair or replace leaky receptacles. • Keep receptacles covered at all times. • Prohibit/prevent dumping of liquid or hazardous wastes. • Post and replace, as necessary, "no hazardous materials" signs. • Inspect and pick up litter daily and clean up spills immediately. • Keep spill control materials available on-site. Review Fact Sheet SC-34, "Waste Handling and Disposal" in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com	N/A
☐Industrial processes.	• Cover or enclose areas that would be the most significant source of pollutants; or, slope the area toward a dead-end sump; or, discharge to the sanitary sewer system in compliance with the applicable municipal waste water district's requirements (include a copy of the waste acceptance letter from the agency accepting the waste in Attachment 10). • Grade or berm area to prevent run-on from surrounding areas. • Installation of storm drains in areas of equipment repair is prohibited. • Implement other features which are comparable or equally effective.	• Review and adhere to Fact Sheet SC-10, "Non- Stormwater Discharges" in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com	N/A

TABLE 3 SOURCE CONTROL BMPS			
Potential Pollutant Sources	**Description**	**Operational BMPs**	**Location**
☐Outdoor storage of equipment or materials	• Comply with all requirements of local Hazardous Materials Programs for: ○ Hazardous Waste Generation ○ Hazardous Materials Release Response and Inventory ○ California Accidental Release (CalARP) ○ Aboveground Storage Tank ○ Uniform Fire Code Article 80 Section 103(b) & (c) 1991 • Underground Storage Tank • Storage of non-hazardous liquids shall be covered by a roof and/or drain to the sanitary sewer system, and be contained by berms, dikes, liners, or vaults. • Storage of hazardous materials and wastes must be in compliance with the local hazardous materials ordinance and a Hazardous Materials Management Plan for the site. Include a detailed description of materials to be stored, storage areas, and structural features to prevent pollutants from entering storm drains.	• Review and adhere to the Fact Sheets SC-31, “Outdoor Liquid Container Storage” and SC- 33, “Outdoor Storage of Raw Materials ” in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com	N/A

TABLE 3
SOURCE CONTROL BMPS

Potential Pollutant Sources	Description	Operational BMPs	Location
☐ Vehicle and Equipment Cleaning	• If a car wash area is not provided, describe measures taken to discourage on-site car washing and explain how these will be enforced. • Equip wash area with a clarifier, grease trap or other pretreatment facility, as appropriate and properly connect to the sanitary sewer. • Implement other features which are comparable or equally effective • Commercial/ industrial facilities having vehicle/ equipment cleaning needs shall either provide a covered, bermed area for washing activities or discourage vehicle/equipment washing by removing hose bibs and installing signs prohibiting such uses. • Washing areas for cars, vehicles, and equipment shall be paved, designed to prevent run-on to or runoff from the area, and plumbed to drain to the sanitary sewer. • Commercial car wash facilities shall be designed such that no runoff from the facility is discharged to the storm drain system. Wastewater from the facility shall discharge to the sanitary sewer, or a wastewater reclamation system shall be installed and permitted by proper regulatory authorities (attach permits in Attachment 10, as necessary).	• Follow operational measures to implement the following (if applicable): ○ Washwater from vehicle and equipment washing operations shall not be discharged to the storm drain system. ○ Car dealerships and similar may rinse cars with water only. ○ Review and adhere to Fact Sheet SC-21, "Vehicle and Equipment Cleaning," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com	N/A

TABLE 3
SOURCE CONTROL BMPS

Potential Pollutant Sources	Description	Operational BMPs	Location
☐ Vehicle/Equipment Repair and Maintenance	• No vehicle repair or maintenance will be done outdoors, or else describe the required features of the outdoor work area. • An industrial waste discharge permit will be obtained. For floor drains connected to the sanitary sewer; design will meet the permitting agency's requirements. • An industrial waste discharge permit will be obtained for tanks, containers or sinks to be used for parts cleaning or rinsing; design will meet the permitting agency's requirements. • Accommodate all vehicle equipment repair and maintenance indoors or designate an outdoor work area and design the area to prevent run-on and runoff of stormwater. • Show secondary containment for exterior work areas where motor oil, brake fluid, gasoline, diesel fuel, radiator fluid, acid-containing batteries or other hazardous materials or hazardous wastes are used or stored. Drains shall not be installed within the secondary containment areas.	• The following restrictions apply to use the site: ○ No person shall dispose of, nor permit the disposal, directly or indirectly of vehicle fluids, hazardous materials, or rinse water from parts cleaning into storm drains. ○ No vehicle fluid removal shall be performed outside a building, nor on asphalt or ground surfaces, whether inside or outside a building, except in such a manner as to ensure that any spilled fluid will be in an area of secondary containment. Leaking vehicle fluids shall be contained or drained from the vehicle immediately. ○ No person shall leave unattended drip parts or other open containers containing vehicle fluid, unless such containers are in use or in an area of secondary containment.	N/A

TABLE 3
SOURCE CONTROL BMPS

Potential Pollutant Sources	Description	Operational BMPs	Location
☐Fuel Dispensing Areas	• Fueling areas[1] shall have impermeable floors (i.e., portland cement concrete or equivalent smooth impervious surface) that are: ○ Graded at the minimum slope necessary to prevent ponding ○ Separated from the rest of the site by a grade break that prevents run-on of stormwater to the maximum extent practicable. • Fueling areas shall be covered by a canopy that extends a minimum of ten feet in each direction from each pump. [Alternative: The fueling area must be covered and the cover's minimum dimensions must be equal to or greater than the area within the grade break or fuel dispensing area[1]. The canopy [or cover] shall not drain onto the fueling area.	• The fueling area is to be dry swept routinely. • Review and adhere to the Business Guide Sheet, "Automotive Service—Service Stations" in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com	N/A

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

TABLE 3 SOURCE CONTROL BMPS			
Potential Pollutant Sources	**Description**	**Operational BMPs**	**Location**
☐Loading Docks	• Loading dock areas draining directly to the sanitary sewer shall be equipped with a spill control valve or equivalent device, which shall be kept closed during periods of operation. • Provide a roof overhang over the loading area or install door skirts cowling) at each bay that enclose the end of the trailer. • Roof downspouts shall be positioned to direct stormwater away from the loading area. Water from loading dock areas should be drained to the sanitary sewer where feasible.	• Move loaded and unloaded items indoors as soon as possible. • Review and adhere to Fact Sheet SC-30, "Outdoor Loading and Unloading," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com	N/A
☒Fire Sprinkler Test Water	• Provide a means to drain fire sprinkler test water to the sanitary sewer.	• Review the note in Fact Sheet SC-41, "Building and Grounds Maintenance," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com	Within the proposed senior living facility

TABLE 3
SOURCE CONTROL BMPS

Potential Pollutant Sources	Description	Operational BMPs	Location
☒Miscellaneous Drain or Wash Water • Boiler drain lines Condensate drain lines • Rooftop equipment Drainage sumps • Roofing, gutters, and trim	• Boiler drain lines shall be directly or indirectly connected to the sanitary sewer system and may not discharge to the storm drain system. • Condensate drain lines may discharge to landscaped areas if the flow is small enough that runoff will not occur. Condensate drain lines may not discharge to the storm drain system. • Rooftop mounted equipment with potential to produce pollutants shall be roofed and/or have secondary containment. • Any drainage sumps on-site shall feature a sediment sump to reduce the quantity of sediment in pumped water. • Avoid roofing, gutters, and trim made of copper or other unprotected metals that may leach into runoff.		
☒Plazas, sidewalks, and parking lots		• Plazas, sidewalks, and parking lots shall be swept regularly to prevent the accumulation of litter and debris. Debris from pressure washing shall be collected to prevent entry into the storm drain system. Washwater containing any cleaning agent or degreaser shall be collected and discharged to the sanitary sewer and not discharged to a storm drain.	Throughout the project site

V. DRAINAGE AREAS

Table 5 summarizes the drainage management areas (DMAs) on site.

TABLE 4
DRAINAGE MANAGEMENT AREAS

DMA No.	Designation	Description
1A	Drains to BMP	DMA 1A is comprised of proposed roof area, asphalt parking and drive aisles, pedestrian walks, landscaping, and offsite run-on from the adjacent church parking lot.
1B	Drains to BMP	DMA 1B is comprised of proposed roof area, asphalt parking and drive aisles, pedestrian walks, and landscaping.
2	Drains to BMP	DMA 2 is comprised of proposed roof area, pedestrian walks, at-grade landscaping, and an existing 2:1 landscaped slope along the eastern edge of the property.
3A	Self-mitigating	DMA 3A consists of a 2:1 landscaped slope along the southern edge of the property.
3B	Drains to BMP	DMA 3B is comprised of landscaping, a pedestrian walk, and the proposed site driveway.
3C	Self-mitigating	DMA 3C consists of a 2:1 landscaped slope along the southern edge of the property.
P	Drains to BMP	DMA P is comprised of proposed asphalt parking and drive aisle, as well as an existing landscaped slope and patio adjacent to the existing church building.

The site map in Attachment 6 shows the DMAs and their flow patterns. The map indicates, using flow patterns, how the flow from each DMA is routed to the corresponding storm water facility. Impervious and pervious areas are shown on the map.

VI. STORMWATER TREATMENT CONTROL BMPS

Treatment control BMPs treating runoff from DMAs are summarized in Table 5.

TABLE 5
STORMWATER TREATMENT CONTROL BMPS

Treatment Control BMP Type	Description	Size or Treatment Control BMP Capacity	Area Drained or Water Quality Flow
BF-1	BIO-1	1,100 SF	1.54 acres

BF-1	BIO-2	450 SF	0.67 acres
BF-1	BIO-3	485 SF	0.90 acres
BF-1	BIO-4	69 SF	0.09 acres
BF-1	BIO-5	1,265 SF	2.07 acres

The location and type of each of the project's stormwater facilities on site are shown on the site map in Attachment 6.
The as-built drawings[2], manufacturer's data, cut-sheets, manuals, and specific operation and maintenance requirements for each treatment control BMP shall be provided in Attachment 7.

VII. INSPECTING STORMWATER BMPS

The quality of stormwater entering the waters of the U.S. or waters of the state relies heavily on the proper operation and maintenance of permanent BMPs. LID, source control, and treatment control stormwater BMPs must be periodically inspected to ensure that they are functioning as designed. Inspections will determine the appropriate maintenance that is required for the facility.

A. Inspection Procedures

All stormwater treatment BMPs are required to be inspected a minimum of once per year. The Inspection and Maintenance Checklist(s) that is applicable to the site is provided in Attachment 8.

B. Inspection Report

The person(s) conducting the inspection activities (Responsible BMP Party. Employees reporting to Responsible BMP Party, or the Designated Emergency Respondent) shall complete the appropriate inspection checklist for the specific facility. All completed checklists are located in Attachment 8. All facilities are to be inspected on an annual basis at a minimum. A copy of each inspection form shall be kept by the applicant a minimum of 5 years.

Inspection Scoring

For each inspection item, a score is given to identify the urgency for any required maintenance. The scoring is as follows:

0 = No deficiencies identified.

1 = Monitor – Although maintenance may not be required at this time, a potential problem exists that will most likely need to be addressed in the future. This can include items like minor erosion, concrete cracks/spalling, or minor sediment accumulation. This item should be revisited at the next inspection.

[2] As-built drawings must be included after construction is complete.

2 = Routine Maintenance Required – Some inspection items can be addressed through the routine maintenance program. This can include items like vegetation management or debris/trash removal.

3 = Immediate Repair Necessary – This item needs immediate attention because failure is imminent or has already occurred. This could include items such as structural failure of a feature (outlet, weir, manhole, etc.), significant erosion, or significant sediment accumulation. This score should be given to an item that can significantly affect the function of the facility.

N/A = This is checked by an item that may not exist in a facility. Not all facilities have all of the features identified on the form (outlet, weir, manhole, etc.).

Overall Facility Rating

An overall rating is given for each facility inspected. The overall facility rating should correspond with the highest score (0, 1, 2, 3) given to any feature on the inspection form.

C. Verification of Inspection and Checklist Submittal

The Stormwater BMP Inspection and Maintenance Checklist (in Attachment 8) provides a record of inspections and the need for maintenance activities at the facility. Verification of the inspection of the stormwater facilities and the facility inspection checklist(s) shall be available to the City of Oceanside if requested.

