

City of Escondido
PRIORITY DEVELOPMENT PROJECT (PDP) SWQMP

ASSESSOR'S PARCEL NUMBER(S):

ENGINEER OF WORK:

PREPARED FOR:

PDP SWQMP PREPARED BY:

DATE OF SWQMP:

PLANS PREPARED BY:

SWQMP APPROVED BY:

APPROVAL DATE:



PRIORITY DEVELOPMENT PROJECT (PDP) SWQMP

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ATTACHMENTS

- Attachment 1: Backup for PDP Pollutant Control BMPs
 - Attachment 1a: Storm Water Pollutant Control Worksheet Calculations (Applicable worksheets)
 - Attachment 1b: Form I-8, Categorization of Infiltration Feasibility Condition
 - Attachment 1c: Form I-9, Factor of Safety and Design Infiltration Rate Worksheet
 - Attachment 1d: Drainage Management Area (DMA) Exhibit
 - Attachment 1e: Individual Structural BMP DMA Mapbook
- Attachment 2: Backup for PDP Hydromodification Control Measures
 - Attachment 2a: Flow Control Facility Design
 - Attachment 2b: Hydromodification Management Exhibit
 - Attachment 2c: Management of Critical Coarse Sediment Yield Areas
 - Attachment 2d: Geomorphic Assessment of Receiving Channels (optional)
 - Attachment 2e: Vector Control Plan (if applicable)
- Attachment 3: Structural BMP Maintenance Plan
 - Attachment 3a: Structural BMP Maintenance Thresholds and Actions
 - Attachment 3b: Draft Maintenance Agreements / Notifications (when applicable)
- Attachment 4: City of Escondido PDP Structural BMP Verification
- Attachment 5: Copy of Plan Sheets Showing Permanent Storm Water BMPs

ACRONYMS

ACP	Alternative Compliance Project
APN	Assessor's Parcel Number
BMP	Best Management Practice
DMA	Drainage Management Area
EOW	Engineer of Work
HMP	Hydromodification Management Plan
HSG	Hydrologic Soil Group
MS4	Municipal Separate Storm Sewer System
N/A	Not Applicable
PDP	Priority Development Project
PE	Professional Engineer
SC	Source Control
SD	Site Design
SDRWQCB	San Diego Regional Water Quality Control Board
SIC	Standard Industrial Classification
SWDM	Storm Water Design Manual
SWQMP	Storm Water Quality Management Plan
USGS	US Geological Survey
WMAA	Watershed Management Area Analysis
WQIP	Water Quality Improvement Plan

PRIORITY DEVELOPMENT PROJECT (PDP) SWQMP

PDP SWQMP PREPARER'S CERTIFICATION PAGE

Project Name: _____

Permit Number: _____

PREPARER'S CERTIFICATION

I hereby declare that I am the Engineer in Responsible Charge of design of storm water best management practices (BMPs) for this project, and that I have exercised responsible charge over the design of the BMPs as defined in Section 6703 of the Business and Professions Code, and that the design is consistent with the PDP requirements of the City of Escondido Storm Water Design Manual, which is a design manual for compliance with the City of Escondido Municipal Code (Chapter 22, Article 2) and regional MS4 Permit (California Regional Water Quality Control Board San Diego Region Order No. R9-2013-0001 as amended by R9-2015-0001 and R9-2015-0100) requirements for storm water management.

I have read and understand that the City of Escondido has adopted minimum requirements for managing urban runoff, including storm water, from land development activities, as described in the Storm Water Design Manual. I certify that this PDP SWQMP has been completed to the best of my ability and accurately reflects the project being proposed and the applicable BMPs proposed to minimize the potentially negative impacts of this project's land development activities on water quality. I understand and acknowledge that the plan check review of this PDP SWQMP by 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.

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

Print Name

Company

Date

Engineer's Seal:

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SUBMITTAL RECORD

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

Preliminary Design / Planning / CEQA

Submittal Number	Date	Summary of Changes
1		Initial Submittal
2		
3		
4		

Final Design

Submittal Number	Date	Summary of Changes
1		Initial Submittal
2		
3		
4		

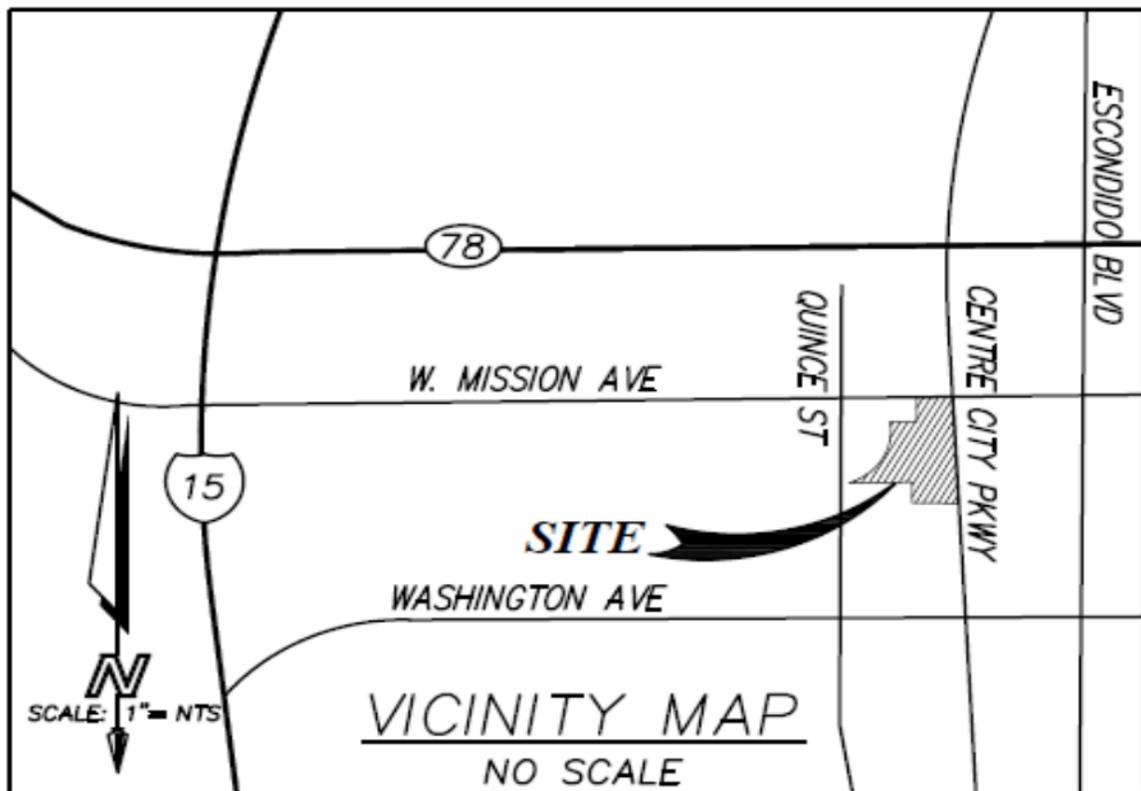
Plan Changes

Submittal Number	Date	Summary of Changes
1		Initial Submittal
2		
3		
4		

PRIORITY DEVELOPMENT PROJECT (PDP) SWQMP

PROJECT VICINITY MAP

Project Name: _____
Permit Number: _____



PRIORITY DEVELOPMENT PROJECT (PDP) SWQMP

Step 1: Project type determination

Site Information Checklist for PDPs		Form I-2a
Project Summary Information		
Project Name		
Project Address		
Assessor's Parcel Number(s)		
Permit Number		
Project Watershed (Hydrologic Unit)	Select One: <input type="checkbox"/> Carlsbad 904 <input type="checkbox"/> San Dieguito 905	
Parcel Area (total area of Assessor's Parcel(s) associated with the project)	_____ Acres (_____ Square Feet)	
Area to be disturbed by the project (Project Area)	_____ Acres (_____ Square Feet)	
Project Proposed Impervious Area (subset of Project Area)	_____ Acres (_____ Square Feet)	
Project Proposed Pervious Area (subset of Project Area)	_____ Acres (_____ Square Feet)	
Note: Proposed Impervious Area + Proposed Pervious Area = Area to be Disturbed by the Project. This may be less than the Parcel Area.		

Step 1.1: Storm Water Quality Management Plan requirements

Site Information Checklist for PDPs		Form I-2a
Step	Answer	Progression
Is the project a Standard Project, Priority Development Project (PDP), or exception to PDP definitions? To answer this item, complete Step 1 Project Type Determination Checklist on Pages 3 and 4, and see PDP exemption information below. For further guidance, see Section 1.4 of the Storm Water Design Manual <i>in its entirety</i> .	<input type="checkbox"/> Standard Project	<u>Standard Project</u> requirements apply. Complete Form I-1.
	<input type="checkbox"/> PDP	<u>Standard and PDP</u> requirements apply, including <u>PDP SWQMP</u> . SWQMP Required.
	<input type="checkbox"/> PDP with ACP	If participating in offsite alternative compliance, complete Step 5.1 (Offsite Alternative Compliance Participation Form) and an ACP SWQMP.
	<input type="checkbox"/> PDP Exemption	Go to Step 1.2 below.

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Step 1.2: Exemption to PDP definitions

Site Information Checklist for PDPs		Form I-2a
<p>Is the project exempt from PDP definitions based on either of the following:</p> <p><input type="checkbox"/> Projects that are only new or retrofit paved sidewalks, bicycle lanes, or trails that meet the following criteria:</p> <ul style="list-style-type: none"> (i) Designed and constructed to direct storm water runoff to adjacent vegetated areas, or other non-erodible permeable areas; OR (ii) Designed and constructed to be hydraulically disconnected from paved streets or roads [i.e., runoff from the new improvement does not drain directly onto paved streets or roads]; OR (iii) Designed and constructed with permeable pavements or surfaces in accordance with County of San Diego Green Streets Infrastructure; 	<p>If so:</p> <p><u>Standard Project requirements apply, AND any additional requirements specific to the type of project. City concurrence with the exemption is required. Provide discussion and list any additional requirements below in this form.</u></p>	
<p><input type="checkbox"/> Projects that are only retrofitting or redeveloping existing paved alleys, streets or roads that are designed and constructed in accordance with the County of San Diego Green Streets Infrastructure;</p>	<p>PDP Exempt.</p>	
<p>Discussion / justification, and additional requirements for exceptions to PDP definitions, if applicable:</p>		
<p> </p>		

PRIORITY DEVELOPMENT PROJECT (PDP) SWQMP

Step 1.3: Confirmation of PDP Determination

Site Information Checklist for PDPs			Form I-2a
The project is (select one): <input type="checkbox"/> New Development <input type="checkbox"/> Redevelopment ¹			
The total proposed newly created or replaced impervious area is: _____ ft ²			
The project meets the following categories, (a) through (f): [select all that apply]			
Yes <input type="checkbox"/>	No <input type="checkbox"/>	(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 <input type="checkbox"/>	No <input type="checkbox"/>	(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 <input type="checkbox"/>	No <input type="checkbox"/>	(c)	<p>New and redevelopment projects that create and/or replace 5,000 square feet or more of impervious surface (collectively over the entire project site), and support one or more of the following uses:</p> <ul style="list-style-type: none"> (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 (Standard Industrial Classification (SIC) code 5812). <i>Information and an SIC search function are available at www.osha.gov/pls/imis/sicsearch.html.</i> (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.
Yes <input type="checkbox"/>	No <input type="checkbox"/>	(d)	<p>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 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).</p> <p><i>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 San Diego Water Board; State Water Quality Protected Areas; water bodies designated with the RARE beneficial use by the State Water Board and San Diego Water Board; and any</i></p>

¹ Redevelopment is defined as: The creation and/or replacement of impervious surface on an already developed site. Examples include the expansion of a building footprint, road widening, the addition to or replacement of a structure, and creation or addition of impervious surfaces. Replacement of impervious surfaces includes any activity that is not part of a routine maintenance activity where impervious material(s) are removed, exposing underlying soil during construction. Redevelopment does not include routine maintenance activities, such as trenching and resurfacing associated with utility work; pavement grinding; resurfacing existing roadways; sidewalks; pedestrian ramps; or bike lanes on existing roads; and routine replacement of damaged pavement, such as pothole repair.

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Site Information Checklist for PDPs			Form I-2a
			<p><i>other equivalent environmentally sensitive areas which have been identified by the Copermittees.</i></p> <p><i>For projects adjacent to an ESA, but not discharging to an ESA, the 2,500 square foot threshold does not apply as long as the project does not physically disturb the ESA and the ESA is upstream of the project.</i></p>
Yes <input type="checkbox"/>	No <input type="checkbox"/>	(e)	<p>New development projects, or redevelopment projects that create and/or replace 5,000 square feet or more of impervious surface, that support one or more of the following uses:</p> <p>(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. <i>Information and an SIC search function are available at www.osha.gov/pls/imis/sicsearch.html.</i></p> <p>(ii) Retail gasoline outlets (RGOs). This 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.</p>
Yes <input type="checkbox"/>	No <input type="checkbox"/>	(f)	<p>New or redevelopment projects that result in the disturbance of one or more acres of land and are expected to generate pollutants post construction.</p> <p>Note: See Storm Water Design Manual Section 1.4.2 for additional guidance.</p>
The following is for redevelopment PDPs only:			
The area of existing (pre-project) impervious area at the project site is:		A	_____ ft ²
The total proposed newly created or replaced impervious area is:		B	_____ ft ²
Percent impervious surface created or replaced:		(B/A)*100	_____ %
<p>The percent impervious surface created or replaced is (select one based on the above calculation):</p> <p><input type="checkbox"/> less than or equal to fifty percent (50%) – only newly created or replaced impervious areas are considered a PDP and subject to stormwater requirements</p> <p>OR</p> <p><input type="checkbox"/> greater than fifty percent (50%) – the entire project site is considered a PDP and subject to stormwater requirements</p>			

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Step 2: City of Escondido PDP SWQMP Site Information Checklist

Step 2.1: Description of Existing Site Condition and Drainage Patterns

Site Information Checklist for PDPs	Form I-2a
<p>Current Status of the Site (select all that apply):</p> <p><input type="checkbox"/> Existing development</p> <p><input type="checkbox"/> Previously graded but not built out</p> <p><input type="checkbox"/> Demolition completed without new construction</p> <p><input type="checkbox"/> Agricultural or other non-impervious use</p> <p><input type="checkbox"/> Vacant, undeveloped/natural</p> <p>Description / Additional Information:</p>	
<p>Existing Land Cover Includes (select all that apply and provide each area on site):</p> <p><input type="checkbox"/> Vegetative Cover _____ Acres (_____ Square Feet)</p> <p><input type="checkbox"/> Non-Vegetated Pervious Areas _____ Acres (_____ Square Feet)</p> <p><input type="checkbox"/> Impervious Areas _____ Acres (_____ Square Feet)</p> <p>Description / Additional Information:</p>	
<p>Underlying Soil belongs to Hydrologic Soil Group (select all that apply):</p> <p><input type="checkbox"/> NRCS Type A</p> <p><input type="checkbox"/> NRCS Type B</p> <p><input type="checkbox"/> NRCS Type C</p> <p><input type="checkbox"/> NRCS Type D</p>	
<p>Approximate Depth to Groundwater (GW) (or N/A for no infiltration BMPs):</p> <p><input type="checkbox"/> Groundwater Depth < 5 feet</p> <p><input type="checkbox"/> 5 feet < Groundwater Depth < 10 feet</p> <p><input type="checkbox"/> 10 feet < Groundwater Depth < 20 feet</p> <p><input type="checkbox"/> Groundwater Depth > 20 feet</p>	
<p>Existing Natural Hydrologic Features (select all that apply):</p> <p><input type="checkbox"/> Watercourses</p> <p><input type="checkbox"/> Seeps</p> <p><input type="checkbox"/> Springs</p> <p><input type="checkbox"/> Wetlands</p> <p><input type="checkbox"/> None</p> <p><input type="checkbox"/> Other</p> <p>Description / Additional Information:</p>	

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Step 2.3: Description of Proposed Site Development

Site Information Checklist for PDPs		Form I-2a	
Project Description / Proposed Land Use and/or Activities:			
List/describe proposed impervious features of the project (e.g., buildings, roadways, parking lots, courtyards, athletic courts, other impervious features):			
List/describe proposed pervious features of the project (e.g., landscape areas):			
Does the project include grading and changes to site topography? <input type="checkbox"/> Yes <input type="checkbox"/> No			
Description / Additional Information:			
Insert acreage or square feet for the different land cover types in the table below:			
Change in Land Cover Type Summary			
Land Cover Type	Existing (acres or ft ²)	Proposed (acres or ft ²)	Percent Change
Vegetation			
Pervious (non-vegetated)			
Impervious			
<i>total</i>			Sum Existing must equal Sum Proposed

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Step 2.6: Identification of Receiving Water and Pollutants of Concern

Site Information Checklist for PDPs			Form I-2a
Describe path of storm water from the project site to the Pacific Ocean (or bay, lagoon, lake or reservoir, as applicable):			
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 / WQIP Highest Priority Pollutant	
Identification of Project Site Pollutants*			
*Identification of project site pollutants below 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 Storm Water Design Manual Appendix B.6):			
Pollutant	Not Applicable to the Project Site	Anticipated from the Project Site	Also a Receiving Water Pollutant of Concern
Sediment			
Nutrients			
Heavy Metals			
Organic Compounds			
Trash & Debris			
Oxygen Demanding Substances			
Oil & Grease			
Bacteria & Viruses			
Pesticides			

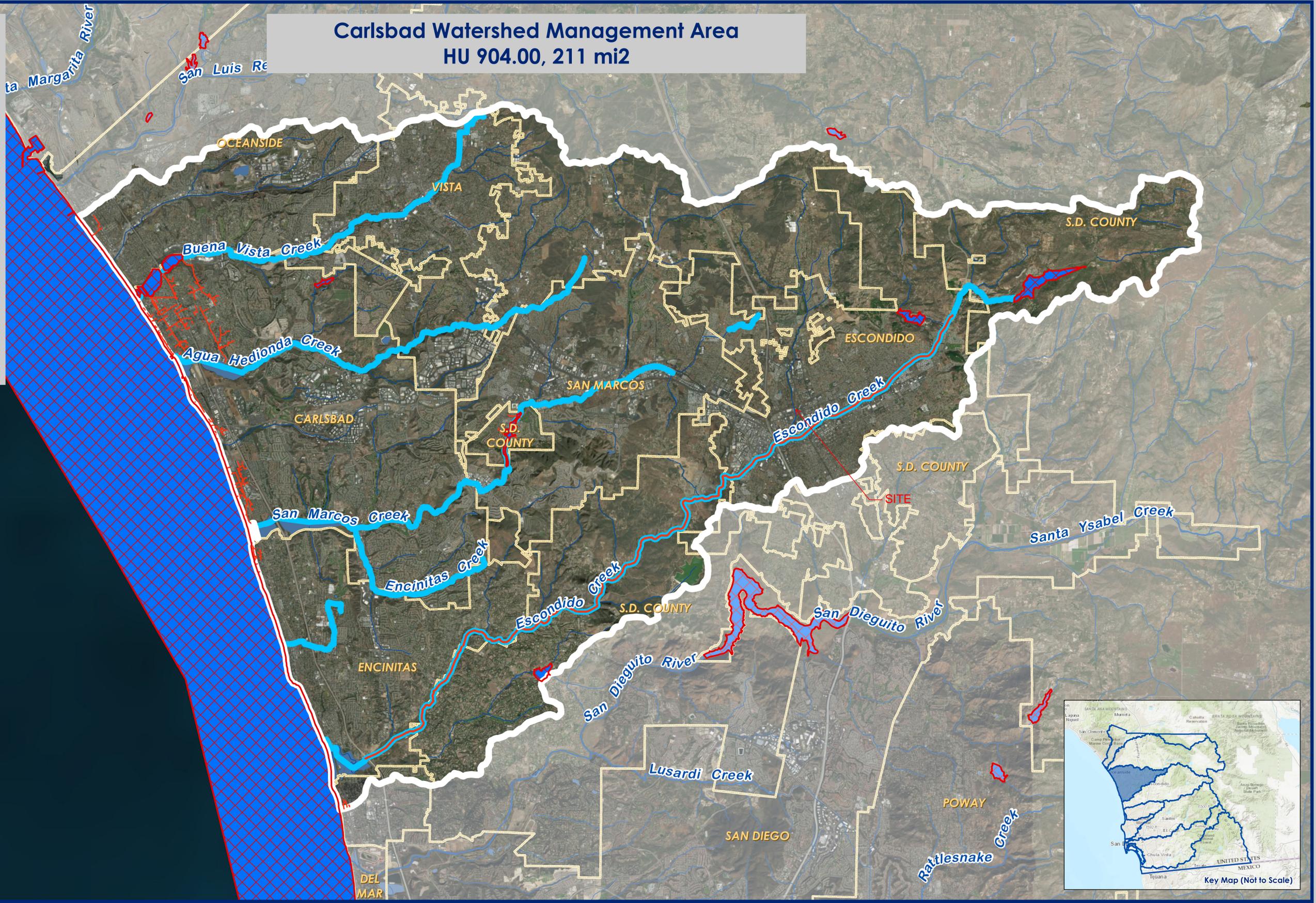
PRIORITY DEVELOPMENT PROJECT (PDP) SWQMP

Step 2.7: Hydromodification Management Requirements

Site Information Checklist for PDPs	Form I-2a
<p>Do hydromodification management requirements apply (see Section 1.6 of the Storm Water Design Manual)?</p> <ul style="list-style-type: none"> <input type="checkbox"/> Yes, hydromodification management requirements for flow control and preservation of critical coarse sediment yield areas are applicable. <input type="checkbox"/> No, the project will discharge runoff directly to the exempt portion of Escondido Creek as detailed in the Carlsbad Watershed WQIP (May 2018 Update). Direct discharge is defined in section 1.6 of the Escondido Storm Water Design Manual. <input type="checkbox"/> 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. Refer to HMP Exhibit in Attachment 2. <input type="checkbox"/> 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. Refer to HMP Exhibit in Attachment 2. <p><i>Note: Direct Discharge refers to an uninterrupted hardened conveyance system. Projects claiming the Direct Discharge exemption must satisfy the applicable criteria (energy dissipation, invert elevation, etc.) included in Section 1.6 of the Escondido Storm Water Design Manual.</i></p>	
<p>Description / Additional Information (to be provided if a 'No' answer has been selected above):</p>	
<p>HMP Exemption Exhibit</p> <p>Attach an HMP Exemption Exhibit that shows direct storm water runoff discharge from the project site to the HMP exempt area. Include project area, applicable underground storm drain line and/or concrete lined channels, outfall information, and exempt waterbody.</p> <p>Reference applicable drawing number(s).</p>	

Carlsbad Watershed Management Area HU 904.00, 211 mi²

- Legend**
-  Watershed Boundaries
 -  Municipal Boundaries
 -  Regional WMAA Streams
 -  Exempt Bodies:
Water Storage Reservoirs, Lakes,
Enclosed Embayments, Pacific
Ocean, Buena Vista Lagoon
 -  Exempt River Reaches:
Reaches of San Luis Rey River, San
Dieguito River, San Diego River,
Forester Creek, Sweetwater River,
Otay River
 -  Exempt Conveyance Systems:
Existing underground storm drains or
conveyance channels whose bed
and bank are concrete-lined,
discharging directly to exempt water
bodies, exempt rivers, or localized
areas of Agua Hedionda Lagoon and
Batiquitos Lagoon



Receiving Waters and Conveyance Systems Exempt from Hydromodification Management Requirements



Exhibit Date: Sept. 8, 2014
Revised Date: Sept. 6, 2018

Aerial Imagery Source: DigitalGlobe, 06/2012

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Step 2.7.2: Flow Control for Post-Project Runoff

Site Information Checklist for PDPs	Form I-2a
<input type="checkbox"/> N/A - This Section only required if hydromodification management requirements apply	
<p>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.</p>	
<p>Has a geomorphic assessment been performed for the receiving channel(s)?</p> <p> <input type="checkbox"/> No, the low flow threshold is 0.1Q2 (default low flow threshold) <input type="checkbox"/> Yes, the result is the low flow threshold is 0.1Q2 <input type="checkbox"/> Yes, the result is the low flow threshold is 0.3Q2 <input type="checkbox"/> Yes, the result is the low flow threshold is 0.5Q2 </p>	
<p>If a geomorphic assessment has been performed, provide title, date, and preparer:</p>	
<p>Discussion / Additional Information: (optional)</p>	
<p>Select method used to determine low flow threshold:</p> <p> <input type="checkbox"/> Sizing Factor Method <input type="checkbox"/> US Geological Survey (USGS) Equation <input type="checkbox"/> Continuous Simulation Modeling </p>	