VIII. MAINTENANCE SCHEDULE FOR STORMWATER BMPS

A maintenance schedule for the stormwater source control and treatment control BMPs on site is provided in Attachment 9. Attachment 9 includes schedules for routine inspection and maintenance, annual inspection and maintenance, and inspection and maintenance after major storm events.

A service agreement with any contractors hired to perform stormwater treatment control BMP maintenance is also provided in Attachment 10.

IX. MAINTAINING STORMWATER BMPS

Stormwater BMPs must be properly maintained to ensure that they operate correctly and provide the water quality treatment for which they were designed. Routine maintenance performed on a frequently scheduled basis, can help avoid more costly rehabilitative maintenance that results when facilities are not adequately maintained.

A. Maintenance Categories

Stormwater BMP maintenance programs are separated into three broad categories of work: routine, restoration, and rehabilitation. The categories are separated based upon the magnitude and type of the maintenance activities performed. A description of each category follows:

Routine Work

This work includes items such as the removal of debris/material that may be clogging the outlet structure well screens and trash racks. It also includes activities such as road and parking lot sweeping, weed control, mosquito treatment, and algae treatment. These activities normally will be performed numerous times during the year. These items can be completed without any prior correspondence; however, inspection and maintenance forms shall be completed.

Restoration Work

This work consists of a variety of isolated or small-scale maintenance and work needed to address operational problems. Most of this work can be completed by a small crew, with minor tools, and small equipment. These items do not require prior correspondence. However, completed maintenance forms are required.

Rehabilitation Work

This work consists of large-scale maintenance and major improvements needed to address failures within the stormwater BMP. This work requires consultation with the City of Oceanside and may require an engineering design with construction plans to be prepared for review and approval.

B. Maintenance Forms

The Stormwater BMP Inspection and Maintenance Form provides a record of maintenance activities and includes general cost information to assist in budgeting for future maintenance. Maintenance Forms for each facility type are provided in Appendix 3. Maintenance Forms shall be completed by the responsible BMP party. The form shall then be reviewed by the applicant or an authorized agent of the applicant and made available for review upon inspection by the City of Oceanside.

X. PREVENTATIVE MEASURES TO REDUCE MAINTENANCE COSTS

The most effective way to maintain a stormwater quality facility is to prevent pollutants from entering the facility. Common pollutants include sediment, trash

& debris, chemicals, pet wastes, runoff from stored materials, illicit discharges into the storm drainage system and many others. This maintenance program includes measures to address these potential contaminants at the source and save time and money in the long run. The maintenance program will consider the following:

- Educate employees and patrons to be aware of how their actions affect water quality and how they can help reduce maintenance costs.
- Keep properties, streets, gutters, and parking lots free of trash, debris, and lawn clippings.
- Ensure the proper use, storage, and disposal of hazardous wastes and chemicals. Promptly clean up spilled materials and dispose of properly.
- Plan landscape care to minimize and properly use chemicals and pesticides.
- Sweep paved surfaces and put the sweepings back on the lawn.
- Be aware of automobiles leaking fluids. Use absorbents such as cat litter to soak up drippings – dispose of properly.
- Encourage pet owners to clean up pet wastes.
- Re-vegetate disturbed and bare areas to maintain vegetative stabilization.
- Clean any private storm drainage system components, including inlets, storm drains, and outfalls.
- Do not store materials outdoors (including landscaping materials) unless properly protected from runoff.

XI. INSPECTION & MAINTENANCE – ANNUAL REPORTING

The tenant is responsible for providing verification that the stormwater treatment control BMPs have been properly inspected and maintained unless otherwise noted. Verification includes records of inspections and maintenance performed on site. Any maintenance required will be identified and described.
Records should be available at the City of Oceanside's request.

ATTACHMENT 1

ORGANIZATIONAL CHART

To be completed with Final Design

ATTACHMENT 2

TRAINING PROGRAM

To be completed with Final Design

ATTACHMENT 3

BMP OPERATION AND MAINTENANCE FUNDING SUPPLEMENTAL INFORMATION

To be completed with Final Design

ATTACHMENT 4

LID BMPS INSPECTION FORM

LID BMP INSPECTION FORM					
Date:	**Inspector:**		**Weather:**		
Reason for Inspection:			**Comments:**		
LID BMP Type	**Description**	**Location**	**Operational BMPs**	**Maintenance Required**	**Maintenance Performed/Comments**
☒Bioretention	**BIO-1**	Located along the western edge of the project site, between the parking lot of the assisted living facility and the adjacent church parking lot.	☐Regularly weed and water during plant establishment phase	☐No ☐ Yes	
			☐Area is free of litter and excess sediment	☐No ☐ Yes	
			☐Area free of erosion and stabilized	☐No ☐ Yes	
			☐Plants are healthy and thriving	☐No ☐ Yes	
			☐Plant types are those from original design	☐No ☐ Yes	
☒Bioretention	**BIO-2**	Located south of the assisted living facility drop off area.	☐Regularly weed and water during plant establishment phase	☐No ☐ Yes	
			☐Area is free of litter and excess sediment	☐No ☐ Yes	
			☐Area free of erosion and stabilized	☐No ☐ Yes	
			☐Plants are healthy and thriving	☐No ☐ Yes	
			☐Plant types are those from original design	☐No ☐ Yes	
☒Bioretention	**BIO-3**	Located along the eastern side of the project site.	☐Regularly weed and water during plant establishment phase	☐No ☐ Yes	
			☐Area is free of litter and excess sediment	☐No ☐ Yes	

LID BMP INSPECTION FORM					
Date:	**Inspector:**		**Weather:**		
Reason for Inspection:			**Comments:**		
LID BMP Type	**Description**	**Location**	**Operational BMPs**	**Maintenance Required**	**Maintenance Performed/Comments**
			☐Area free of erosion and stabilized	☐No ☐ Yes	
			☐Plants are healthy and thriving	☐No ☐ Yes	
			☐Plant types are those from original design	☐No ☐ Yes	
☒Bioretention	**BIO-4**	Located east of the driveway entrance to the assisted living facility.	☐Regularly weed and water during plant establishment phase	☐No ☐ Yes	
			☐Area is free of litter and excess sediment	☐No ☐ Yes	
			☐Area free of erosion and stabilized	☐No ☐ Yes	
			☐Plants are healthy and thriving	☐No ☐ Yes	
			☐Plant types are those from original design	☐No ☐ Yes	
☒Bioretention	**BIO-5**	Located at the northwest corner of the parking lot and drive aisle located west of the church.	☐Regularly weed and water during plant establishment phase	☐No ☐ Yes	
			☐Area is free of litter and excess sediment	☐No ☐ Yes	
			☐Area free of erosion and stabilized	☐No ☐ Yes	
			☐Plants are healthy and thriving	☐No ☐ Yes	
			☐Plant types are those from original	☐No ☐ Yes	

LID BMP INSPECTION FORM					
Date:	**Inspector:**		**Weather:**		
Reason for Inspection:			**Comments:**		
LID BMP Type	**Description**	**Location**	**Operational BMPs**	**Maintenance Required**	**Maintenance Performed/Comments**
			design		

ATTACHMENT 5

SOURCE CONTROL BMP INSPECTION FORM

SOURCE CONTROL BMP INSPECTION FORM

Date:	**Inspector:**	**Weather:**
Reason for Inspection:		**Comments:**

Potential Pollutant Sources	Location	Operational BMPs	Maintenance Required	Maintenance Performed/Comments
☒On-site storm drain inlets	Throughout the project site and western parking lot.	☐Maintain and periodically replace inlet markers, if necessary.	☐No ☐ Yes	
		☐Review stormwater pollution prevention information applicable to the site.	☐No ☐ Yes	
		☐Adhere to applicable operational BMPs in Fact Sheet SC-44, “Drainage System Maintenance,” in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com	☐No ☐ Yes	
		☐Do not allow anyone to discharge anything to storm drains or to store or deposit materials so as to create a potential discharge to storm drains.	☐No ☐ Yes	
☒Interior floor drains and elevator shaft sump pumps	Within the assisted living facility building.	☐Inspect and maintain drains to prevent blockages and overflow.	☐No ☐ Yes	
☐Interior parking garages	N/A	☐Inspect and maintain drains to prevent blockages and overflow.	☐No ☐ Yes	
☒Landscape/ Outdoor Pesticide Use	Landscaped areas throughout the project site.	☐Maintain landscaping using minimum or no pesticides.	☐No ☐ Yes	
		☐Review and adhere to applicable operational BMPs in Fact Sheet SC-41, `“Building and Grounds Maintenance,” in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com	☐No ☐ Yes	

SOURCE CONTROL BMP INSPECTION FORM

Date:	**Inspector:**	**Weather:**
Reason for Inspection:		**Comments:**

Potential Pollutant Sources	**Location**	**Operational BMPs**	**Maintenance Required**	**Maintenance Performed/Comments**
Landscape/Outdoor pesticide Use Continued		☐Review IMP information and provide to landscape and maintenance personnel.	☐No ☐ Yes	
☒Use efficient irrigation systems	Landscaped areas throughout the project site.	☐Inspect irrigation system for leaks and/or malfunctions.	☐No ☐ Yes	
☐Need for future indoor & structural pest control	N/A	☐Review Integrated Pest Management information and provide to other maintenance personnel.	☐No ☐ Yes	
☐Pools, spas, ponds, decorative fountains, and other water features.	N/A	☐Review and adhere to applicable operational BMPs in Fact Sheet SC-72, “Fountain and Pool Maintenance,” in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com	☐No ☐ Yes	
☒Food service	Within the assisted living facility building.	☐Grease traps cleaned, as necessary. ☐See Refuse Areas.	☐No ☐ Yes	
☐Refuse areas	N/A	☐Provide adequate number of receptacles.	☐No ☐ Yes	
		☐Inspect receptacles regularly; repair or replace leaky receptacles.	☐No ☐ Yes	
		☐Keep receptacles covered at all times.	☐No ☐ Yes	
		☐Prohibit/prevent dumping of liquid or hazardous wastes.	☐No ☐ Yes	
		☐Post “no hazardous materials” signs.	☐No ☐ Yes	

SOURCE CONTROL BMP INSPECTION FORM

Date:	**Inspector:**	**Weather:**
Reason for Inspection:		**Comments:**

Potential Pollutant Sources	**Location**	**Operational BMPs**	**Maintenance Required**	**Maintenance Performed/Comments**
Refuse areas- Continued		☐Inspect and pick up litter daily and clean up spills immediately.	☐No ☐ Yes	
		☐Keep spill control materials available on- site. Review Fact Sheet SC-34, "Waste Handling and Disposal" in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com	☐No ☐ Yes	
☐Industrial processes.	N/A	☐Review and adhere to Fact Sheet SC-10, "Non- Stormwater Discharges" in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com	☐No ☐ Yes	
☐Outdoor storage of equipment or materials	N/A	☐Review and adhere to the Fact Sheets SC-31, "Outdoor Liquid Container Storage" and SC- 33, "Outdoor Storage of Raw Materials " in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com	☐No ☐ Yes	
☐Vehicle and Equipment Cleaning	N/A	**Follow operational measures to implement the following (if applicable):**		
		☐Washwater from vehicle and equipment washing operations shall not be discharged to the storm drain system.	☐No ☐ Yes	

SOURCE CONTROL BMP INSPECTION FORM				
Date:	**Inspector:**	**Weather:**		
Reason for Inspection:		**Comments:**		
Potential Pollutant Sources	**Location**	**Operational BMPs**	**Maintenance Required**	**Maintenance Performed/Comments**
Vehicle and Equipment Cleaning Continued		☐Car dealerships and similar may rinse cars with potable water only. Any excess water shall be drained through landscaping and dechlorinated prior to discharge to the storm drain system.	☐No ☐ Yes	
		☐Review and adhere to Fact Sheet SC-21, "Vehicle and Equipment Cleaning," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com	☐No ☐ Yes	
☐Vehicle/Equipment Repair and Maintenance	N/A	**The following restrictions apply to use the site:**		
		☐No person shall dispose of, nor permit the disposal, directly or indirectly of vehicle fluids, hazardous materials, or rinse water from parts cleaning into storm drains.	☐No ☐ Yes	
		☐No vehicle fluid removal shall be performed outside a building, Nor on asphalt or ground surfaces, whether inside or outside a building, except in such a manner as to ensure that any spilled fluid will be in an area of secondary containment. Leaking vehicle fluids shall be contained or drained from the vehicle immediately.	☐No ☐ Yes	

SOURCE CONTROL BMP INSPECTION FORM

Date:	**Inspector:**	**Weather:**
Reason for Inspection:		**Comments:**

Potential Pollutant Sources	**Location**	**Operational BMPs**	**Maintenance Required**	**Maintenance Performed/Comments**
Vehicle/Equipment Repair and Maintenance Continued		☐No person shall leave unattended drip parts or other open containers of chemicals such as vehicle fluid, unless such containers are in use or in an area of secondary containment.	☐No ☐ Yes	
☐Fuel Dispensing Areas	N/A	☐The fueling area is to be dry swept routinely.	☐No ☐ Yes	
		☐Review and adhere to the Business Guide Sheet, "Automotive Service—Service Stations" in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com	☐No ☐ Yes	
		☐Fueling areas are covered by a canopy.	☐No ☐ Yes	
		☐The canopy does not drain onto the fueling area.	☐No ☐ Yes	
		☐Grading of the area prevents run-on of stormwater to the maximum extent practicable.	☐No ☐ Yes	
☐Loading Docks	N/A	☐Move loaded and unloaded items indoors as soon as possible.	☐No ☐ Yes	
		☐Review and adhere to Fact Sheet SC-30, "Outdoor Loading and Unloading," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com	☐No ☐ Yes	

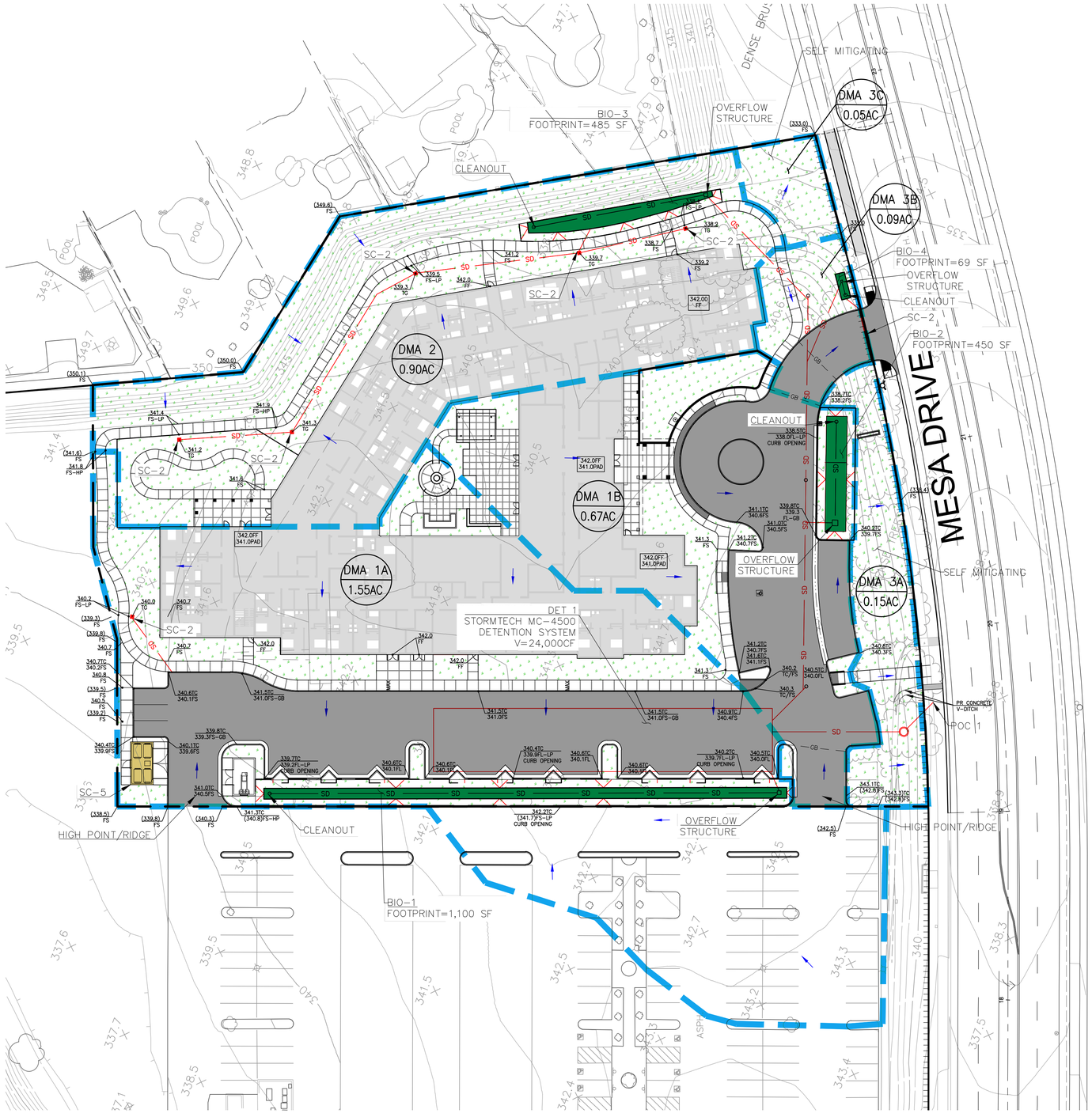
SOURCE CONTROL BMP INSPECTION FORM

Date:	**Inspector:**	**Weather:**
Reason for Inspection:		**Comments:**

Potential Pollutant Sources	**Location**	**Operational BMPs**	**Maintenance Required**	**Maintenance Performed/Comments**
☒Fire Sprinkler Test Water	Within the assisted living facility building.	☐Review the note in Fact Sheet SC-41, "Building and Grounds Maintenance," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com	☐No ☐ Yes	
☒Miscellaneous Drain or Wash Water • Boiler drain lines Condensate drain lines • Rooftop equipment Drainage sumps • Roofing, gutters, and trim	At the assisted living facility building.		☐No ☐ Yes	
☒Plazas, sidewalks, and parking lots	Throughout the project site and western parking area.	☐Plazas, sidewalks, and parking lots shall be swept regularly to prevent the accumulation of litter and debris. Debris from pressure washing shall be collected to prevent entry into the storm drain system. Washwater containing any cleaning agent or degreaser shall be collected and discharged to the sanitary sewer and not discharged to a storm drain.	☐No ☐ Yes	

ATTACHMENT 6

SITE MAP



ABBREVIATIONS:

AC	ACRES
CFS	CUBIC FEET PER SECOND
FG	FINISHED GROUND
FS	FINISH SURFACE
L	LENGTH

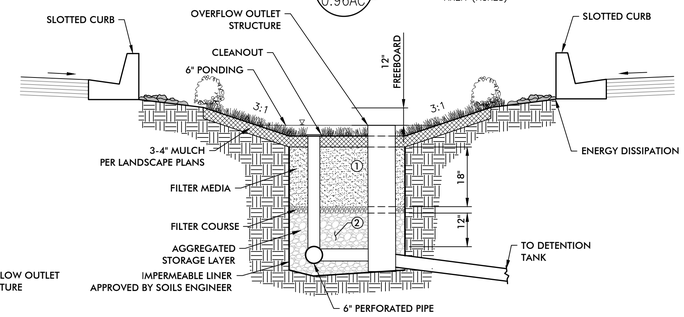
HYDROLOGIC SITE DATA

SOIL GROUP: C & D
ASSISTED LIVING SITE AREA: 3.39 AC
DEPTH TO GROUNDWATER: +20'

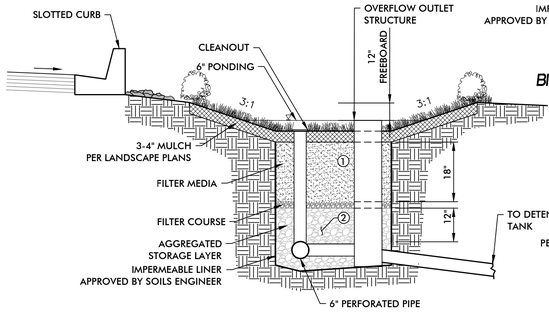
DMA	DRAINAGE AREA (ACRES)	85TH PERCENTILE (d) (INCHES)	WEIGHTED RUNOFF FACTOR (C)	DCV (CUBIC-FEET)	BIOFILTRATION VOLUME (1.5XDCV)	MINIMUM BMP FOOTPRINT (SQUARE-FEET)	BMP FOOTPRINT PROVIDED (SQUARE-FEET)
DMA 1A	1.55	0.64	0.78	2,809	3,973	1,576	1,579
DMA 1B	0.67	0.64	076	1,181	1,670	664	670
DMA 2	0.90	0.64	0.61	1,270	1,796	714	720
DMA 3A	0.15	0.64	0.32	--	--	--	--
DMA 3B	0.09	0.64	0.59	123	169	69	69
DMA 3C	0.05	0.64	0.30	--	--	--	--

LEGEND:

- RIGHT-OF-WAY LINE
- CENTERLINE
- DMA BOUNDARY
- LANDSCAPE AREA
- BIORETENTION TREATMENT AREA
- AC PAVEMENT
- ROOF
- WALK
- STORM DRAIN STENCILING & MAINTENANCE (SC-2)
- PROPOSED TRASH ENCLOSURE (SC-5)
- FLOW DIRECTION
- DMA 1 / 0.96AC — SUBAREA DESIGNATION / AREA (ACRES)



BIORETENTION CELL TYPICAL SECTION - DMA 1A
N.T.S.



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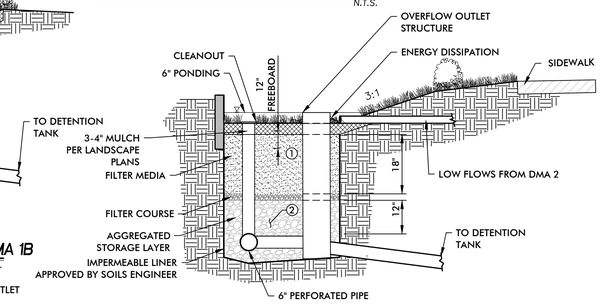

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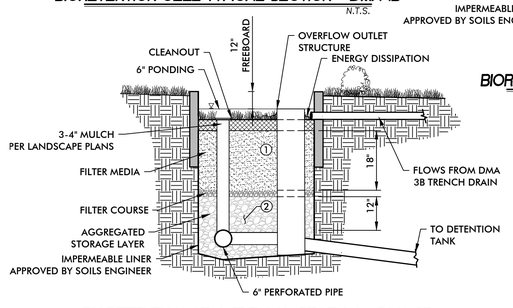
N.T.S.



BIORETENTION CELL TYPICAL SECTION - DMA 3B
N.T.S.

BIORETENTION & STORM WATER PLANTER NOTES:

① 18" PLANTING MEDIA THAT IS SUFFICIENTLY PERMEABLE TO ACHIEVE A LONG TERM, IN-PLACE FILTRATION RATE OF AT LEAST 5 INCHES PER HOUR AND SUPPORT VIGOROUS PLANT GROWTH. PLANTING MEDIA SHALL CONSIST OF THE FOLLOWING MIXTURE OF FINE SAND AND COMPOST, MEASURED ON A VOLUME BASIS: 70%-85% SAND, AND 15%-30% COMPOST. SEE LANDSCAPE PLANS FOR ADDITIONAL DETAILS ON SOIL/PLANTING MIX.

SAND SHALL BE FREE OF WOOD, WASTE, COATING SUCH AS CLAY, STONE DUST, CARBONATE, ETC. OR ANY OTHER DELETERIOUS MATERIAL. ALL AGGREGATE PASSING THE NO. 200 SIEVE SHALL BE NON-PLASTIC. SAND FOR PLANTING MEDIA SHALL BE ANALYZED BY AN ACCREDITED LAB USING ASTM D 422, AND COMPLY WITH GRADATION REQUIREMENTS PER SPECIFICATIONS INCLUDED IN LANDSCAPE PLANS.