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Step 2.8: Other Site Requirements and Constraints

Site Information Checklist for PDPs	Form I-2a
<p>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.</p>	
Optional Additional Information or Continuation of Previous Sections As Needed	
<p>This space provided for additional information or continuation of information from previous sections as needed.</p>	

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Step 3: Source Control BMP Checklist

Source Control BMP Checklist for PDPs		Form I-2b		
<p>All development projects must implement source control BMPs 4.2.1 through 4.2.6 where applicable and feasible. See Chapter 4.2 and Appendix E of the City Storm Water Design Manual for information to implement source control BMPs shown in this checklist. The following checklists serve as guides only. Mark what elements are included in your project. See Storm Water Design Manual Chapter 4 and Appendix E for more information on determining appropriate BMPs for your project.</p> <p>Answer each category below pursuant to the following:</p> <ul style="list-style-type: none"> • "Yes" means the project will implement the source control BMP as described in Chapter 4.2 and/or Appendix E of the City Storm Water Design Manual. Discussion / justification is not required. • "No" means the BMP is applicable to the project but it is not feasible to implement. Discussion / justification must be provided. • "N/A" means the BMP is not applicable at the project site because the project does not include the feature that is addressed by the BMP (e.g., the project has no outdoor materials storage areas). Discussion / justification must be provided. 				
Source Control Requirement		Applied?		
4.2.1 Prevention of Illicit Discharges into the MS4		<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Discussion / justification if 4.2.1 not implemented:				
4.2.2 Storm Drain Stenciling or Signage		<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Discussion / justification if 4.2.2 not implemented:				
4.2.3 Protect Outdoor Materials Storage Areas from Rainfall, Run-On, Runoff, and Wind Dispersal		<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Discussion / justification if 4.2.3 not implemented:				
4.2.4 Protect Materials Stored in Outdoor Work Areas from Rainfall, Run-On, Runoff, and Wind Dispersal		<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Discussion / justification if 4.2.4 not implemented:				
4.2.5 Protect Trash Storage Areas from Rainfall, Run-On, Runoff, and Wind Dispersal		<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Discussion / justification if 4.2.5 not implemented:				

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Form I-2b Page 2 of 2			
Source Control Requirement	Applied?		
4.2.6 Additional BMPs Based on Potential Sources of Runoff Pollutants (must answer for each source listed below):			
<input type="checkbox"/> Onsite storm drain inlets	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
<input type="checkbox"/> Interior floor drains and elevator shaft sump pumps	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
<input type="checkbox"/> Interior parking garages	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
<input type="checkbox"/> Need for future indoor & structural pest control	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
<input type="checkbox"/> Landscape/outdoor pesticide use	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
<input type="checkbox"/> Pools, spas, ponds, decorative fountains, and other water features	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
<input type="checkbox"/> Food service	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
<input type="checkbox"/> Refuse areas	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
<input type="checkbox"/> Industrial processes	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
<input type="checkbox"/> Outdoor storage of equipment or materials	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
<input type="checkbox"/> Vehicle and equipment cleaning	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
<input type="checkbox"/> Vehicle/equipment repair and maintenance	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
<input type="checkbox"/> Fuel dispensing areas	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
<input type="checkbox"/> Loading docks	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
<input type="checkbox"/> Fire sprinkler test water	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
<input type="checkbox"/> Miscellaneous drain or wash water	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
<input type="checkbox"/> Plazas, sidewalks, and parking lots	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Discussion / justification if 4.2.6 not implemented. Clearly identify which sources of runoff pollutants are discussed. Justification must be provided for <u>all</u> "No" answers shown above.			

Note: Show all source control measures described above that are included in design capture volume calculations in the plan sheets of Attachment 5.

PRIORITY DEVELOPMENT PROJECT (PDP) SWQMP

Step 4: Site Design BMP Checklist

Site Design BMP Checklist for PDPs		Form I-2c		
<p>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.</p> <p>Answer each category below pursuant to the following.</p> <ul style="list-style-type: none"> • "Yes" means the project will implement the site design BMP as described in Chapter 4 and/or Appendix E of the 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 must be provided. 				
Site Design Requirement		Applied?		
4.3.1 Maintain Natural Drainage Pathways and Hydrologic Features		<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Discussion / justification if 4.3.1 not implemented:				
1-1 Are existing natural drainage pathways and hydrologic features mapped on the site map?		<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
1-2 Are trees implemented? If yes, are they shown on the site map?		<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
1-3 Implemented trees meet the design criteria in 4.3.1 Fact Sheet (e.g. soil volume, maximum credit, etc.)?		<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
1-4 Is tree credit volume calculated using Appendix B.2.2.1 and SD-1 Fact Sheet in Appendix E?		<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
4.3.2 Conserve Natural Areas, Soils, and Vegetation		<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Discussion / justification if 4.3.2 not implemented:				
4.3.3 Minimize Impervious Area		<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Discussion / justification if 4.3.3 not implemented:				
4.3.4 Minimize Soil Compaction		<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Discussion / justification if 4.3.4 not implemented:				

PRIORITY DEVELOPMENT PROJECT (PDP) SWQMP

Form I-2c Page 2 of 2			
Site Design Requirement	Applied?		
4.3.5 Impervious Area Dispersion	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Discussion / justification if 4.3.5 not implemented:			
5-1 Is the pervious area receiving runoff from impervious area identified on the site map?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
5-2 Does the pervious area satisfy the design criteria in 4.3.5 Fact Sheet in Appendix E (e.g. maximum slope, minimum length, etc.)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
5-3 Is impervious area dispersion credit volume calculated using Appendix B.2.1.1 and 4.3.5 Fact Sheet in Appendix E?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
4.3.6 Runoff Collection	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Discussion / justification if 4.3.6 not implemented:			
6a-1 Are green roofs implemented in accordance with design criteria in 4.3.6A Fact Sheet? If yes, are they shown on the site map?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
6a-2 Is the green roof credit volume calculated using Appendix B.2.1.2 and 4.3.6A Fact Sheet in Appendix E?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
6b-1 Are permeable pavements implemented in accordance with design criteria in 4.3.6B Fact Sheet? If yes, are they shown on the site map?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
6b-2 Is the permeable pavement credit volume calculated using Appendix B.2.1.3 and 4.3.6B Fact Sheet in Appendix E?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
4.3.7 Landscaping with Native or Drought Tolerant Species	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Discussion / justification if 4.3.7 not implemented:			
4.3.8 Harvesting and Using Precipitation	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Discussion / justification if 4.3.8 not implemented:			
8-1 Are rain barrels implemented in accordance with design criteria in 4.3.8 Fact Sheet? If yes, are they shown on the site map?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
8-2 Is the rain barrel credit volume calculated using Appendix B.2.2.2 and 4.3.8 Fact Sheet in Appendix E?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A

Note: Show all site design measures described above that are included in design capture volume calculations in the plan sheets of Attachment 5.

PRIORITY DEVELOPMENT PROJECT (PDP) SWQMP

Step 5: Summary of Structural BMPs

Summary of Structural BMPs	Form I-3
PDP Structural BMPs	
<p>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).</p>	
<p>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).</p>	
<p>Use this form to provide narrative description of the general strategy for structural BMP implementation at the project site in the box below. Then complete the PDP structural BMP summary information sheet (page 3 of this form) for each structural BMP within the project (copy the BMP summary information page as many times as needed to provide summary information for each individual structural BMP).</p>	
<p>Description of Structural BMP Strategy 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.</p>	
<p>(Continue on page 2 as necessary.)</p>	

PRIORITY DEVELOPMENT PROJECT (PDP) SWQMP

Form I-3 Page 2 of 3

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

(Continued from page 1)

PRIORITY DEVELOPMENT PROJECT (PDP) SWQMP

Form I-3 Page 3 of 3	
Structural BMP Summary Information	
(Copy this page as needed to provide information for each individual proposed structural BMP)	
Structural BMP ID No.	
Construction Plan Sheet No.	
Type of structural BMP: <input type="checkbox"/> Retention by harvest and use (HU-1) <input type="checkbox"/> Retention by infiltration basin (INF-1) <input type="checkbox"/> Retention by bioretention (INF-2) <input type="checkbox"/> Retention by permeable pavement (INF-3) <input type="checkbox"/> Retention by dry wells (INF-4) <input type="checkbox"/> Partial retention by biofiltration with partial retention (PR-1) <input type="checkbox"/> Biofiltration (BF-1) <input type="checkbox"/> Biofiltration with Nutrient Sensitive Media Design (BF-2) <input type="checkbox"/> Proprietary Biofiltration (BF-3) meeting all requirements of Appendix F <input type="checkbox"/> Flow-thru treatment control with prior lawful approval to meet earlier PDP requirements (provide BMP type/description in discussion section below) <input type="checkbox"/> Flow-thru treatment control included as pre-treatment/forebay for an onsite retention or biofiltration BMP (provide BMP type/description and indicate which onsite retention or biofiltration BMP it serves in discussion section below) <input type="checkbox"/> Flow-thru treatment control with alternative compliance (provide BMP type/description in discussion section below) <input type="checkbox"/> Detention pond or vault for hydromodification management <input type="checkbox"/> Other (describe in discussion section below)	
Purpose: <input type="checkbox"/> Pollutant control only <input type="checkbox"/> Hydromodification control only <input type="checkbox"/> Combined pollutant control and hydromodification control <input type="checkbox"/> Pre-treatment/forebay for another structural BMP <input type="checkbox"/> 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 (See Section 8.2.3.2 of the Storm Water Design Manual)	
Who will be the final owner of this BMP?	<input type="checkbox"/> HOA <input type="checkbox"/> Property Owner <input type="checkbox"/> City <input type="checkbox"/> Other (describe)
Who will maintain this BMP into perpetuity?	<input type="checkbox"/> HOA <input type="checkbox"/> Property Owner <input type="checkbox"/> City <input type="checkbox"/> Other (describe)
Discussion (as needed):	

PRIORITY DEVELOPMENT PROJECT (PDP) SWQMP

Step 5.1: Offsite Alternative Compliance Participation Form

THIS FORM IS NOT APPLICABLE AT THIS TIME: An Alternative Compliance Program is under consideration by the City of Escondido.	
PDP INFORMATION	
Record ID:	
Assessor's Parcel Number(s) [APN(s)]	
What are your PDP Pollutant Control Debits? *See Attachment 1 of the PDP SWQMP	
What are your PDP HMP Debits? (if applicable) *See Attachment 2 of the PDP SWQMP	
ACP Information	
Record ID:	
Assessor's Parcel Number(s) [APN(s)]	
Project Owner/Address	
What are your ACP Pollutant Control Credits? *See Attachment 1 of the ACP SWQMP	
What are your ACP HMP Debits? (if applicable) *See Attachment 2 of the ACP SWQMP	
Is your ACP in the same watershed as your PDP? <input type="checkbox"/> Yes <input type="checkbox"/> No	Will your ACP project be completed prior to the completion of the PDP? <input type="checkbox"/> Yes <input type="checkbox"/> No
Does your ACP account for all Deficits generated by the PDP? <input type="checkbox"/> Yes <input type="checkbox"/> No (PDP and/or ACP must be redesigned to account for all deficits generated by the PDP.)	What is the difference between your PDP debits and ACP Credits? *(ACP Credits -Total PDP Debits = Total Earned Credits) _____

PRIORITY DEVELOPMENT PROJECT (PDP) SWQMP

ATTACHMENT 1

BACKUP FOR PDP POLLUTANT CONTROL BMPS

This is the cover sheet for Attachment 1.