COMPOST SHALL BE A WELL DECOMPOSED, STABLE, WEED-FREE ORGANIC MATTER SOURCE DERIVED FROM WASTE MATERIALS CERTIFIED THROUGH USCC SEAL OF TESTING ASSURANCE (STA) PROGRAM. ORGANIC MATTER CONTENT SHALL BE 35%-75% BY DRY WEIGHT, AND PH BETWEEN 6.0 AND 7.5.

② UNDERDRAIN GRAVEL CLASS 2 PERMEABLE, PER CALTRANS SPECIFICATION 68-2.02F(3). AT LEAST 6" OF WASHED AGGREGATE MUST BE PLACED BELOW, TO THE TOP, AND TO THE SIDES OF THE UNDERDRAIN PIPE(S).

30' 0' 15' 30'
SCALE: 1" = 30'

PRELIMINARY DMA EXHIBIT

SUNRISE SENIOR LIVING OF OCEANSIDE
4700 MESA DR

SUNRISE SENIOR LIVING

FUSCOE ENGINEERING
600 Wilshire Blvd., Suite 1470, Los Angeles, California 90017
tel 213.988.8802 ◦ fax 213.988.8803 ◦ www.fuscoe.com

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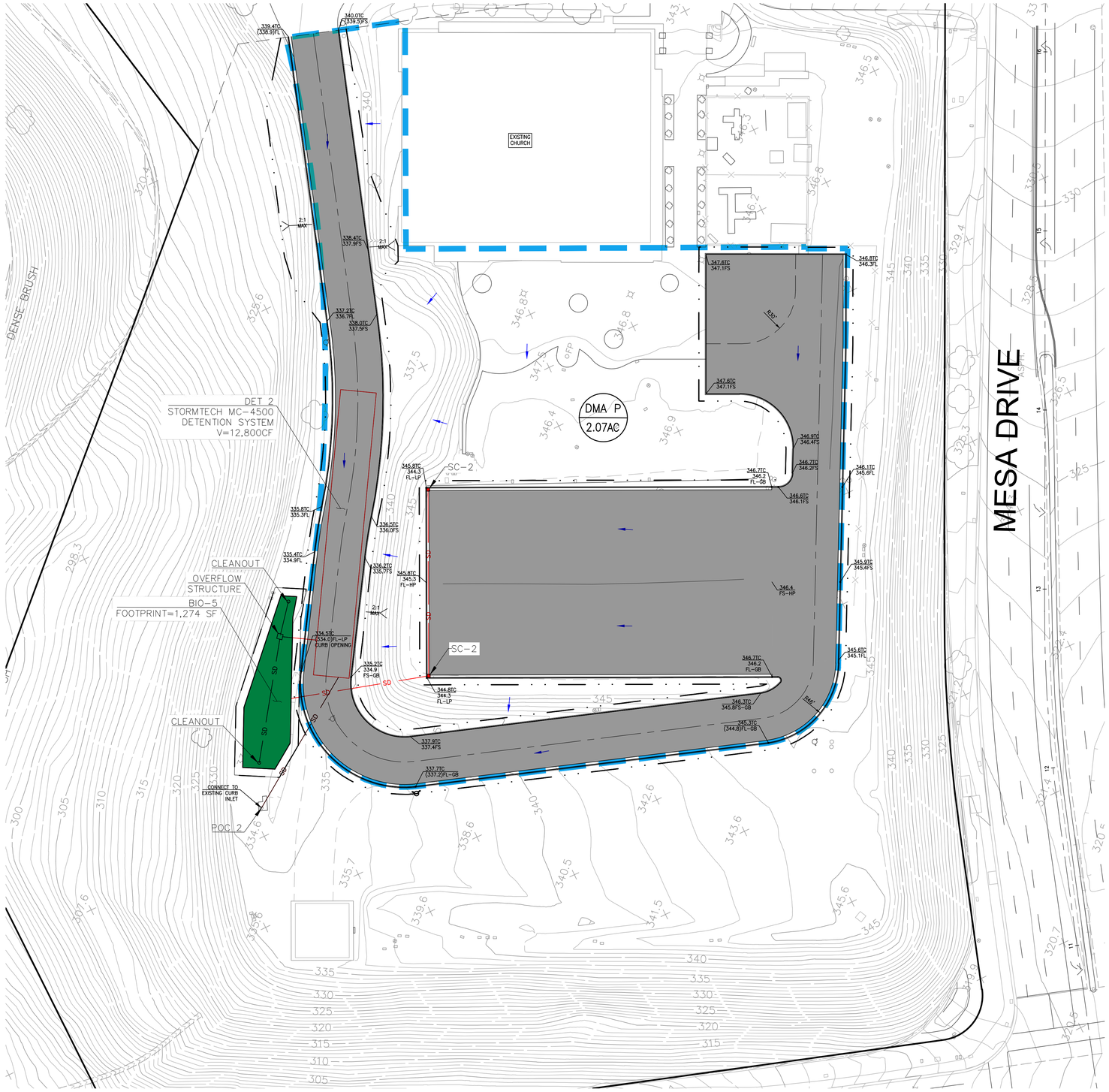


HYDROLOGIC SITE DATA

SOIL GROUP: C & D
WESTERN PARKING SITE AREA: 2.07 AC
DEPTH TO GROUNDWATER: +20'

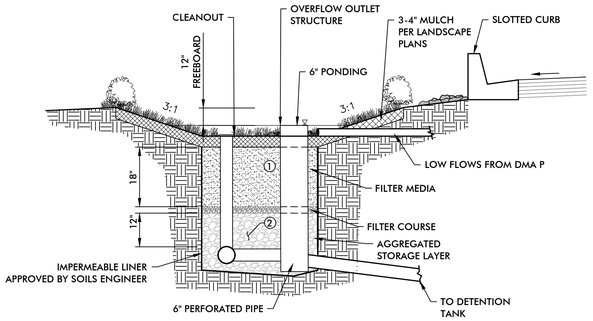
ABBREVIATIONS:

AC	ACRES
CFS	CUBIC FEET PER SECOND
FG	FINISHED GROUND
FS	FINISH SURFACE
L	LENGTH

LEGEND:

- RIGHT-OF-WAY LINE
- CENTERLINE
- DMA BOUNDARY
- LANDSCAPE AREA
- AC PAVEMENT
- BIOFILTRATION BMP
- FLOW DIRECTION
- CATCH BASIN STENCILING
- DMA 1 / 0.96AC — SUBAREA DESIGNATION / AREA (ACRES)

DMA	DRAINAGE AREA (ACRES)	85TH PERCENTILE (d) (INCHES)	WEIGHTED RUNOFF FACTOR (C)	DCV (CUBIC-FEET)	BIOFILTRATION VOLUME (1.5XDCV)	MINIMUM BMP FOOTPRINT (SQUARE-FEET)	BMP FOOTPRINT PROVIDED (SQUARE-FEET)
DMA P	2.07	0.64	0.69	3,311	4,682	1,862	1,880



BIORETENTION CELL TYPICAL SECTION - DMA P
N.T.S.

BIORETENTION & STORM WATER PLANTER NOTES:

① 18" PLANTING MEDIA THAT IS SUFFICIENTLY PERMEABLE TO ACHIEVE A LONG TERM, IN-PLACE FILTRATION RATE OF AT LEAST 5 INCHES PER HOUR AND SUPPORT VIGOROUS PLANT GROWTH. PLANTING MEDIA SHALL CONSIST OF THE FOLLOWING MIXTURE OF FINE SAND AND COMPOST, MEASURED ON A VOLUME BASIS: 70%-85% SAND, AND 15%-30% COMPOST. SEE LANDSCAPE PLANS FOR ADDITIONAL DETAILS ON SOIL/PLANTING MIX.

SAND SHALL BE FREE OF WOOD, WASTE, COATING SUCH AS CLAY, STONE DUST, CARBONATE, ETC. OR ANY OTHER DELETERIOUS MATERIAL. ALL AGGREGATE PASSING THE NO. 200 SIEVE SHALL BE NON-PLASTIC. SAND FOR PLANTING MEDIA SHALL BE ANALYZED BY AN ACCREDITED LAB USING ASTM D 422, AND COMPLY WITH GRADATION REQUIREMENTS PER SPECIFICATIONS INCLUDED IN LANDSCAPE PLANS.

COMPOST SHALL BE A WELL DECOMPOSED, STABLE, WEED-FREE ORGANIC MATTER SOURCE DERIVED FROM WASTE MATERIALS CERTIFIED THROUGH USCC SEAL OF TESTING ASSURANCE (STA) PROGRAM. ORGANIC MATTER CONTENT SHALL BE 35%-75% BY DRY WEIGHT, AND PH BETWEEN 6.0 AND 7.5.

② UNDERDRAIN GRAVEL CLASS 2 PERMEABLE, PER CALTRANS SPECIFICATION 68-2.02F(3). AT LEAST 6" OF WASHED AGGREGATE MUST BE PLACED BELOW, TO THE TOP, AND TO THE SIDES OF THE UNDERDRAIN PIPE(S).

30' 0' 15' 30'
SCALE: 1" = 30'

PRELIMINARY LOWER CHURCH PARKING EXHIBIT

SUNRISE SENIOR LIVING OF OCEANSIDE
4700 MESA DR

SUNRISE SENIOR LIVING

FUSCOE ENGINEERING
600 Wilshire Blvd., Suite 1470, Los Angeles, California 90017
tel 213.988.8802 ◦ fax 213.988.8803 ◦ www.fuscoe.com

ATTACHMENT 7

AS-BUILT DRAWINGS

To be completed with Final Design

ATTACHMENT 8

TREATMENT CONTROL BMP INSPECTION AND MAINTENANCE CHECKLIST(S)

Bioretention Area
INSPECTION AND MAINTENANCE CHECKLIST

Property Address: 4700 Mesa Drive, Oceanside, CA 92507 Property Applicant: North County Community Partners, LLC

Treatment Measure No.: _____ Date of Inspection: _____ Type of Inspection: ☐ Monthly ☐ Pre-Wet Season ☐ After heavy runoff ☐ End of Wet Season

Inspector(s): _____ Overall Facility Score*:_____ ☐ Other:_____

Defect	Conditions When Maintenance Is Needed	Maintenance Score**	Comments (Describe maintenance completed and if needed maintenance was not conducted, note when it will be done)	Results Expected When Maintenance Is Performed
1. Standing Water	When water stands in the bioretention area between storms and does not drain within five days after rainfall.			There should be no areas of standing water once inflow has ceased. Any of the following may apply: sediment or trash blockages removed, improved grade from head to foot of bioretention area, or added underdrains.
2. Trash and Debris Accumulation	Trash and debris accumulated in the bioretention area.			Trash and debris removed from bioretention area and disposed of properly.
3. Sediment	Evidence of sedimentation in bioretention area.			Material removed so that there is no clogging or blockage. Material is disposed of properly.
4. Erosion	Channels have formed around inlets, there are areas of bare soil, and/or other evidence of erosion.			Obstructions and sediment removed so that water flows freely and disperses over a wide area. Obstructions and sediment are disposed of properly.
5. Vegetation	Vegetation is dead, diseased and/or overgrown.			Vegetation is healthy and attractive in appearance.

Biorentention Area - Inspection and Maintenance Checklist
Property Address: 4700 Mesa Drive, Oceanside, CA 92507

Date of Inspection:_____
Treatment Measure No.:_____

Defect	Conditions When Maintenance Is Needed	Maintenance Score**	Comments (Describe maintenance completed and if needed maintenance was not conducted, note when it will be done)	Results Expected When Maintenance Is Performed
6. Mulch	Mulch is missing or patchy in appearance. Areas of bare earth are exposed, or mulch layer is less than 3 inches in depth.			All bare earth is covered, except mulch is kept 6 inches away from trunks of trees and shrubs. Mulch is even in appearance, at a depth of 3 inches.
7. Miscellaneous	Any condition not covered above that needs attention in order for the bioretention area to function as designed.			Meet the design specifications.

*Overall Facility Score = Worst Score from all Defect Items Noted.
**Scores: 0 = OK, 1 = Monitor, 2 = Routine Maintenance, 3 = Immediate Repair Necessary

ATTACHMENT 9

MAINTENANCE SCHEDULE

To be completed with Final Design

ATTACHMENT 10

STORMWATER FACILITIES MAINTENANCE AGREEMENT WITH ACCESS RIGHTS AND COVENANTS (SWFMA)

To be completed with Final Design

ATTACHMENT 11

ANNUAL INSPECTION AND MAINTENANCE REPORTING FORM

URBAN STORMWATER MITIGATION PLAN REPORTING FORM
ANNUAL INSPECTION AND MAINTENANCE OF TREATMENT CONTROL BMPS
(SIDE A)

Responsible Party for Inspection Maintenance: _____ Signature:_____
Date:_____ Print Name/Title_____

Facility Name:____Sunrise Senior Living Oceanside_____

BMP Type	Location Lat/Lon or Inlet #	Date of Construction	Inspection Date(s)	Condition of BMP Indicate whether the BMP is present and in working condition, requires cleaning or replacement.	*Maintenance required? (Y/N) If yes, complete reverse side.

* Maintenance is to be carried out as needed and in accordance with approved Operation and Maintenance Plan.

URBAN STORMWATER MITIGATION PLAN REPORTING FORM
ANNUAL INSPECTION AND MAINTENANCE OF TREATMENT CONTROL BMPS
(SIDE B)

BMP Type	BMP Location (lat/lon or Inlet #)	Date of Maintenance Activity	Description of maintenance performed	If applicable, describe any additional work required.

* Maintenance is to be carried out as needed and in accordance with the City of Oceanside's Operation and Maintenance Plan.

TECHNICAL NOTE

Retention/Detention System Maintenance

TN 6.01
February 2007

This document is provided for informational purposes only and is meant only to be a guide. Individuals using this information should make their own decisions as to suitability of this guideline for their individual projects and adjust accordingly.

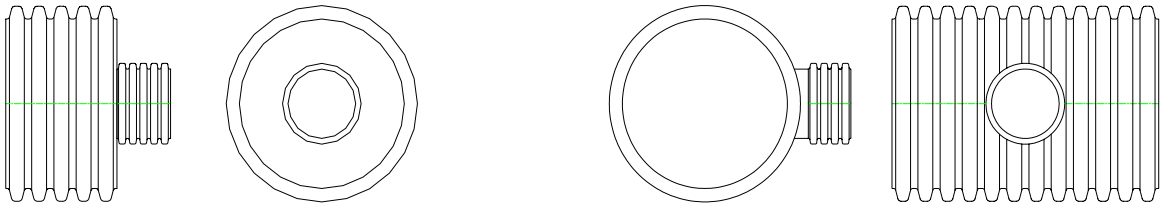
Introduction

A retention/detention system is comprised of a series of pipes and fittings that form an underground storage area, which retains or detains storm water runoff from a given area. As sediment and debris settle out of the detained stormwater, build up occurs that requires the system to be regularly inspected and cleaned in order for the system to perform as originally designed. The following provides the available fittings and guidelines for inspection and maintenance of an HDPE underground storage system.

System Accessories and Fittings

Concentric Reducers

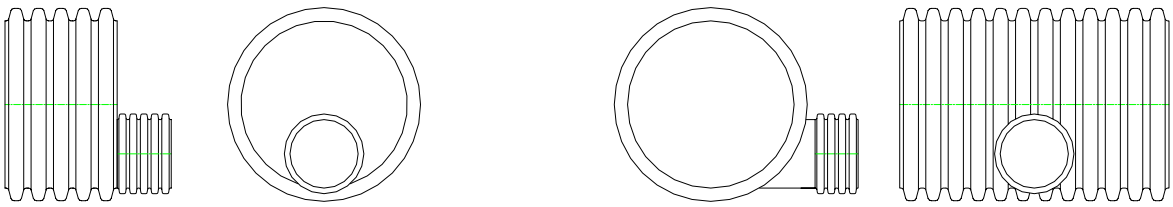
Concentric Reducers are fittings that transition between two pipes, either in line with one another or at perpendicular angles. The centerlines of the two pipes are at the same elevation. When a concentric reducer is used to connect the manifold pipe to the lateral pipes, most debris will be trapped in the manifold pipe.



SIDE VIEW SECTION VIEW SIDE VIEW SECTION VIEW

Eccentric Reducers

Eccentric Reducers are fittings that transition between two pipes, either in line with one another or at perpendicular angles. The inverts of the two pipes are at the same elevations. When an eccentric reducer is used to connect the manifold pipe to the lateral pipes, most debris will follow the flow of the storm water into the lateral pipes.



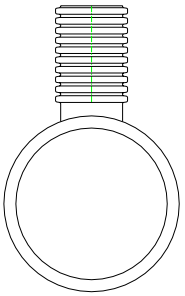
SIDE VIEW SECTION VIEW SIDE VIEW SECTION VIEW

Riser

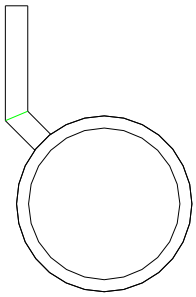
Each retention/detention system typically has risers strategically placed for maintenance and inspection of the system. These risers are typically 24” in diameter or larger and are placed on the manifold fittings.

Cleanouts

Cleanout ports are usually 4-, 6-, or 8-in diameter pipe and are placed on the manifold fittings. They are used for entrance of a pipe from a vacuum truck or a water-jetting device.



RISER
CROSS-SECTION VIEW



CLEANOUT
CROSS-SECTION VIEW

For a complete listing of available fittings and components please refer to the *ADS Fittings Manual*.

Maintenance Overview of a Retention/Detention System

Maintaining a clean and obstruction-free retention/detention system helps to ensure the system performs the intended function of the primary design. Build up of debris may obstruct flow through the laterals in a retention system or block the entranceway of the outlet pipe in a detention system. This may result in ineffective operation or complete failure of the system . Additionally, surrounding areas may potentially run the risk of damage due to flooding or other similar issues.

Inspection/Maintenance Frequency

All retention/detention systems must be cleaned and maintained. Underground systems may be maintained more cost effectively if these simple guidelines are followed. Inspection should be performed at a minimum of once per year. Cleaning should be done at the discretion of individuals responsible to maintain proper storage and flow. While maintenance can generally be performed year round, it should be scheduled during a relatively dry season.

Pre-Inspection

A post-installation inspection should be performed to allow the owner to measure the invert prior to accumulation of sediment. This survey will allow the monitoring of sediment build-up without requiring access to the retention/detention system.

The following is the recommended procedure for pre-inspections:

1) Locate the riser section or cleanouts of the retention/detention system. The riser will typically be 24” in diameter or larger and the cleanouts are usually 4”, 6” or 8” in diameter.
2) Remove the lid of the riser or clean outs.
3) Insert a measuring device into the opening and make note to a point of reference on the stick or string. (This is done so that sediment build up can be determined in the future without having to enter the system.)

Inspection/Maintenance

A retention/detention system should be inspected at a minimum of one time a year or after major rain events if necessary.

The following is the recommended procedure to inspect system in service:

1) Locate the riser section of the retention/detention system. The riser will typically be 24” in diameter or larger.
2) Remove the lid from the riser.
3) Measure the sediment buildup at each riser and cleanout location. Only certified confined space entry personnel having appropriate equipment should be permitted to enter the retention/detention System.
4) Inspect each manifold, all laterals, and outlet pipes for sediment build up, obstructions, or other problems. Obstructions should be removed at this time.
5) If measured sediment build up is between 5% - 20% of the pipe diameter, cleaning should be considered; if sediment build up exceeds 20%, cleaning should be performed at the earliest opportunity. A thorough cleaning of the system (manifolds and laterals) shall be performed by either manual methods or by a vacuum truck.

StormTech
Detention • Retention • Water Quality
An ADS company

Isolator® Row O&M Manual

THE MOST **ADVANCED** NAME IN WATER MANAGEMENT SOLUTIONS™

ADS®

THE ISOLATOR® ROW

INTRODUCTION

An important component of any Stormwater Pollution Prevention Plan is inspection and maintenance. The StormTech Isolator Row is a technique to inexpensively enhance Total Suspended Solids (TSS) and Total Phosphorus (TP) removal with easy access for inspection and maintenance.

THE ISOLATOR ROW

The Isolator Row is a row of StormTech chambers, either SC-160, SC-310, SC-310-3, SC-740, DC-780, MC-3500 or MC-4500 models, that is surrounded with filter fabric and connected to a closely located manhole for easy access. The fabric-wrapped chambers provide for settling and filtration of sediment as storm water rises in the Isolator Row and ultimately passes through the filter fabric. The open bottom chambers and perforated sidewalls (SC-310, SC- 310-3 and SC-740 models) allow storm water to flow both vertically and horizontally out of the chambers. Sediments are captured in the Isolator Row protecting the storage areas of the adjacent stone and chambers from sediment accumulation.

A woven geotextile fabric is placed between the stone and the Isolator Row chambers. The woven geotextile provides a media for stormwater filtration, a durable surface for maintenance, prevents scour of the underlying stone and remains intact during high pressure jetting. A non-woven fabric is placed over the chambers to provide a filter media for flows passing through the perforations in the sidewall of the chamber. The non-woven fabric is not required over the SC-160, DC-780, MC-3500 or MC-4500 models as these chambers do not have perforated side walls.

The Isolator Row is typically designed to capture the “first flush” and offers the versatility to be sized on a volume basis or flow rate basis. An upstream manhole provides access to the Isolator Row and typically includes a high flow weir. When flow rates or volumes exceed the Isolator Row weir capacity the water will flow over the weir and discharge through a manifold to the other chambers.

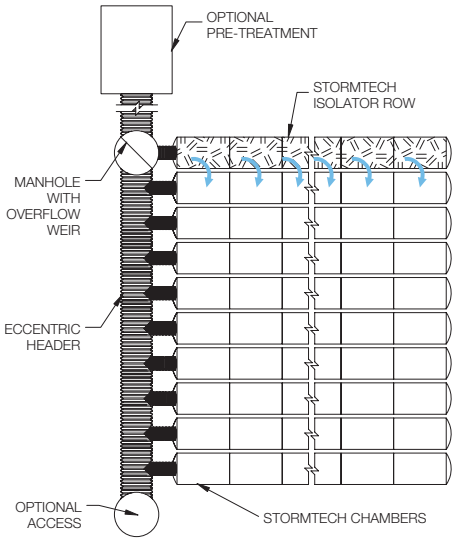
Another acceptable design uses one open grate inlet structure. Using a “high/low” design (low invert elevation on the Isolator Row and a higher invert elevation on the manifold) an open grate structure can provide the advantages of the Isolator Row by creating a differential between the Isolator Row and manifold thus allowing for settlement in the Isolator Row.

The Isolator Row may be part of a treatment train system. The design of the treatment train and selection of pretreatment devices by the design engineer is often driven by regulatory requirements. Whether pretreatment is used or not, the Isolator Row is recommended by StormTech as an effective means to minimize maintenance requirements and maintenance costs.

Note: See the StormTech Design Manual for detailed information on designing inlets for a StormTech system, including the Isolator Row.

Looking down the Isolator Row from the manhole opening, woven geotextile is shown between the chamber and stone base.

StormTech Isolator Row with Overflow Spillway (not to scale)



ISOLATOR ROW INSPECTION/MAINTENANCE

INSPECTION

The frequency of inspection and maintenance varies by location. A routine inspection schedule needs to be established for each individual location based upon site specific variables. The type of land use (i.e. industrial, commercial, residential), anticipated pollutant load, percent imperviousness, climate, etc. all play a critical role in determining the actual frequency of inspection and maintenance practices.

At a minimum, StormTech recommends annual inspections. Initially, the Isolator Row should be inspected every 6 months for the first year of operation. For subsequent years, the inspection should be adjusted based upon previous observation of sediment deposition.

The Isolator Row incorporates a combination of standard manhole(s) and strategically located inspection ports (as needed). The inspection ports allow for easy access to the system from the surface, eliminating the need to perform a confined space entry for inspection purposes.

If upon visual inspection it is found that sediment has accumulated, a stadia rod should be inserted to determine the depth of sediment. When the average depth of sediment exceeds 3 inches throughout the length of the Isolator Row, clean-out should be performed.