Indicate which Items are Included behind this cover sheet:

Attachment Sequence	Contents	Checklist
Attachment 1a	<p>Storm Water Pollutant Control Worksheet Calculations</p> <ul style="list-style-type: none"> -Worksheet B.1-DMA Summary (Optional) -Worksheet B.2-1- DCV (Required) -Worksheet B.3-1- H&U Checklist (Required) -Worksheet B.4-1-Simple Sizing Inf. (if applicable) -Worksheet B.5-1-Biofilt. Sizing (Pollutant)(if applicable) -Worksheet B.5-2-Biofilt. Sizing (Volume) (if applicable) -Worksheet B.5-3-Biofilt. Volume Ret. (if applicable) -Worksheet B.5-4-Biofilt. Alt. Min. Footprint(if applicable) -Worksheet B.5-5-Biofilt. w/Upstream Stor. (if applicable) -Worksheet B.5-6-Biofilt. Ret. No Inf. (if applicable) -Worksheet B.5-7-Vol. Ret. Amended Soils (if applicable) -Worksheet B.6-1-Flow-Thru Design Flow (if applicable) -Form I-10-Compact Biofilt. Checklist (if applicable) -Summary Worksheet (optional) 	<ul style="list-style-type: none"> <input type="checkbox"/> Worksheet B.1 (Optional) <input type="checkbox"/> Worksheet B.2-1 (Required) <input type="checkbox"/> Worksheet B.3-1 (Required) <input type="checkbox"/> Worksheet B.4-1 (if applicable) <input type="checkbox"/> Worksheet B.5-1 (if applicable) <input type="checkbox"/> Worksheet B.5-2 (if applicable) <input type="checkbox"/> Worksheet B.5-3 (if applicable) <input type="checkbox"/> Worksheet B.5-4 (if applicable) <input type="checkbox"/> Worksheet B.5-5 (if applicable) <input type="checkbox"/> Worksheet B.5-6 (if applicable) <input type="checkbox"/> Worksheet B.5-7 (if applicable) <input type="checkbox"/> Worksheet B.6-1 (if applicable) <input type="checkbox"/> Form I-10 (if applicable) <input type="checkbox"/> Summary Worksheet (optional)
Attachment 1b	<p>-Worksheet C.4-1 (Form I-8A), Categorization of Infiltration Feasibility Condition Based on Geotechnical Conditions</p> <p>-Worksheet C.4-2 (Form I-8B), Categorization of Infiltration Feasibility Condition based on Groundwater and Water Balance Conditions</p> <p>(Required unless the project will use harvest and use BMPs, or an Infiltration Feasibility Condition Letter is submitted)</p> <p>Refer to Appendices C and D of the Storm Water Design Manual to complete Form I-8.</p>	<ul style="list-style-type: none"> <input type="checkbox"/> Included <input type="checkbox"/> Not included because the entire project will use harvest and use BMPs <input type="checkbox"/> Not included because an Infiltration Feasibility Condition Letter is submitted
Attachment 1c	<p>Form I-9, Factor of Safety and Design Infiltration Rate Worksheet (Required unless the project will use harvest and use BMPs, or an Infiltration Feasibility Condition Letter is submitted)</p> <p>Refer to Appendices C and D of the Storm Water Design Manual to complete Form I-9.</p>	<ul style="list-style-type: none"> <input type="checkbox"/> Included <input type="checkbox"/> Not included because the entire project will use harvest and use BMPs <input type="checkbox"/> Not included because an Infiltration Feasibility Condition Letter is submitted
Attachment 1d	<p>DMA Exhibit (Required)</p> <p>See DMA Exhibit Checklist on the back of this Attachment cover sheet.</p>	<ul style="list-style-type: none"> <input type="checkbox"/> Included
Attachment 1e	<p>Individual Structural BMP DMA Mapbook (Required)</p> <ul style="list-style-type: none"> -Place each map on 8.5"x11" paper. -Show at a minimum the DMA, Structural BMP, and any existing hydrologic features within the DMA. 	<ul style="list-style-type: none"> <input type="checkbox"/> Included

PRIORITY DEVELOPMENT PROJECT (PDP) SWQMP

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

The DMA Exhibit must identify:

- 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 Step 3.5)
- Structural BMPs (identify location, structural BMP ID#, type of BMP, and size/detail)
- Flow direction arrows
- Site Design BMPs used for volume reduction credits
- Existing and proposed site drainage network and connections to drainage offsite
- Trash Enclosure(s), if available
- Roof downspouts

Additionally, it is generally best practice (and the City may require) that these additional features listed below be included on the DMA Exhibit:

- 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
- Proposed grading
- Proposed impervious features

SOURCE CONTROL(SC)/SITE DESIGN(SD):

ITEMS	FACT SHEET/DESIGN-REQMT
PREVENT ILLICIT DISCHARGE INTO MS4	4.2.1
STORM DRAIN STENCILING OR SIGNAGE	4.2.2
PROTECT TRASH STORAGE AREAS	4.2.5
MINIMIZE IMPERVIOUS AREA	4.3.3
LANDSCAPING WITH NATIVE OR DROUGHT TOLERANT SPECIES	4.3.7
ONSITE STORM DRAIN INLET LABELING	SC-A
REFUSE AREAS EXPOSURE REDUCTION	SC-G

DMA SITE MAP NOTES

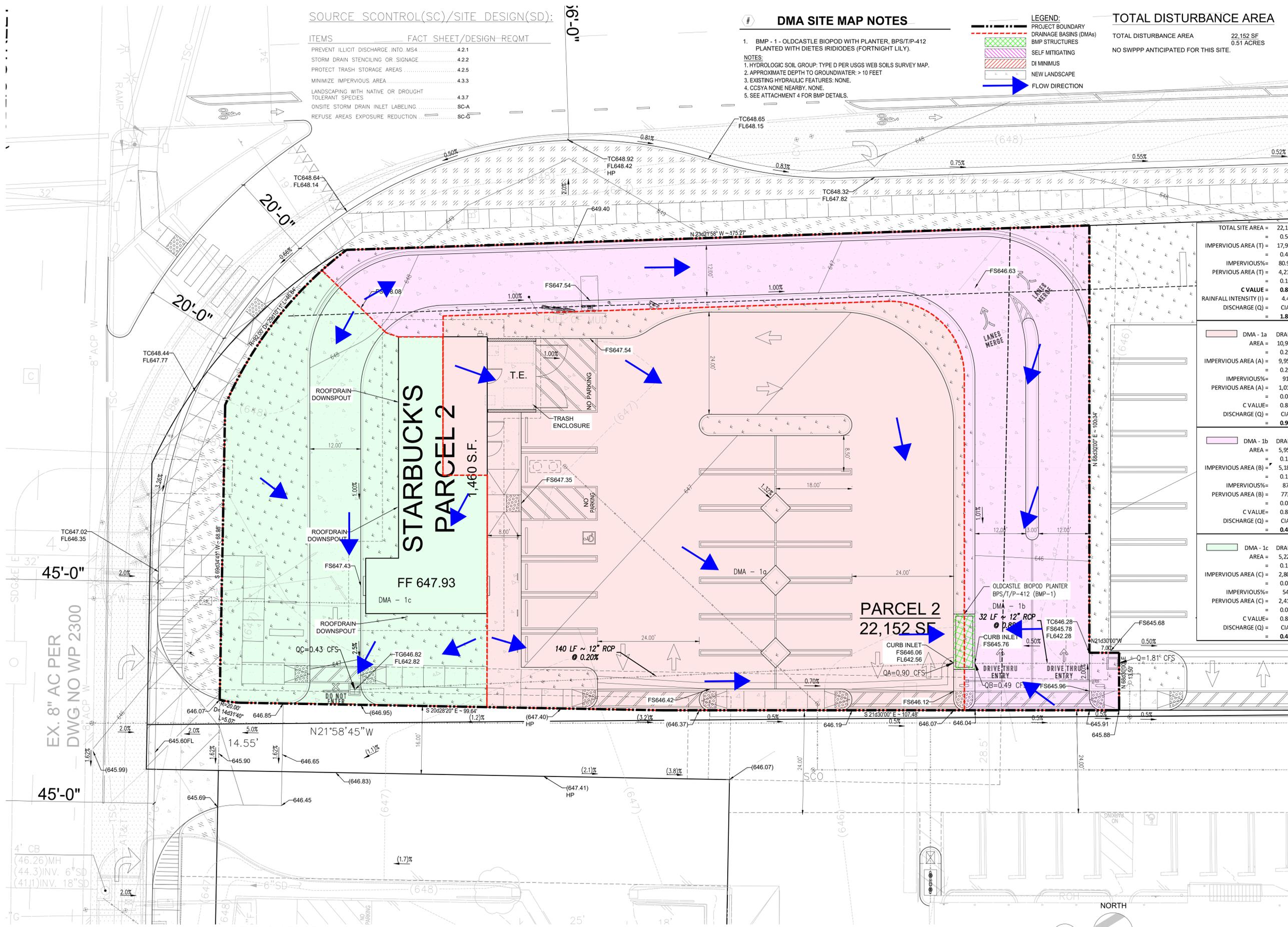
- BMP - 1 - OLDCASTLE BIOPOD WITH PLANTER, BPS/T/P-412 PLANTED WITH DIETES IRIDIODES (FORTNIGHT LILY).
- NOTES:
- HYDROLOGIC SOIL GROUP: TYPE D PER USGS WEB SOILS SURVEY MAP.
 - APPROXIMATE DEPTH TO GROUNDWATER: > 10 FEET
 - EXISTING HYDRAULIC FEATURES: NONE.
 - COSEA NONE NEARBY, NONE.
 - SEE ATTACHMENT 4 FOR BMP DETAILS.

LEGEND:

- PROJECT BOUNDARY
- DRAINAGE BASINS (DMAs)
- BMP STRUCTURES
- SELF MITIGATING
- DI MINIMUS
- NEW LANDSCAPE
- FLOW DIRECTION

TOTAL DISTURBANCE AREA

TOTAL DISTURBANCE AREA 22,152 SF
0.51 ACRES
NO SWPPP ANTICIPATED FOR THIS SITE.



Category	Value	Unit
TOTAL SITE AREA	22,152	SF
IMPERVIOUS AREA (T)	17,941	SF
IMPERVIOUS%	80.99	%
PERVIOUS AREA (T)	4,211	SF
PERVIOUS%	19.01	%
C VALUE	0.81	
RAINFALL INTENSITY (I)	4.4	IN/HR
DISCHARGE (Q)	CIA	
DISCHARGE (Q)	1.81	CFS

DMA	Drains To	Area	Impervious Area	Impervious%	Pervious Area	Pervious%	C Value	Discharge (Q)
DMA - 1a	DRAINS TO BMP 1	10,975 SF	9,955 SF	90.7%	1,019 SF	9.3%	0.81	CIA
DMA - 1b	DRAINS TO BMP 1	5,956 SF	5,183 SF	87.0%	773 SF	13.0%	0.81	CIA
DMA - 1c	DRAINS TO BMP 1	5,221 SF	2,803 SF	53.7%	2,419 SF	46.3%	0.81	CIA

Revisions:

1	
2	
3	
4	
5	
6	

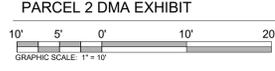
MOUR GROUP
ENGINEERING + DESIGN
6593 RIVERDALE ST.
SAN DIEGO, CA 92120
PH. 619.727.4800

PROJECT: **PROPOSED DEVELOPMENT PARCEL 2**
CENTRE CITY PARKWAY AND MISSION AVENUE
ESCONDIDO, CA 92025

CLIENT: **501 WEST MISSION, LLC**
616 PATRICK COX
14483 OLD CREEK ROAD
SAN DIEGO, CA 92131

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DATE: MAY 7, 2024
PROJECT NO.: WM2301
DRAWN: MOUR GROUP
SCALE: AS SHOWN
SHEET TITLE: DMA EXHIBIT
PARCEL 2
SHEET # **C103**



SCALE: 1"=10'-0"

1



PRIORITY DEVELOPMENT PROJECT (PDP) SWQMP

Worksheet B.2-1. BMP Design Capture Volume

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

Note:

$$\begin{aligned}
 C &= (0.1 \times \text{Pervious area} + 0.9 \times \text{impervious area}) / (\text{total area}) \\
 &= (0.1 \times 4,211 + 0.9 \times 17,941) / (22,152) \\
 &= 0.75
 \end{aligned}$$

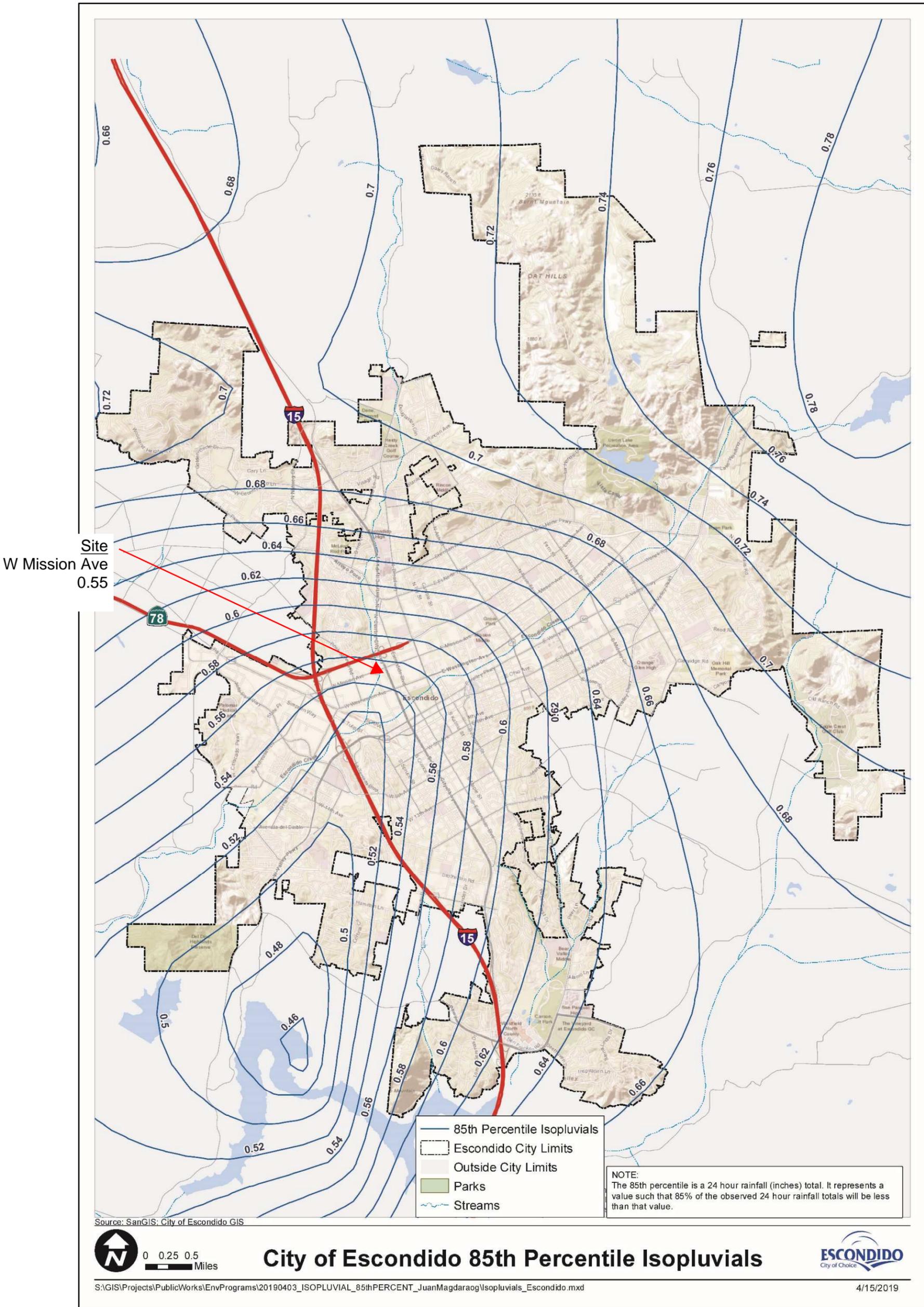


Figure B.1-1: City of Escondido 85th Percentile 24-hour Isopluvial Map

PRIORITY DEVELOPMENT PROJECT (PDP) SWQMP

Worksheet B.3-1. Harvest and Use Feasibility Checklist (Form I-7)

Harvest and Use Feasibility Checklist		Worksheet B.3-1
<p>1. Is there a demand for harvested water (check all that apply) at the project site that is reliably present during the wet season?</p> <p><input type="checkbox"/> Toilet and urinal flushing</p> <p><input type="checkbox"/> Landscape irrigation</p> <p><input type="checkbox"/> Other: _____</p>		
<p>2. If there is a demand; estimate the anticipated average wet season demand over a period of 36 hours. Guidance for planning level demand calculations for toilet/urinal flushing and landscape irrigation is provided in Section B.3.2.</p>		
<p>3. Calculate the DCV using worksheet B-2.1.</p>		
<p>3a. Is the 36-hour demand greater than or equal to the DCV?</p> <p>Yes / No ⇒ ↓ X</p>	<p>3b. Is the 36-hour demand greater than 0.25DCV but less than the full DCV?</p> <p>Yes / No ⇒ ↓ X</p>	<p>3c. Is the 36-hour demand less than 0.25DCV?</p> <p>Yes ↓ X</p>
<p>Harvest and use appears to be feasible. Conduct more detailed evaluation and sizing calculations to confirm that DCV can be used at an adequate rate to meet drawdown criteria.</p>	<p>Harvest and use may be feasible. Conduct more detailed evaluation and sizing calculations to determine feasibility. Harvest and use may only be able to be used for a portion of the site, or (optionally) the storage may need to be upsized to meet long term capture targets while draining in longer than 36 hours.</p>	<p>Harvest and use is considered to be infeasible.</p>

Note: 36-hour demand calculations are for feasibility analysis only. Once feasibility analysis is complete the applicant may be allowed to use a different drawdown time provided they meet the 80% annual capture standard (refer to B.4.2) and 96-hour vector control drawdown requirement.

PRIORITY DEVELOPMENT PROJECT (PDP) SWQMP

Worksheet B.4-1: Simple Sizing Method for Infiltration BMPs

Simple Sizing Method for Infiltration BMPs		Worksheet B.4-1		
1	DCV (Worksheet B-2.1)	DCV=		cubic-feet
2	Estimated design infiltration rate	$K_{\text{design}}=$		in/hr
3	Available BMP surface area	$A_{\text{BMP}}=$		sq-ft
4	Average effective depth in the BMP footprint (DCV/A_{BMP})	$D_{\text{avg}}=$		feet
5	Drawdown time, T ($D_{\text{avg}} * 12/K_{\text{design}}$)	T=		hours
6	Provide alternative calculation of drawdown time, if needed.			
7	Provide calculations for effective depth provided in the BMP: Effective Depth = Surface ponding (below the overflow elevation) + gravel storage thickness x gravel porosity (0.4)			

Note: Shown drawdown time is for the Biopod planter.

PRIORITY DEVELOPMENT PROJECT (PDP) SWQMP

Worksheet B.5-1: Sizing Method for Pollutant Removal Criteria

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

Note: The site is HMP exempt. The designed 4x12 Biopod (BMP) from Oldcastle provides more than required treated storm flow rate and can bypass unlimited storm. Therefore, we do not increase BMP size to match above calculated 498 sf.

PRIORITY DEVELOPMENT PROJECT (PDP) SWQMP

Worksheet B.6-1: Flow-Thru Design Flows

Flow-thru Design Flows		Worksheet B.6-1		
1	DCV	DCV		cubic-foot
2	DCV retained	DCV_{retained}		cubic-foot
3	DCV biofiltered	$DCV_{\text{biofiltered}}$		cubic-foot
4	DCV requiring flow-thru (Line 1 – Line 2 – 0.67*Line 3)	$DCV_{\text{flow-thru}}$		cubic-foot
5	Adjustment factor (Line 4 / Line 1)*	AF=		unitless
6	Design rainfall intensity	i=	0.20	in/hr
7	Area tributary to BMP (s)	A=		acres
8	Area-weighted runoff factor (estimate using Appendix B.2)	C=		unitless
9	Calculate Flow Rate = AF x (C x i x A)	Q=		cfs
10	For Proprietary Biofiltration Only: $Q_{\text{Bio}}=1.5 \times Q$	$Q_{\text{Bio}}=$		cfs

Note: See Biopod sizing summary sheet in attachment 5 of SWQMP report.

PRIORITY DEVELOPMENT PROJECT (PDP) SWQMP

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

Compact (high rate) Biofiltration BMP Checklist		Form I-10
<p>Compact (high rate) biofiltration BMPs have a media filtration rate greater than 5 in/hr. and a media surface area smaller than 3% of contributing area times adjusted runoff factor. Compact biofiltration BMPs are typically proprietary BMPs that may qualify as biofiltration.</p> <p>A compact biofiltration BMP may satisfy the pollutant control requirements for a DMA onsite in some cases. This depends on the characteristics of the DMA and the performance certification/data of the BMP. If the pollutant control requirements for a DMA are met onsite, then the DMA is not required to participate in an offsite storm water alternative compliance program to meet its pollutant control obligations.</p> <p>An applicant using a compact biofiltration BMP to meet the pollutant control requirements onsite must complete Section 1 of this form and include it in the PDP SWQMP. A separate form must be completed for each DMA. In instances where the City Engineer does not agree with the applicant's determination, Section 2 of this form will be completed by the City and returned to the applicant.</p>		
<p>Section 1: Biofiltration Criteria Checklist (Appendix F)</p> <p>Refer to Part 1 of the Storm Water Standards to complete this section. When separate forms/worksheets are referenced below, the applicant must also complete these separate forms/worksheets (as applicable) and include in the PDP SWQMP. The criteria numbers below correspond to the criteria numbers in Appendix F.</p>		
Criteria	Answer	Progression
<p>Criteria 1 and 3:</p> <p>What is the infiltration condition of the DMA?</p> <p>Refer to Section 5.4.2 and Appendix C of the BMP Design Manual (Part 1 of Storm Water Standards) for guidance.</p> <p>Applicant must complete and include the following in the PDP SWQMP submittal to support the feasibility determination:</p> <ul style="list-style-type: none"> Infiltration Feasibility Condition Letter; or Worksheet C.4-1: Form I-8A and Worksheet C.4-2: Form I-8B. <p>Applicant must complete and include all applicable sizing worksheets in the SWQMP submittal</p>	<p><input type="checkbox"/> Full Infiltration Condition</p> <p><input type="checkbox"/> Partial Infiltration Condition</p> <p><input type="checkbox"/> No Infiltration Condition</p>	<p>Stop. Compact biofiltration BMP is not allowed.</p> <p>Compact biofiltration BMP is only allowed, if the target volume retention is met onsite (Refer to Table B.5-1 in Appendix B.5). Use Worksheet B.5- 2 in Appendix B.5 to estimate the target volume retention (Note: retention in this context means reduction).</p> <p>If the required volume reduction is achieved proceed to Criteria 2.</p> <p>If the required volume reduction is not achieved, compact biofiltration BMP is not allowed. Stop.</p> <p>Compact biofiltration BMP is allowed if volume retention criteria in Table B.5-1 in Appendix B.5 for the no infiltration condition is met. Compliance with this criterion must be documented in the PDP SWQMP.</p> <p>If the criteria in Table B.5-1 is met proceed to Criteria 2.</p> <p>If the criteria in Table B.5-1 is not met, compact biofiltration BMP is not allowed. Stop.</p>

PRIORITY DEVELOPMENT PROJECT (PDP) SWQMP

Compact (high rate) Biofiltration BMP Checklist		Form I-10
Provide basis for Criteria 1 and 3:		
Feasibility Analysis:		
Summarize findings and include either infiltration feasibility condition letter or Worksheet C.4-1: Form I-8A and Worksheet C.4-2: Form I-8B in the PDP SWQMP submittal.		
If Partial Infiltration Condition:		
Provide documentation that target volume retention is met (include Worksheet B.5-2 in the PDP SWQMP submittal). Worksheet B.5-7 in Appendix B.5 can be used to estimate volume retention benefits from landscape areas.		
If No Infiltration Condition:		
Provide documentation that the volume retention performance standard is met (include Worksheet B.5-2 in the PDP SWQMP submittal) in the PDP SWQMP submittal. Worksheet B.5-6 in Appendix B.5 can be used to document that the performance standard is met.		
Criteria	Answer	Progression
Criteria 2: Is the compact biofiltration BMP sized to meet the performance standard from the MS4 Permit? Refer to Appendix B.5 and Appendix F.2 of the BMP Design Manual (Part 1 of Storm Water Standards) for guidance.	<input type="checkbox"/> Meets Flow Based Criteria	Use guidance from Appendix F.2.2 to size the compact biofiltration BMP to meet the flow based criteria. Include the calculations in the PDP SWQMP. Use parameters for sizing consistent with manufacturer guidelines and conditions of its third party certifications (i.e. a BMP certified at a loading rate of 1 gpm/sq. ft. cannot be designed using a loading rate of 1.5 gpm/sq. ft.) Proceed to Criteria 4.
	<input type="checkbox"/> Meets Volume Based Criteria	Provide documentation that the compact biofiltration BMP has a total static (i.e. non-routed) storage volume, including pore-spaces and pre-filter detention volume (Refer to Appendix B.5 for a schematic) of at least 0.75 times the portion of the DCV not reliably retained onsite. Proceed to Criteria 4.
	<input type="checkbox"/> Does not Meet either	Stop. Compact biofiltration BMP is not allowed.