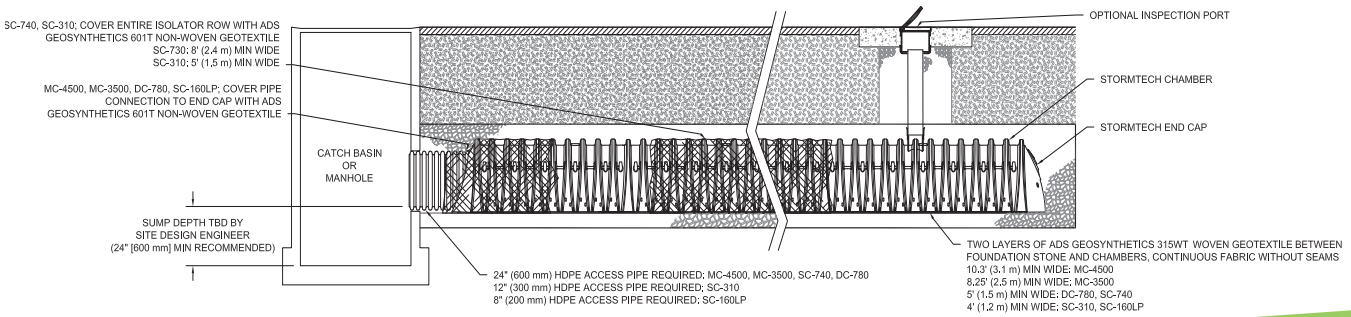
MAINTENANCE

The Isolator Row was designed to reduce the cost of periodic maintenance. By "isolating" sediments to just one row, costs are dramatically reduced by eliminating the need to clean out each row of the entire storage bed. If inspection indicates the potential need for maintenance, access is provided via a manhole(s) located on the end(s) of the row for cleanout. If entry into the manhole is required, please follow local and OSHA rules for a confined space entries.

Maintenance is accomplished with the JetVac process. The JetVac process utilizes a high pressure water nozzle to propel itself down the Isolator Row while scouring and suspending sediments. As the nozzle is retrieved, the captured pollutants are flushed back into the manhole for vacuuming. Most sewer and pipe maintenance companies have vacuum/JetVac combination vehicles. Selection of an appropriate JetVac nozzle will improve maintenance efficiency. Fixed nozzles designed for culverts or large diameter pipe cleaning are preferable. Rear facing jets with an effective spread of at least 45" are best. Most JetVac reels have 400 feet of hose allowing maintenance of an Isolator Row up to 50 chambers long. **The JetVac process shall only be performed on StormTech Isolator Rows that have AASHTO class 1 woven geotextile (as specified by StormTech) over their angular base stone.**

StormTech Isolator Row (not to scale)

Note: Non-woven fabric is only required over the inlet pipe connection into the end cap for SC-160LP, DC-780, MC-3500 and MC-4500 chamber models and is not required over the entire Isolator Row.



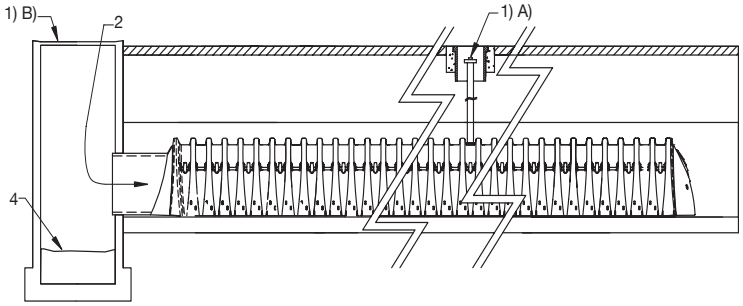
ISOLATOR ROW STEP BY STEP MAINTENANCE PROCEDURES

STEP 1
Inspect Isolator Row for sediment.
- A) Inspection ports (if present)
  - i. Remove lid from floor box frame
  - ii. Remove cap from inspection riser
  - iii. Using a flashlight and stadia rod,measure depth of sediment and record results on maintenance log.
  - iv. If sediment is at or above 3 inch depth, proceed to Step 2. If not, proceed to Step 3.
- B) All Isolator Rows
  - i. Remove cover from manhole at upstream end of Isolator Row
  - ii. Using a flashlight, inspect down Isolator Row through outlet pipe
    1. Mirrors on poles or cameras may be used to avoid a confined space entry
    2. Follow OSHA regulations for confined space entry if entering manhole
  - iii. If sediment is at or above the lower row of sidewall holes (approximately 3 inches), proceed to Step 2. If not, proceed to Step 3.

STEP 2
Clean out Isolator Row using the JetVac process.
- A) A fixed floor cleaning nozzle with rear facing nozzle spread of 45 inches or more is preferable
- B) Apply multiple passes of JetVac until backflush water is clean
- C) Vacuum manhole sump as required

STEP 3
Replace all caps, lids and covers, record observations and actions.

STEP 4
Inspect & clean catch basins and manholes upstream of the StormTech system.



SAMPLE MAINTENANCE LOG

Date	Stadia Rod Readings		Sediment Depth (1)–(2)	Observations/Actions	Inspector
	Fixed point to chamber bottom (1)	Fixed point to top of sediment (2)			
3/15/11	6.3 ft	none		New installation. Fixed point is CI frame at grade	DJM
9/24/11		6.2	0.1 ft	Some grit felt	SM
6/20/13		5.8	0.5 ft	Mucky feel, debris visible in manhole and in Isolator Row, maintenance due	NV
7/7/13	6.3 ft		0	System jetted and vacuumed	DJM

StormTech Detention • Retention • Water Quality
An ADS company

Advanced Drainage Systems, Inc.
4640 Trueman Blvd., Hilliard, OH 43026
1-800-821-6710 www.ads-pipe.com

Oldcastle Precast®

FLOGARD+PLUS®
CATCH BASIN INSERT FILTER

Inspection and Maintenance Guide

DRAINAGE PROTECTION SYSTEMS
DPS
A division of
Oldcastle Precast

Stormwater

SCOPE:

Federal, State and Local Clean Water Act regulations and those of insurance carriers require that stormwater filtration systems be maintained and serviced on a recurring basis. The intent of the regulations is to ensure that the systems, on a continuing basis, efficiently remove pollutants from stormwater runoff thereby preventing pollution of the nation's water resources. These specifications apply to the FloGard+Plus® Catch Basin Insert Filter.

RECOMMENDED FREQUENCY OF SERVICE:

Drainage Protection Systems (DPS) recommends that installed FloGard+Plus Catch Basin Insert Filters be serviced on a recurring basis. Ultimately, the frequency depends on the amount of runoff, pollutant loading and interference from debris (leaves, vegetation, cans, paper, etc.); however, it is recommended that each installation be serviced a minimum of three times per year, with a change of filter medium once per year. DPS technicians are available to do an onsite evaluation, upon request.

RECOMMENDED TIMING OF SERVICE:

DPS guidelines for the timing of service are as follows:

1. For areas with a definite rainy season: Prior to, during and following the rainy season.
2. For areas subject to year-round rainfall: On a recurring basis (at least three times per year).
3. For areas with winter snow and summer rain: Prior to and just after the snow season and during the summer rain season.
4. For installed devices not subject to the elements (washracks, parking garages, etc.): On a recurring basis (no less than three times per year).

SERVICE PROCEDURES:

1. The catch basin grate shall be removed and set to one side. The catch basin shall be visually inspected for defects and possible illegal dumping. If illegal dumping has occurred, the proper authorities and property owner representative shall be notified as soon as practicable.
2. Using an industrial vacuum, the collected materials shall be removed from the liner. (Note: DPS uses a truck-mounted vacuum for servicing FloGard+Plus catch basin inserts.)
3. When all of the collected materials have been removed, the filter medium pouches shall be removed by unsnapping the tether from the D-ring and set to one side. The filter liner, gaskets, stainless steel frame and mounting brackets, etc., shall be inspected for continued serviceability. Minor damage or defects found shall be corrected on-the-spot and a notation made on the Maintenance Record. More extensive deficiencies that affect the efficiency of the filter (torn liner, etc.), if approved by the customer representative, will be corrected and an invoice submitted to the representative along with the Maintenance Record.
4. The filter medium pouches shall be inspected for defects and continued serviceability and replaced as necessary and the pouch tethers re-attached to the liner's D-ring. See below.
5. The grate shall be replaced.

REPLACEMENT AND DISPOSAL OF EXPOSED FILTER MEDIUM AND COLLECTED DEBRIS

The frequency of filter medium exchange will be in accordance with the existing DPS-Customer Maintenance Contract. DPS recommends that the medium be changed at least once per year. During the appropriate service, or if so determined by the service technician during a non-scheduled service, the filter medium will be replaced with new material. Once the exposed pouches and debris have been removed, DPS has possession and must dispose of it in accordance with local, state and federal agency requirements.

DPS also has the capability of servicing all manner of storm drain filters, catch basin inserts and catch basins without inserts, underground oil/water separators, stormwater interceptors and other such devices. All DPS personnel are highly qualified technicians and are confined space trained and certified. Call us at (888) 950-8826 for further information and assistance.

TECHNICAL NOTE

Post Installation Testing of HP Storm

TN 5.20
August 2016

Introduction

Storm sewer is often tested after or during installation to ensure a sound installation was accomplished. Types of post installation field testing include deflection testing and joint testing. Specific testing required for the project will be found in the project specifications. This technical note is not meant to supersede any project specification, but should be used in conjunction with the project specification and national testing standards as it relates specifically to HP Storm pipe.

Deflection Testing

An important feature of any flexible pipe is its ability to deflect, or oval, under load without structural distress. Deflection allows the load to be transferred from the pipe to the surrounding backfill. The result is flexible pipe can withstand very high loads as a relatively light structure. Flexible pipe – including HP Storm – *must* deflect in order to mobilize the strength of the surrounding backfill.

According to current thermoplastic design procedures, deflection is defined as a service limit. The designer, considering all site conditions, will set this service limit in order to perform a proper design evaluation. Deflection in excess of this service limit does not necessarily result in strength limits being exceeded, i.e. system failure. For more information on service and strength limit states, see the *Structures* section of the Drainage Handbook. HP Storm can be expected to perform satisfactorily in most applications with 5% or 7.5% deflection and so it is typical of designers to choose a service limit in this range.

When testing for allowable deflection limits, the minimum inside diameter should be used when establishing mandrel sizing. The minimum inside diameter accounts for the allowable manufacturing tolerances. Table 1 lists the inside diameters that result from 5% and 7.5% deflection from the minimum inside diameter. Values listed in Table 1 should be used for sizing mandrels for deflection testing. Mandrels may be obtained from a variety of commercial suppliers.

Table 1
HP Storm Recommended Mandrel Settings

Pipe Type	Pipe Diameter	Minimum Inside Diameter*	Inside Diameter with 5% Deflection	Inside Diameter with 7.5% Deflection
Dual Wall	12	11.88	11.29	10.99
	15	14.78	14.11	13.74
	18	17.82	16.93	16.48
	24	23.76	22.57	21.98
	30	29.70	28.22	27.47
	36	35.64	33.86	32.97
	42	41.58	39.50	38.46
	48	47.52	45.14	43.96
	60	59.40	56.43	54.95

* Value is the larger of ASTM F2881 and AASHTO M330. If designing to a specific standard, please review allowable minimum diameter

It is important to understand that mandrel testing is a go/no-go test. If any line were to not pass a mandrel, it is important to ascertain the cause. Obstructions in the line, not associated with deflection, may influence the test. Visual inspection is recommended in the event of a no-go result.

Joint Testing

Joint testing is an important part of any gravity sewer system, both in testing for infiltration and exfiltration. Infiltration aids to estimate the amount of sewer water that will be conveyed to, and ultimately treated by, the waste water treatment plant. Exfiltration aids to estimate the loss of sewage water into the surrounding soil. The two primary ways of testing sewer pipe joints for infiltration and/or exfiltration is using air or water to create a constant pressure within the system.

Exfiltration Testing with Air

Air is a compressible gas and so it is extremely important one adheres to the appropriate safety regulations outlined in OSHA and project specifications. There are two primary national testing standards that may be applied to joint testing HP Storm: ASTM F1417 *Standard Test Method for Installation Acceptance of Plastic Gravity Sewer Lines Using Low-Pressure Air*, and ASTM F3058 *Preliminary Field Testing of Thermoplastic Pipe Joints for Gravity Flow (Non-Pressure) Sewer Lines*. When either standard is specified by the project plans, one should review the standards carefully and follow the testing procedure and safety precautions outlined. The below commentary on the ASTM testing procedures should be considered a summary and does not replace the testing procedures outlined in their respective specifications.