PRIORITY DEVELOPMENT PROJECT (PDP) SWQMP

Compact (high rate) Biofiltration BMP Checklist		Form I-10
<p>Provide basis for Criteria 2: Provide documentation that the BMP meets the numeric criteria and is designed consistent with the manufacturer guidelines and conditions of its third-party certification (i.e., loading rate, etc., as applicable).</p>		
Criteria	Answer	Progression
<p>Criteria 4: Does the compact biofiltration BMP meet the pollutant treatment performance standard for the projects most significant pollutants of concern?</p> <p>Refer to Appendix B.6 and Appendix F.1 of the BMP Design Manual (Part 1 of Storm Water Standards) for guidance.</p>	<input type="checkbox"/> Yes, meets the TAPE certification.	<p>Provide documentation that the compact BMP has an appropriate TAPE certification for the projects most significant pollutants of concern. Proceed to Criteria 5.</p>
	<input type="checkbox"/> Yes, through other third-party documentation.	<p>Acceptance of third-party documentation is at the discretion of the City Engineer. The City engineer will consider, (a) the data submitted; (b) representativeness of the data submitted; and (c) consistency of the BMP performance claims with pollutant control objectives in Table F.1-2 and Table F.1-1 while making this determination. If a compact biofiltration BMP is not accepted, a written explanation/ reason will be provided in Section 2. Proceed to Criteria 5.</p>
	<input type="checkbox"/> No	<p>Stop. Compact biofiltration BMP is not allowed.</p>
<p>Provide basis for Criteria 4: Provide documentation that identifies the projects most significant pollutants of concern and TAPE certification or other third party documentation that shows that the compact biofiltration BMP meets the pollutant treatment performance standard for the projects most significant pollutants of concern.</p>		

PRIORITY DEVELOPMENT PROJECT (PDP) SWQMP

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

PRIORITY DEVELOPMENT PROJECT (PDP) SWQMP

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

PRIORITY DEVELOPMENT PROJECT (PDP) SWQMP

Worksheet C.4-2 (Form I-8A): Categorization of Infiltration Feasibility Condition Based on Geotechnical Conditions²

Categorization of Infiltration Feasibility Condition based on Geotechnical Conditions		Worksheet C.4-1: Form I-8A ³
Part 1 - Full Infiltration Feasibility Screening Criteria		
DMA(s) Being Analyzed:	Project Phase:	
Criteria 1: Infiltration Rate Screening		
1A	<p>Is the mapped hydrologic soil group according to the NRCS Web Soil Survey or UC Davis Soil Web Mapper Type A or B and corroborated by available site soil data⁴?</p> <p><input type="checkbox"/> Yes; the DMA may feasibly support full infiltration. Answer “Yes” to Criteria 1 Result or continue to Step 1B if the applicant elects to perform infiltration testing.</p> <p><input type="checkbox"/> No; the mapped soil types are A or B but is not corroborated by available site soil data (continue to Step 1B).</p> <p><input type="checkbox"/> No; the mapped soil types are C, D, or “urban/unclassified” and is corroborated by available site soil data. Answer “No” to Criteria 1 Result.</p> <p><input type="checkbox"/> No; the mapped soil types are C, D, or “urban/unclassified” but is not corroborated by available site soil data (continue to Step 1B).</p>	
1B	<p>Is the reliable infiltration rate calculated using planning phase methods from Table D.3-1?</p> <p><input type="checkbox"/> Yes; Continue to Step 1C.</p> <p><input type="checkbox"/> No; Skip to Step 1D.</p>	
1C	<p>Is the reliable infiltration rate calculated using planning phase methods from Table D.3-1 greater than 0.5 inches per hour?</p> <p><input type="checkbox"/> Yes; the DMA may feasibly support full infiltration. Answer “Yes” to Criteria 1 Result.</p> <p><input type="checkbox"/> No; full infiltration is not required. Answer “No” to Criteria 1 Result.</p>	
1D	<p>Infiltration Testing Method. Is the selected infiltration testing method suitable during the design phase (see Appendix D.3)? Note: Alternative testing standards may be allowed with appropriate rationales and documentation.</p> <p><input type="checkbox"/> Yes; continue to Step 1E.</p> <p><input type="checkbox"/> No; select an appropriate infiltration testing method.</p>	

² Note that it is not required to investigate each and every criterion in the worksheet, a single “no” answer in Part 1, Part 2, Part 3, or Part 4 determines a full, partial, or no infiltration condition.

³ This form must be completed each time there is a change to the site layout that would affect the infiltration feasibility condition. Previously completed forms shall be retained to document the evolution of the site storm water design.

⁴ Available data includes site-specific sampling or observation of soil types or texture classes, such as obtained from borings or test pits necessary to support other design elements.

PRIORITY DEVELOPMENT PROJECT (PDP) SWQMP

Categorization of Infiltration Feasibility Condition based on Geotechnical Conditions		Worksheet C.4-1: Form I-8A ³
1E	<p>Number of Percolation/Infiltration Tests. Does the infiltration testing method performed satisfy the minimum number of tests specified in Table D.3-2?</p> <p><input type="checkbox"/> Yes; continue to Step 1F.</p> <p><input type="checkbox"/> No; conduct appropriate number of tests.</p>	
1F	<p>Factor of Safety. Is the suitable Factor of Safety selected for full infiltration design? See guidance in D.5; Tables D.5-1 and D.5-2; and Worksheet D.5-1 (Form I-9).</p> <p><input type="checkbox"/> Yes; continue to Step 1G.</p> <p><input type="checkbox"/> No; select appropriate factor of safety.</p>	
1G	<p>Full Infiltration Feasibility. Is the average measured infiltration rate divided by the Factor of Safety greater than 0.5 inches per hour?</p> <p><input type="checkbox"/> Yes; answer "Yes" to Criteria 1 Result.</p> <p><input type="checkbox"/> No; answer "No" to Criteria 1 Result.</p>	
Criteria 1 Result	<p>Is the estimated reliable infiltration rate greater than 0.5 inches per hour within the DMA where runoff can reasonably be routed to a BMP?</p> <p><input type="checkbox"/> Yes; the DMA may feasibly support full infiltration. Continue to Criteria 2.</p> <p><input type="checkbox"/> No; full infiltration is not required. Skip to Part 1 Result.</p>	
<p>Summarize infiltration testing methods, testing locations, replicates, and results and summarize estimates of reliable infiltration rates according to procedures outlined in D.5. Documentation should be included in project geotechnical report.</p>		

PRIORITY DEVELOPMENT PROJECT (PDP) SWQMP

Categorization of Infiltration Feasibility Condition based on Geotechnical Conditions		Worksheet C.4-1: Form I-8A ³	
Criteria 2: Geologic/Geotechnical Screening			
2A	<p>If all questions in Step 2A are answered “Yes,” continue to Step 2B.</p> <p>For any “No” answer in Step 2A answer “No” to Criteria 2, and submit an “Infiltration Feasibility Condition Letter” that meets the requirements in Appendix C.1.1. The geologic/geotechnical analyses listed in Appendix C.2.1 do not apply to the DMA because one of the following setbacks cannot be avoided and therefore result in the DMA being in a no infiltration condition. The setbacks must be the closest horizontal radial distance from the surface edge (at the overflow elevation) of the BMP.</p>		
2A-1	Can the proposed full infiltration BMP(s) avoid areas with existing fill materials greater than 5 feet thick below the infiltrating surface?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
2A-2	Can the proposed full infiltration BMP(s) avoid placement within 10 feet of existing underground utilities, structures, or retaining walls?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
2A-3	Can the proposed full infiltration BMP(s) avoid placement within 50 feet of a natural slope (>25%) or within a distance of 1.5H from fill slopes where H is the height of the fill slope?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
2B	<p>When full infiltration is determined to be feasible, a geotechnical investigation report must be prepared that considers the relevant factors identified in Appendix C.2.1.</p> <p>If all questions in Step 2B are answered “Yes,” then answer “Yes” to Criteria 2 Result. If there are “No” answers continue to Step 2C.</p>		
2B-1	<p>Hydroconsolidation. Analyze hydroconsolidation potential per approved ASTM standard due to a proposed full infiltration BMP.</p> <p>Can full infiltration BMPs be proposed within the DMA without increasing hydroconsolidation risks?</p>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
2B-2	<p>Expansive Soils. Identify expansive soils (soils with an expansion index greater than 20) and the extent of such soils due to proposed full infiltration BMPs.</p> <p>Can full infiltration BMPs be proposed within the DMA without increasing expansive soil risks?</p>	<input type="checkbox"/> Yes	<input type="checkbox"/> No

PRIORITY DEVELOPMENT PROJECT (PDP) SWQMP

Categorization of Infiltration Feasibility Condition based on Geotechnical Conditions		Worksheet C.4-1: Form I-8A ³	
2B-3	<p>Liquefaction. If applicable, identify mapped liquefaction areas. Evaluate liquefaction hazards in accordance with Section 6.4.2 of the City of San Diego's Guidelines for Geotechnical Reports (2011 or most recent edition). Liquefaction hazard assessment shall take into account any increase in groundwater elevation or groundwater mounding that could occur as a result of proposed infiltration or percolation facilities.</p> <p>Can full infiltration BMPs be proposed within the DMA without increasing liquefaction risks?</p>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
2B-4	<p>Slope Stability. If applicable, perform a slope stability analysis in accordance with the ASCE and Southern California Earthquake Center (2002) Recommended Procedures for Implementation of DMG Special Publication 117, Guidelines for Analyzing and Mitigating Landslide Hazards in California to determine minimum slope setbacks for full infiltration BMPs. See the City of San Diego's Guidelines for Geotechnical Reports (2011) to determine which type of slope stability analysis is required.</p> <p>Can full infiltration BMPs be proposed within the DMA without increasing slope stability risks?</p>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
2B-5	<p>Other Geotechnical Hazards. Identify site-specific geotechnical hazards not already mentioned (refer to Appendix C.2.1).</p> <p>Can full infiltration BMPs be proposed within the DMA without increasing risk of geologic or geotechnical hazards not already mentioned?</p>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
2B-6	<p>Setbacks. Establish setbacks from underground utilities, structures, and/or retaining walls. Reference applicable ASTM or other recognized standard in the geotechnical report.</p> <p>Can full infiltration BMPs be proposed within the DMA using established setbacks from underground utilities, structures, and/or retaining walls?</p>	<input type="checkbox"/> Yes	<input type="checkbox"/> No

PRIORITY DEVELOPMENT PROJECT (PDP) SWQMP

Categorization of Infiltration Feasibility Condition based on Geotechnical Conditions		Worksheet C.4-1: Form I-8A ³	
2C	<p>Mitigation Measures. Propose mitigation measures for each geologic/geotechnical hazard identified in Step 2B. Provide a discussion of geologic/geotechnical hazards that would prevent full infiltration BMPs that cannot be reasonably mitigated in the geotechnical report. See Appendix C.2.1.8 for a list of typically reasonable and typically unreasonable mitigation measures.</p> <p>Can mitigation measures be proposed to allow for full infiltration BMPs? If the question in Step 2 is answered “Yes,” then answer “Yes” to Criteria 2 Result. If the question in Step 2C is answered “No,” then answer “No” to Criteria 2 Result.</p>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Criteria 2 Result	Can infiltration greater than 0.5 inches per hour be allowed without increasing risk of geologic or geotechnical hazards that cannot be reasonably mitigated to an acceptable level?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Summarize findings and basis; provide references to related reports or exhibits.			
Part 1 Result – Full Infiltration Geotechnical Screening ⁵		Result	
<p>If answers to both Criteria 1 and Criteria 2 are “Yes”, a full infiltration design is potentially feasible based on Geotechnical conditions only.</p> <p>If either answer to Criteria 1 or Criteria 2 is “No”, a full infiltration design is not required.</p>		<input type="checkbox"/> Full infiltration Condition <input type="checkbox"/> Complete Part 2	

⁵ To be completed using gathered site information and best professional judgement considering the definition of MEP in the MS4 Permit. Additional testing and/or studies may be required by City Engineer to substantiate findings.

PRIORITY DEVELOPMENT PROJECT (PDP) SWQMP

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

PRIORITY DEVELOPMENT PROJECT (PDP) SWQMP

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

PRIORITY DEVELOPMENT PROJECT (PDP) SWQMP

Categorization of Infiltration Feasibility Condition based on Geotechnical Conditions		Worksheet C.4-1: Form I-8A ³	
4B-4	<p>Slope Stability. If applicable, perform a slope stability analysis in accordance with the ASCE and Southern California Earthquake Center (2002) Recommended Procedures for Implementation of DMG Special Publication 117, Guidelines for Analyzing and Mitigating Landslide Hazards in California to determine minimum slope setbacks for full infiltration BMPs. See the City of San Diego's Guidelines for Geotechnical Reports (2011) to determine which type of slope stability analysis is required.</p> <p>Can partial infiltration BMPs be proposed within the DMA without increasing slope stability risks?</p>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
4B-5	<p>Other Geotechnical Hazards. Identify site-specific geotechnical hazards not already mentioned (refer to Appendix C.2.1).</p> <p>Can partial infiltration BMPs be proposed within the DMA without increasing risk of geologic or geotechnical hazards not already mentioned?</p>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
4B-6	<p>Setbacks. Establish setbacks from underground utilities, structures, and/or retaining walls. Reference applicable ASTM or other recognized standard in the geotechnical report.</p> <p>Can partial infiltration BMPs be proposed within the DMA using recommended setbacks from underground utilities, structures, and/or retaining walls?</p>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
4C	<p>Mitigation Measures. Propose mitigation measures for each geologic/geotechnical hazard identified in Step 4B. Provide a discussion on geologic/geotechnical hazards that would prevent partial infiltration BMPs that cannot be reasonably mitigated in the geotechnical report. See Appendix C.2.1.8 for a list of typically reasonable and typically unreasonable mitigation measures.</p> <p>Can mitigation measures be proposed to allow for partial infiltration BMPs? If the question in Step 4C is answered "Yes," then answer "Yes" to Criteria 4 Result. If the question in Step 4C is answered "No," then answer "No" to Criteria 4 Result.</p>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Criteria 4 Result	<p>Can infiltration of greater than or equal to 0.05 inches/hour and less than or equal to 0.5 inches/hour be allowed without increasing the risk of geologic or geotechnical hazards that cannot be reasonably mitigated to an acceptable level?</p>	<input type="checkbox"/> Yes	<input type="checkbox"/> No

PRIORITY DEVELOPMENT PROJECT (PDP) SWQMP

Categorization of Infiltration Feasibility Condition based on Geotechnical Conditions		Worksheet C.4-1: Form I-8A ³
Summarize findings and basis; provide references to related reports or exhibits		
Part 2 – Partial Infiltration Geotechnical Screening Result ⁶	Result	
<p>If answers to both Criteria 3 and Criteria 4 are “Yes”, a partial infiltration design is potentially feasible based on geotechnical conditions only.</p> <p>If answers to either Criteria 3 or Criteria 4 is “No”, then infiltration of any volume is considered to be infeasible within the site.</p>	<p><input type="checkbox"/> Partial Infiltration Condition</p> <p><input type="checkbox"/> No Infiltration Condition</p>	

⁶ To be completed using gathered site information and best professional judgement considering the definition of MEP in the MS4 Permit. Additional testing and/or studies may be required by City Engineer to substantiate findings.

PRIORITY DEVELOPMENT PROJECT (PDP) SWQMP

Worksheet C.4-2: Categorization of Infiltration Feasibility Condition based on Groundwater and Water Balance Conditions⁷

Categorization of Infiltration Feasibility Condition based on Groundwater and Water Balance Conditions		Worksheet C.4-2: Form I-8B ⁸
Part 1 - Full Infiltration Feasibility Screening Criteria		
DMA(s) Being Analyzed:		Project Phase:
Criteria 1: Groundwater Screening		
1A	<p>Groundwater Depth. Is the depth to seasonally high groundwater tables (normal high depth during the wet season) beneath the base of any full infiltration BMP greater than 10 feet?</p> <p><input type="checkbox"/> Yes; continue to Step 1B.</p> <p><input type="checkbox"/> No; The depth to groundwater is less than or equal to 10 feet, but site layout changes or reasonable mitigation measures can be proposed to support full infiltration BMPs. Continue to step 1B.</p> <p><input type="checkbox"/> No; The depth to groundwater is less than or equal to 10 feet and site layout changes or reasonable mitigation measures cannot be proposed to support full infiltration BMPs. Answer “No” for Criteria 1 Result.</p>	
1B	<p>Contaminated Soil/Groundwater. Are proposed full infiltration BMPs at least 250 feet away from contaminated soil or groundwater sites? This can be confirmed using GeoTracker (geotracker.waterboards.ca.gov) to identify open contaminated sites. The setbacks must be the closest horizontal radial distance from the surface edge (at the overflow elevation) of the BMP.</p> <p><input type="checkbox"/> Yes; continue to Step 1C.</p> <p><input type="checkbox"/> No; However, site layout changes or reasonable mitigation measures can be proposed to support full infiltration BMPs. Continue to Step 1C.</p> <p><input type="checkbox"/> No; Site layout changes or reasonable mitigation measures cannot be proposed to support full infiltration BMPs. Answer “No” to Criteria 1 Result.</p>	

⁷ Note that it is not required to investigate each and every criterion in the worksheet, a single “no” answer in Part 1, Part 2, part 3, or Part 4 determines a full, partial, or no infiltration condition.

⁸ This form must be completed each time there is a change to the site layout that would affect the infiltration feasibility condition. Previously completed forms shall be retained to document the evolution of the site storm water design.

PRIORITY DEVELOPMENT PROJECT (PDP) SWQMP

Categorization of Infiltration Feasibility Condition based on Groundwater and Water Balance Conditions		Worksheet C.4-2: Form I-8B ⁸
1C	<p>Inadequate Soil Treatment Capacity. Are full infiltration BMPs proposed in DMA soils that have adequate soil treatment capacity?</p> <p>The DMA has adequate soil treatment capacity if ALL of the following criteria (detailed in C.2.2.1) for all soil layers beneath the infiltrating surface are met:</p> <ul style="list-style-type: none"> • USDA texture class is sandy loam or loam or silt loam or silt or sandy clay loam or clay loam or silty clay loam or sandy clay or silty clay or clay; and • Cation Exchange Capacity (CEC) greater than 5 milliequivalents/100g; and • Soil organic matter is greater than 1%; and • Groundwater table is equal to or greater than 10 feet beneath the base of the full infiltration BMP. <p><input type="checkbox"/> Yes; continue to Step 1D.</p> <p><input type="checkbox"/> No; However, site layout changes or reasonable mitigation measures can be proposed to support full infiltration BMPs. Continue to Step 1D.</p> <p><input type="checkbox"/> No; Site layout changes or reasonable mitigation measures cannot be proposed to support full infiltration BMPs. Answer “No” to Criteria 1 Result.</p>	
1D	<p>Other Groundwater Contamination Hazards. Are there site-specific groundwater contamination hazards not already mentioned (refer to Appendix C.2.2) that can be reasonably mitigated to support full infiltration BMPs?</p> <p><input type="checkbox"/> Yes; there are other contamination hazards identified that can be mitigated. Answer “Yes” to Criteria 1 Result.</p> <p><input type="checkbox"/> No; there are other contamination hazards identified that cannot be mitigated. Answer “No” to Criteria 1 Result.</p> <p><input type="checkbox"/> N/A; no contamination hazards are identified. Answer “Yes” to Criteria 1 Result.</p>	
Criteria 1 Result	<p>Can infiltration greater than 0.5 inches per hour be allowed without increasing risk of groundwater contamination that cannot be reasonably mitigated to an acceptable level? See Appendix C.2.2.8 for a list of typically reasonable and typically unreasonable mitigation measures.</p> <p><input type="checkbox"/> Yes; Continue to Part 1, Criteria 2.</p> <p><input type="checkbox"/> No; Continue to Part 1 Result.</p>	

PRIORITY DEVELOPMENT PROJECT (PDP) SWQMP

Categorization of Infiltration Feasibility Condition based on Groundwater and Water Balance Conditions		Worksheet C.4-2: Form I-8B ⁸
Criteria 2: Water Balance Screening		
2A	<p>Ephemeral Stream Setback. Does the proposed full infiltration BMP meet both the following?</p> <ul style="list-style-type: none"> The full infiltration BMP is located at least 250 feet away from an ephemeral stream; AND The bottom surface of the full infiltration BMP is at a depth 20 feet or greater from seasonally high groundwater tables. <p><input type="checkbox"/> Yes; Answer “Yes” to Criteria 2 Result.</p> <p><input type="checkbox"/> No; Continue to Step 2B.</p>	
2B	<p>Mitigation Measures. Can site layout changes be proposed to support full infiltration BMPs?</p> <p><input type="checkbox"/> Yes; the site can be reconfigured to mitigate potential water balance issues. Answer “Yes” to Criteria 2 Result.</p> <p><input type="checkbox"/> No; the site cannot be reconfigured to mitigate potential water balance issues. Continue to Step 2C and provide discussion.</p>	
2C	<p>Additional studies. Do additional studies support full infiltration BMPs?</p> <p>In the event that water balance effects are used to reject full infiltration (anticipated to be rare), additional analysis shall be completed and documented by a qualified professional indicating the site-specific information evaluated and the technical basis for this finding.</p> <p><input type="checkbox"/> Yes; Answer “Yes” to Criteria 2 Result.</p> <p><input type="checkbox"/> No; Answer “No” to Criteria 2 Result.</p>	
Criteria 2 Result	<p>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?</p> <p><input type="checkbox"/> Yes; Continue to Part 1 Result.</p> <p><input type="checkbox"/> No; Continue to Part 1 Result.</p>	

PRIORITY DEVELOPMENT PROJECT (PDP) SWQMP

Categorization of Infiltration Feasibility Condition based on Groundwater and Water Balance Conditions	Worksheet C.4-2: Form I-8B ⁸
<p>Summarize potential water balance effects. Documentation should focus on mapping and soil data regarding proximity to ephemeral streams and groundwater depth.</p>	
Empty space for documentation	
Part 1 – Full Infiltration Groundwater and Water Balance Screening Result ⁹	Result
<p>If answers to Criteria 1 and 2 are “Yes”, a full infiltration design is potentially feasible. The feasibility screening category is Full Infiltration based on groundwater conditions.</p> <p>If answer to Criteria 1 or Criteria 2 is “No”, infiltration may be possible to some extent but would not generally be feasible or desirable to achieve a “full infiltration” design based on groundwater conditions. Proceed to Part 2.</p>	<p><input type="checkbox"/> Full Infiltration</p> <p><input type="checkbox"/> Complete Part 2</p>

⁹ To be completed using gathered site information and best professional judgement considering the definition of MEP in the MS4 Permit. Additional testing and/or studies may be required by City Engineer to substantiate findings.

PRIORITY DEVELOPMENT PROJECT (PDP) SWQMP

Categorization of Infiltration Feasibility Condition based on Groundwater and Water Balance Conditions	Worksheet C.4-2: Form I-8B ⁸
Part 2 – Partial vs. No Infiltration Feasibility Screening Criteria	
DMA(s) Being Analyzed:	Project Phase:
Criteria 3: Groundwater Screening	
<p>Contaminated Soil/Groundwater. Are partial infiltration BMPs proposed at least 100 feet away from contaminated soil or groundwater sites? This can be confirmed using GeoTracker (geotracker.waterboards.ca.gov) to identify open contaminated sites. This criterion is intentionally a smaller radius than full infiltration, as the potential quantity of infiltration from partial infiltration BMPs is smaller.</p> <p><input type="checkbox"/> Yes; Answer “Yes” to Criteria 3 Result.</p> <p><input type="checkbox"/> No; However, site layout changes can be proposed to avoid contaminated soils or soils that lack adequate treatment capacity. Select “Yes” to Criteria 3 Result. It is a requirement for the SWQMP preparer to identify potential mitigation measures.</p> <p><input type="checkbox"/> No; Contaminated soils or soils that lack adequate treatment capacity cannot be avoided and partial infiltration BMPs are not feasible. Select “No” to Criteria 3 Result.</p>	
<p>Criteria 3 Result: Can infiltration of greater than or equal to 0.05 inches/hour and less than or equal to 0.5 inches/hour be allowed without increasing risk of groundwater contamination that cannot be reasonably mitigated to an acceptable level?</p> <p>Yes; Continue to Part 2, Criteria 4.</p> <p><input type="checkbox"/> No; Skip to Part 2 Result.</p>	
<p>Summarize findings and basis. Documentation should focus on mapped soil types and contaminated site locations.</p>	

PRIORITY DEVELOPMENT PROJECT (PDP) SWQMP

Categorization of Infiltration Feasibility Condition based on Groundwater and Water Balance Conditions	Worksheet C.4-2: Form I-8B ⁸
Criteria 4: Water Balance Screening	
<p>Additional studies. In the event that water balance effects are used to reject partial infiltration (anticipated to be rare), a qualified professional must provide an analysis of the incremental effects of partial infiltration BMPs on the water balance compared to incidental infiltration under a no infiltration scenario (e.g. precipitation, irrigation, etc.).</p>	
<p>Criteria 4 Result: Can infiltration of greater than or equal to 0.05 inches/hour and less than or equal to 0.5 inches/hour be allowed without causing potential water balance issues such as change of seasonality of ephemeral streams?</p> <p><input type="checkbox"/> Yes: Continue to Part 2 Result.</p> <p><input type="checkbox"/> No: Continue to Part 2 Result.</p>	
<p>Summarize potential water balance effects. Documentation should focus on mapping and soil data regarding proximity to ephemeral streams and groundwater depth</p>	
Part 2 – Partial Infiltration Groundwater and Water Balance Screening Result ¹⁰	Result
<p>If answers to Criteria 3 and Criteria 4 are “Yes”, a partial infiltration design is potentially feasible. The feasibility screening category is Partial Infiltration based on groundwater and water balance conditions.</p> <p>If answer to Criteria 3 or Criteria 4 is “No”, then infiltration of any volume is considered to be infeasible within the site. The feasibility screening category is No Infiltration based on groundwater or water balance condition.</p>	<p><input type="checkbox"/> Partial Infiltration Condition</p> <p><input type="checkbox"/> No Infiltration Condition</p>

¹⁰ To be completed using gathered site information and best professional judgement considering the definition of MEP in the MS4 Permit. Additional testing and/or studies may be required by City Engineer to substantiate findings.

PRIORITY DEVELOPMENT PROJECT (PDP) SWQMP

Factor of Safety and Design Infiltration Rate Worksheet			Form I-9		
Factor Category		Factor Description	Assigned Weight (w)	Factor Value (v)	Product (p) $p = w \times v$
A	Suitability Assessment	Soil assessment methods	0.25		
		Predominant soil texture	0.25		
		Site soil variability	0.25		
		Depth to groundwater or impervious layer	0.25		
		Suitability Assessment Safety Factor, $S_A = \sum p$			
B	Design	Level of pretreatment/ expected sediment loads	0.5		
		Redundancy/resiliency	0.25		
		Compaction during construction	0.25		
		Design Safety Factor, $S_B = \sum p$			
Combined Safety Factor, $S_{total} = S_A \times S_B$					
Observed Infiltration Rate, inch/hr, $K_{observed}$ (corrected for test-specific bias)					
Design Infiltration Rate, in/hr, $K_{design} = K_{observed} / S_{total}$					
Supporting Data					
Briefly describe infiltration test and provide reference to test forms:					

PRIORITY DEVELOPMENT PROJECT (PDP) SWQMP

Factor of Safety and Design Infiltration Rate Worksheet		Form I-9
The Geotechnical Engineer certifies they completed Form I-9 (see Appendix C.4.3).		
Professional Geotechnical Engineer's Printed Name:	[SEAL]	
Professional Geotechnical Engineer's Signed Name:		
Date: _____		

PRIORITY DEVELOPMENT PROJECT (PDP) SWQMP

ATTACHMENT 3

Structural BMP Maintenance Information

This is the cover sheet for Attachment 3.

Indicate which items are included behind this cover sheet:

Attachment Sequence	Contents	Checklist
Attachment 3a	Structural BMP Maintenance Plan (Required)	<input type="checkbox"/> Included See Structural BMP Maintenance Information Checklist on the back of this Attachment cover sheet.
Attachment 3b	Draft Storm Water Control Facilities Maintenance Agreement (SWCFMA) (when applicable)	<input type="checkbox"/> Included <input type="checkbox"/> Not Applicable

Note: Agreement to be signed prior to final approval.

PRIORITY DEVELOPMENT PROJECT (PDP) SWQMP

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

Attachment 3a must identify:

- Specific maintenance indicators and actions for proposed structural BMP(s). This must be based on Section 7.7 and Appendix E of the Storm Water 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 all Structural BMPs, Attachment 3b must include a draft maintenance agreement in the City's standard format (PDP applicant to contact City staff to obtain the current maintenance agreement forms or download from City's website).

Missing items typically not required at planning level.

Summary of Standard Inspection and Maintenance

The property owner is responsible to ensure inspection, operation and maintenance of permanent BMPs on their property unless responsibility has been formally transferred to an agency, community facilities district, homeowners association, property owners association, or other special district.

Maintenance frequencies listed in this table are average/typical frequencies. Actual maintenance needs are site-specific, and maintenance may be required more frequently. Maintenance must be performed whenever needed, based on maintenance indicators presented in this table. The BMP owner is responsible for conducting regular inspections to see when maintenance is needed based on the maintenance indicators. During the first year of operation of a structural BMP, inspection is recommended at least once prior to August 31 and then monthly from September through May. Inspection during a storm event is also recommended. After the initial period of frequent inspections, the minimum inspection and maintenance frequency can be determined based on the results of the first year inspections.

Threshold/Indicator	Maintenance Action	Typical Maintenance Frequency
Accumulation of sediment, litter, or debris	Remove and properly dispose of accumulated materials, without damage to the vegetation or compaction of the media layer.	<ul style="list-style-type: none"> Inspect monthly. If the BMP is 25% full* or more in one month, increase inspection frequency to monthly plus after every 0.1-inch or larger storm event. Remove any accumulated materials found at each inspection.
Obstructed inlet or outlet structure	Clear blockage.	<ul style="list-style-type: none"> Inspect monthly and after every 0.5-inch or larger storm event. Remove any accumulated materials found at each inspection.
Damage to structural components such as weirs, inlet or outlet structures	Repair or replace as applicable	<ul style="list-style-type: none"> Inspect annually. Maintain when needed.
Poor vegetation establishment	Re-seed, re-plant, or re-establish vegetation per original plans.	<ul style="list-style-type: none"> Inspect monthly. Maintain when needed.

E.18: BF-1 Biofiltration

Threshold/Indicator	Maintenance Action	Typical Maintenance Frequency
Dead or diseased vegetation	Remove dead or diseased vegetation, re-seed, re-plant, or re-establish vegetation per original plans.	<ul style="list-style-type: none"> Inspect monthly. Maintain when needed.
Overgrown vegetation	Mow or trim as appropriate.	<ul style="list-style-type: none"> Inspect monthly. Maintain when needed.
2/3 of mulch has decomposed, or mulch has been removed	Remove decomposed fraction and top off with fresh mulch to a total depth of 3 inches.	<ul style="list-style-type: none"> Inspect monthly. Replenish mulch annually, or more frequently when needed based on inspection.
Erosion due to concentrated irrigation flow	Repair/re-seed/re-plant eroded areas and adjust the irrigation system.	<ul style="list-style-type: none"> Inspect monthly. Maintain when needed.
Erosion due to concentrated storm water runoff flow	Repair/re-seed/re-plant eroded areas, and make appropriate corrective measures such as adding erosion control blankets, adding stone at flow entry points, or minor re-grading to restore proper drainage according to the original plan. If the issue is not corrected by restoring the BMP to the original plan and grade, the City Engineer shall be contacted prior to any additional repairs or reconstruction.	<ul style="list-style-type: none"> Inspect after every 0.5-inch or larger storm event. If erosion due to storm water flow has been observed, increase inspection frequency to after every 0.1-inch or larger storm event. Maintain when needed. If the issue is not corrected by restoring the BMP to the original plan and grade, the City Engineer shall be contacted prior to any additional repairs or reconstruction.
Standing water in BMP for longer than 24 hours following a storm event Surface ponding longer than approximately 24 hours following a storm event may be detrimental to vegetation health	Make appropriate corrective measures such as adjusting irrigation system, removing obstructions of debris or invasive vegetation, clearing underdrains, or repairing/replacing clogged or compacted soils.	<ul style="list-style-type: none"> Inspect monthly and after every 0.5-inch or larger storm event. If standing water is observed, increase inspection frequency to after every 0.1-inch or larger storm event. Maintain when needed.

E.18: BF-1 Biofiltration

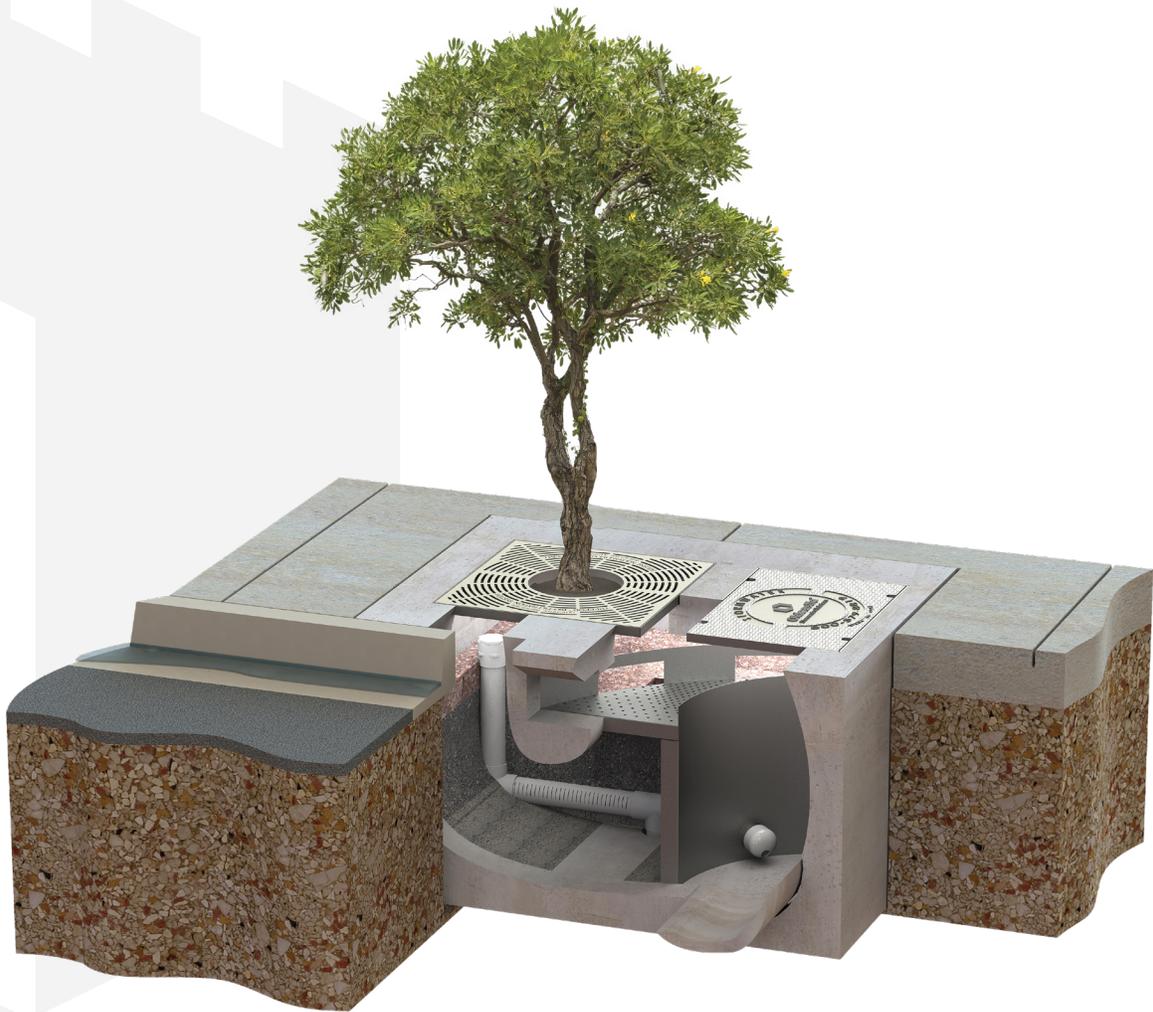
Threshold/Indicator	Maintenance Action	Typical Maintenance Frequency
<p>Presence of mosquitoes/larvae</p> <p>For images of egg rafts, larva, pupa, and adult mosquitoes, see http://www.mosquito.org/biology</p>	<p>If mosquitoes/larvae are observed: first, immediately remove any standing water by dispersing to nearby landscaping; second, make corrective measures as applicable to restore BMP drainage to prevent standing water.</p> <p>If mosquitoes persist following corrective measures to remove standing water, or if the BMP design does not meet the 96-hour drawdown criteria due to release rates controlled by an orifice installed on the underdrain, the City Engineer shall be contacted to determine a solution. A different BMP type, or a Vector Management Plan prepared with concurrence from the County of San Diego Department of Environmental Health, may be required.</p>	<ul style="list-style-type: none