ASTM F1417 entails testing a run of pipe from one manhole to the next adjacent manhole. Inflatable plugs are positioned into the manholes and secured. Air is introduced into the pipe line and gradually builds pressure. Once the line has been pressurized and is stable at 4.0-psi, the pressure is decreased to 3.5-psi at which time the line must not lose more than 0.5- or 1.0-psi (whichever is specified by the design engineer) in the specified amount of time. Table 2 below summarizes the minimum time that must be reached for less than 0.5- or 1.0-psi of pressure drop, depending on the diameter and length of pipe being tested.

Table 2
Time to Pressure Drop for HP Storm (per ASTM F1417)

Pipe Diameter	Pressure Drop (psi)	Minimum Test Time (min:sec)	Length for Minimum Time, (ft)	Time for Longer Lengths, (sec)	Time for Length Shown, (min:sec)							
					100 ft	150 ft	200 ft	250 ft	300 ft	350 ft	400 ft	450 ft
12	0.5	5:40	199	1.709 L	5:40	5:40	5:42	7:08	8:33	9:58	11:24	12:50
	1.0	11:20		3.418 L	11:20	11:20	11:24	14:15	17:05	19:56	22:47	25:38
15	0.5	7:05	159	2.671 L	7:05	7:05	8:54	11:08	13:21	15:35	17:48	20:02
	1.0	14:10		5.342 L	14:10	14:10	17:48	22:15	26:42	31:09	35:36	40:04
18	0.5	8:30	133	3.846 L	8:30	9:37	12:49	16:01	19:14	22:26	25:38	28:51
	1.0	17:00		7.692 L	17:00	19:13	25:38	32:03	38:27	44:52	51:16	57:41
24	0.5	11:20	99	6.837 L	11:24	17:57	22:48	28:30	34:11	39:53	45:35	51:17
	1.0	22:40		13.764 L	22:47	34:11	43:34	56:58	68:22	79:46	91:10	102:33
30	0.5	14:10	80	10.683 L	17:48	26:43	35:37	44:31	53:25	62:19	71:13	80:07
	1.0	28:20		21.366 L	35:37	53:25	71:13	89:02	106:50	124:38	142:26	160:15

Data taken from ASTM F 1417[1] and Uni-Bell, Uni-B-6-98[3].
It may not be necessary to hold the test for the entire time period listed above when it is evident that the rate of air loss is zero or less than the allowable pressure drop and authorized by the approving authority[1].

When the pipe is large enough to be physically accessed, it may be desirable to test individual joints for safety reasons. In these cases, one may consider joint testing in accordance with ASTM F3058, also known as a joint isolation test. ADS recommends a joint isolation test, in lieu of a full line test, for testing pipe diameters 36” and larger for safety reasons. This test is typically done with air, though water may also be used, and involves the use of special testing equipment. The equipment consists of two inflatable bladders, placed on each side of the joint, creating an open center cavity between them. The bladders are inflated and then the center cavity is pressurized to 3.5 psi. The joint passes the test if the pressure is held for 5 seconds without dropping more than 1.0-psi. For all practical purposes, this is a go/no-go test. Final acceptance of the pipeline per this testing method shall be at the discretion of the Design Engineer. One

advantage of this type of test is the ability for the installer to quickly test the joint immediately after installation, allowing for any corrective measures to be taken early on in the project.

Infiltration/Exfiltration with Water

Testing gravity sewer joints via water infiltration or exfiltration is a common practice. For HP Storm, this testing should be conducted in accordance with ASTM F2487 *Standard Practice for Infiltration and Exfiltration Acceptance Testing of Installed Corrugated High Density Polyethylene Pipelines*. These standards entail first observing the ground water conditions and, if applicable, measuring the infiltration rate of the ground water through the joints. If ground water is not applicable, then the line is filled with water and the leakage is observed through exfiltration.

Manholes shall be tested separately and independently of the pipe line to the requirements established in the project specifications. When water level is measured in the manhole for the exfiltration test, the leakage associated with the manhole shall be subtracted from the overall leakage of the test section to establish a pass or fail grade for the pipe.

Allowable Leakage

The allowable leakage rate for HP Storm is 100 gallons/in-dia/mi-pipe/day for both infiltration and exfiltration when done in accordance with ASTM F2487.

Conclusion

ADS HP Storm is intended for gravity flow storm sewer applications and may be tested for deflection and joint tightness as discussed in this technical document. It is important to note that the testing procedures are no different than for other storm sewer products currently being used in the market. This document does not purport to address the safety concerns associated with testing HP Storm. Any questions associated with testing HP Storm can be directed to your local representative.

References

1. ASTM F1417, *Standard Test Method for Installation Acceptance of Plastic Gravity Sewer Lines Using Low-Pressure Air*, ASTM, 2005
2. *F3058, Preliminary Field Testing of Thermoplastic Pipe Joints for Gravity Flow (non-Pressure) Sewer Lines*, ASTM, 2016.
3. Uni-B-6-98, *Recommended Practice for Low-Pressure Air Testing of Installed Sewer Pipe,* Uni-Bell PVC Pipe Association, 1998
4. ASTM F2487, *Standard Practice for Infiltration and Exfiltration Acceptance Testing of Installed Corrugated High Density Polyethylene Pipelines,* ASTM, 2006
5. ASTM F2881, *Standard Specification for 12 to 60 in. (300 to 1500 mm) Polypropylene (PP) Dual Wall Pipe and Fittings for Non-Pressure Storm Sewer Applications*, ASTM, 2011

ATTACHMENT 4
Copy of Plan Sheets Showing Permanent Storm Water BMPs

This is the cover sheet for Attachment 4.

LEGEND & ABBREVIATIONS

- CENTER LINE
- RIGHT–OF–WAY / PROPOSED PARCEL LINE
- PROPERTY LINE
- EASEMENT
- EXISTING WALL
- PROPOSED BUILDING FOOTPRINT
- DW — EXISTING DOMESTIC WATER LINE
- SS — EXISTING SANITARY SEWER LINE
- JT — EXISTING JOINT TRENCH
- SD — PROPOSED STORM DRAIN
- GB — GRADE BREAK
- LIMIT OF GRADING
- 2" GRIND & OVERLAY
- LANDSCAPE

BFP	BACKFLOW PREVENTER
CB	CATCH BASIN
CL	CENTER LINE
DW	DOMESTIC WATER
EX	EXISTING
FF	FINISHED FLOOR
FW	FIRE WATER
FDC	FIRE DEPARTMENT CONNECTION
FG	FINISH GRADE
FH	FIRE HYDRANT
FL	FLOW LINE
FS	FINISH SURFACE
GB	GRADE BREAK
HP	HIGH POINT
LP	LOW POINT
MH	MANHOLE
PL	PROPERTY LINE
PR	PROPOSED
R/W	RIGHT–OF–WAY
SL	STREETLIGHT
SLPB	STREETLIGHT PULLBOX
SS	SANITARY SEWER
TC	TOP OF CURB
TG	TOP OF GRATE
TS	TRAFFIC SIGNAL PULLBOX
TYP	TYPICAL
(111.11)	EXISTING ELEVATION
802.6FS	SPOT ELEVATION

EARTHWORK QUANTITIES

DESCRIPTION	CUT (CY)	FILL (CY)	NET (CY)	DISPOSITION
RAW SITE	5235	–	5235	CUT
OVER–EX	–	–	–	–
NET TOTAL	–	–	–	–

- ASSUMED ADDITIONAL 1.58' OF CUT WITHIN PAVEMENT AREA BASED ON GEOTECHNICAL REPORT PREPARED BY GEOCON INCORPORATED, DATED NOVEMBER 4, 2019
- ASSUMED ADDITIONAL 0.42' OF CUT WITHIN CONCRETE PAVEMENT AREA BASED ON GEOTECHNICAL REPORT PREPARED BY GEOCON INCORPORATED, DATED NOVEMBER 4, 2019
- ASSUMED ADDITIONAL 0.75' OF CUT BENEATH BUILDING FOOTPRINT BASED ON GEOTECHNICAL REPORT PREPARED BY GEOCON INCORPORATED, DATED NOVEMBER 4, 2019
- ASSUMED 612 CUBIC YARDS OF CUT FOR STORMWATER DETENTION TANK

NOTE:
- DETERIORATED SIDEWALK, CURB, AND GUTTER SEGMENT REPLACEMENT TO BE DETERMINED BY THE CITY ENGINEER DURING FINAL ENGINEERING.

20' 0' 10' 20'
SCALE: 1" = 20'

SUNRISE SENIOR LIVING

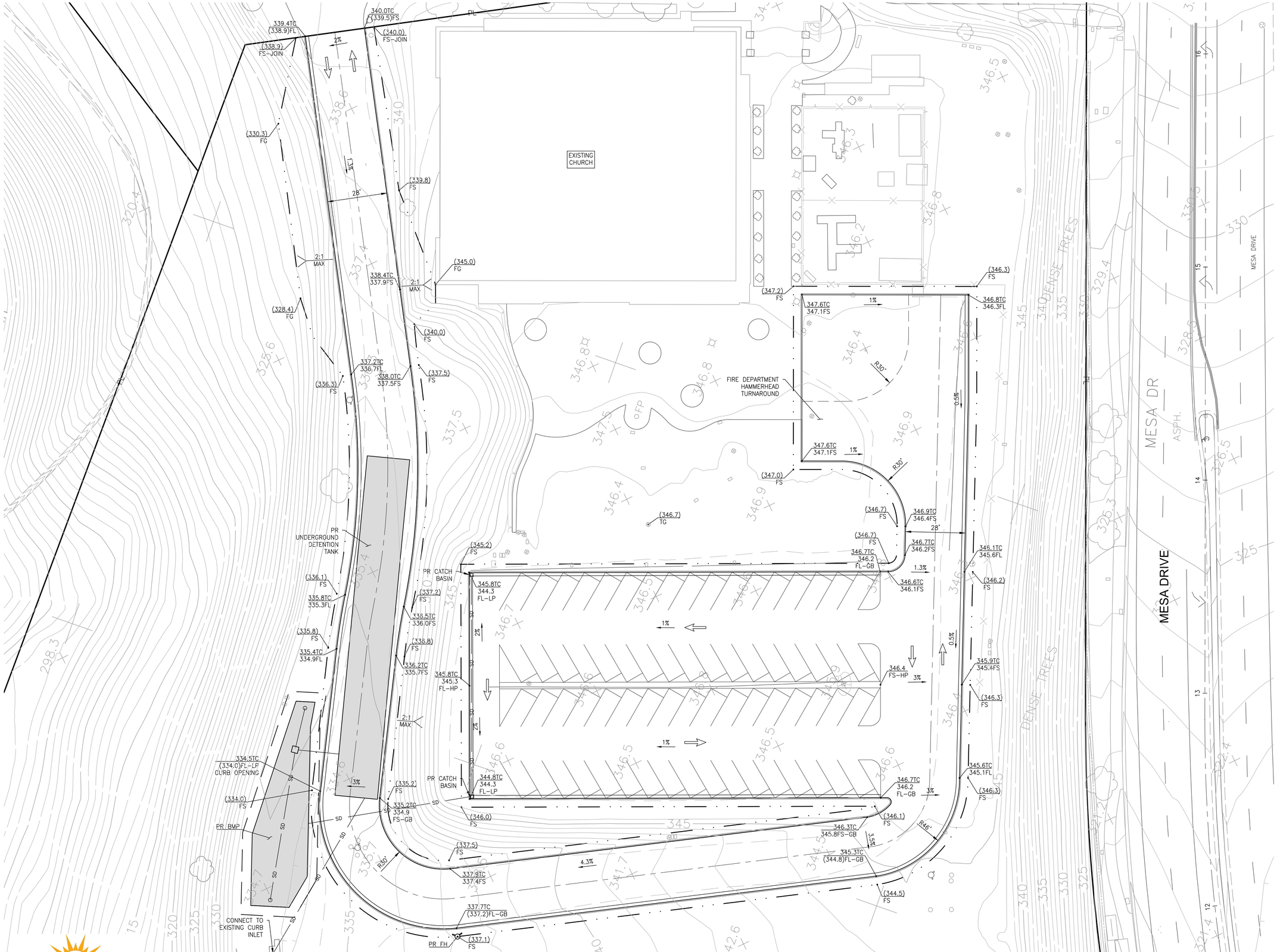
PRELIMINARY

ENGINEER OF WORK: BRITTANY KNOTT, PE RCE 76502

CONCEPT GRADING • C.4-1

OCEANSIDE, CA • 08.07.2020

HPI architecture



LEGEND & ABBREVIATIONS

	CENTER LINE
	RIGHT-OF-WAY / PROPOSED PARCEL LINE
	PROPERTY LINE
	EASEMENT
	EXISTING WALL
	PROPOSED BUILDING FOOTPRINT
DW	EXISTING DOMESTIC WATER LINE
SS	EXISTING SANITARY SEWER LINE
JT	EXISTING JOINT TRENCH
SD	PROPOSED STORM DRAIN
SS	PROPOSED SEWER
DW	PROPOSED WATER
FW	PROPOSED FIRE WATER
GB	GRADE BREAK
	LIMIT OF GRADING

BFP	BACKFLOW PREVENTER
CB	CATCH BASIN
CL	CENTER LINE
DW	DOMESTIC WATER
EX	EXISTING
FF	FINISHED FLOOR
FW	FIRE WATER
FDC	FIRE DEPARTMENT CONNECTION
FG	FINISH GRADE
FH	FIRE HYDRANT
FL	FLOW LINE
FS	FINISH SURFACE
GB	GRADE BREAK
HP	HIGH POINT
LP	LOW POINT
MH	MANHOLE
PL	PROPERTY LINE
PR	PROPOSED
R/W	RIGHT-OF-WAY
SL	STREETLIGHT
SLPB	STREETLIGHT PULLBOX
SS	SANITARY SEWER
TC	TOP OF CURB
TG	TOP OF GRATE
TS	TRAFFIC SIGNAL PULLBOX
TYP	TYPICAL
(111.11)	EXISTING ELEVATION
802.6FS	SPOT ELEVATION
	LANDSCAPE

EARTHWORK QUANTITIES

DESCRIPTION	CUT (CY)	FILL (CY)	NET (CY)	DISPOSITION
RAW SITE	3035	970	2065	CUT
OVER-EX	–	–	–	–
NET TOTAL	–	–	–	–

- ASSUMED ADDITIONAL 1.58' OF CUT WITHIN DRIVE AISLE PAVEMENT AREA BASED ON GEOTECHNICAL REPORT PREPARED BY GEOCON INCORPORATED, DATED NOVEMBER 4, 2019
- ASSUMED ADDITIONAL 0.92' OF CUT WITHIN PARKING PAVEMENT AREA BASED ON GEOTECHNICAL REPORT PREPARED BY GEOCON INCORPORATED, DATED NOVEMBER 4, 2019
- ASSUMED 652 CUBIC YARDS OF CUT FOR STORMWATER DETENTION TANK

20' 0' 10' 20'
SCALE: 1" = 20'

SUNRISE SENIOR LIVING

PRELIMINARY

ENGINEER OF WORK: BRITTANY KNOTT, PE RCE 76502

CONCEPT GRADING • C.4-2

OCEANSIDE, CA • 08.07.2020

EPI architecture

LEGEND & ABBREVIATIONS

	CENTER LINE
	RIGHT–OF–WAY / PROPOSED PARCEL LINE
	PROPERTY LINE
	EASEMENT
	EXISTING WALL
	PROPOSED BUILDING FOOTPRINT
DW	EXISTING DOMESTIC WATER LINE
SS	EXISTING SANITARY SEWER LINE
JT	EXISTING JOINT TRENCH
SD	PROPOSED STORM DRAIN
SS	PROPOSED SEWER
DW	PROPOSED WATER
FW	PROPOSED FIRE WATER

BFP	BACKFLOW PREVENTER
CB	CATCH BASIN
CL	CENTER LINE
DW	DOMESTIC WATER
EX	EXISTING
FF	FINISHED FLOOR
FW	FIRE WATER
FDC	FIRE DEPARTMENT CONNECTION
FG	FINISH GRADE
FH	FIRE HYDRANT
FL	FLOW LINE
FS	FINISH SURFACE
GB	GRADE BREAK
HP	HIGH POINT
LP	LOW POINT
MH	MANHOLE
PL	PROPERTY LINE
PR	PROPOSED
R/W	RIGHT–OF–WAY
SL	STREETLIGHT
SLPB	STREETLIGHT PULLBOX
SS	SANITARY SEWER
TC	TOP OF CURB
TG	TOP OF GRATE
TS	TRAFFIC SIGNAL PULLBOX
TYP	TYPICAL
(111.11)	EXISTING ELEVATION
802.6FS	SPOT ELEVATION

ASSUMED ELEC/TEL/CATV POC

ASSUMED DW & FW POC

PR TEL & CATV PULLING STRUCTURES

PROSED 2 STORY ASSISTED LIVING FACILITY
FF = 342.0

PR AREA DRAIN TYP

PR BMP

ASSUMED SS POC

PR DETENTION TANK

PR TEL & CATV PULLING STRUCTURES

PR PUMP

PR BMP

PR FDC

PR CLEAN OUT TYP

PR BFP

PR FH

EX AT&T TELEPHONE PEDESTAL ASSUMED TELE FEED POINT

EX COX CATV VAULT ASSUMED CATV FEED POINT

PR DOMESTIC WATER METER

PR SEWER CONNECTION TO EX 8" MAIN

MESA DRIVE

PR DW & FW CONNECTIONS TO EX 10" MAIN

EX FH

EX 8" SS W-02164-008

EX 24" DW W-02164-008

EX 10" DW W-02164-008

POOL

ASPH.

DENSE BR

30' 0' 15' 30'
SCALE: 1" = 30'

SUNRISE SENIOR LIVING

PRELIMINARY

ENGINEER OF WORK: BRITTANY KNOTT, PE RCE 76502

CONCEPT UTILITY PLAN • C.5

OCEANSIDE, CA • 08.07.2020

EPI architecture

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.

ATTACHMENT 5
Drainage Report

This is the cover sheet for Attachment 5.

Provided as a separate PDF

ATTACHMENT 6
Geotechnical and Groundwater Investigation Report

This is the cover sheet for Attachment 6.

Provided as a separate PDF

ATTACHMENT 7
Storm Water Quality Assessment Form

This is the cover sheet for Attachment 7.

City of Oceanside – Engineering Division – Clean Water Program

STORM WATER QUALITY ASSESSMENT FOR PLANNING, ENGINEERING, AND BUILDING PERMIT APPLICATIONS

All applications for Planning, Engineering, or Building Division permits are required to complete this assessment form and include it as part of the initial permit application submittal. Staff will review the permit application content to determine the applicability of State and City storm water requirements. Please note a storm water assessment cannot be provided without a complete permit application package.

Section 1 – Project Information	
Applicant Name: Josh Haskins	Phone Number: 949-300-8501
Project Name: Sunrise Senior Living of Oceanside	Email Address (Optional): josh@sagecrestllc.com
Project Site Address: 4700 Mesa Drive	Street Intersection: Mesa Drive & College Blvd
Assessor Parcel Number(s): 161-511-019	Total Parcel Area (acres or square feet): 2.92 acres
Project Description: Senior Living Facility	Proposed Project Impervious Area (acres or square feet): 2.0 acres

Section 2 – Identify Project Type	
☐	New Development Project – go to Section 3
☒	Redevelopment Project go to Section 3
☐	None of the above – Skip Section 3 and go to Section 4

Section 3 – Identify Applicable Priority Development Project Categories	
☐	**New Development Project** – A project that creates 10,000 square feet or more of impervious surfaces (collectively over the entire project site). This includes commercial, industrial, residential, mixed-use, and public development projects on public or private land.
☒	**Redevelopment Project** – A project that creates and/or replaces 5,000 square feet or more of impervious surface (collectively over the entire project site on an existing site of 10,000 square feet or more of impervious surfaces). This includes commercial, industrial, residential, mixed-use, and public development projects on public or private land.
☐	**Restaurants** – Category is defined as a facility that sells prepared foods and drinks for consumption, including stationary lunch counters and refreshment stands selling prepared foods and drinks for immediate consumption (SIC code 5812); where new or redevelopment projects that create and/or replace 5,000 square feet or more impervious surface (collectively over the entire project site).
☐	**Hillside Development** – Category includes development on any natural slope that is twenty-five percent or greater; where new or redevelopment projects that create and/or replace 5,000 square feet or more impervious surface (collectively over the entire project site).
☐	**Parking Lots** – Category is defined as a land area or facility for the temporary parking or storage of motor vehicles used personally, for business, or for commerce; where new or redevelopment projects that create and/or replace 5,000 square feet or more impervious surface (collectively over the entire project site).
☐	**Streets, Roads, Highways, Freeways, and Driveways** – Category is defined as any paved impervious surface used for the transportation of automobiles, trucks, motorcycles, and other vehicles; where new or redevelopment projects that create and/or replace 5,000 square feet or more impervious surface (collectively over the entire project site).
☐	**Water Quality Environmentally Sensitive Area** – New or redevelopment projects that create and/or replace 2,500 square feet or more of impervious surface (collectively over the entire project site), and discharging directly to a Water Quality Environmentally Sensitive Area (WQESA). "Discharging directly to" includes flow that is conveyed overland a distance of 200 feet or less from the project to the WQESA, 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).
☐	**Automotive Repair Shop** – Category is defined as a facility that is categorized in any one of the following Standard Industrial Classification (SIC) codes: 5013, 5014, 5541, 7532-7534, or 7536-7539, where new or redevelopment projects that create and/or replace 5,000 square feet or more impervious surface (collectively over the entire project site).
☐	**Retail Gasoline Outlet (RGOs)** – Category includes RGOs that meet the following criteria (a) 5,000 square feet or more or (b) a projected Average Daily Traffic (ADT) of 100 or more vehicles per day; where new or redevelopment projects that create and/or replace 5,000 square feet or more impervious surface (collectively over the entire project site).
☒	**Development Projects greater than one acre** – New or redevelopment projects that result in the disturbance of one or more acres of land and are expected to generate pollutants post construction.
☐	**None of the Above**

STORM WATER QUALITY ASSESSMENT FOR PLANNING, ENGINEERING, AND BUILDING PERMIT APPLICATIONS

Section 4 – Identify Permit Application Type	
☒	**Discretionary Permit Application**: Specific Plan (S), General Plan Amendment (GPA), Zone Amendment (ZA), Tentative Map (T), Tentative Parcel Map (P), Development Plan (D), Conditional Use Permit (CUP), Variance (V), Regular Coastal Permit (RC), Historic Permit (H), Reclamation Plan, Planned Development Permit, Planned Unit Development Permit, Planning Commission Approval of Plans, Site Plan Review, Tentative Map Amendments to Conditions of Approval or Time Extension, Variance.
☐	**Administrative Permit Application**: Administrative Clearing Permit, Lot Line Adjustment, Final Map Modification, Grading Plan (including modification or renewal), Improvement Plan (including modification), Landscape Plan, Building Permit, Construction Right-of-Way Permit, Encroachment Permit, Excavation Permit, On-site Wastewater System Permit, Underground Tank Permit, Well Permit, or etc.

Section 5 – Applicant Certification	
Name of Responsible Party: Josh Haskins	Phone Number: 949-300-8501
Email Address (optional) josh@sagecrestllc.com	FAX Number (optional):
I understand and acknowledge the City of Oceanside has adopted minimum requirements, as mandated by the San Diego Regional Water Quality Control Board – Order No. R9-2013-0001, as amended by Order Nos. R9-2015-0001 and R9-2015-0100 (NPDES NO. CAS0109266) for mitigating impacts associated with urban runoff, including storm water from construction and land development activities. I certify this assessment has been accurately completed to the best of my knowledge and is consistent with the proposed project. I acknowledge that non-compliance with the City Best Management Practice (BMP) Design Manual, Grading Ordinance, and Erosion Control Ordinance may result in enforcement action by the City, the California State Water Resources Control Board, and/or the San Diego Regional Water Quality Control Board. Enforcement action may include stop work orders, notice of violation, fines, or other actions.	
Applicant Signature:	Date: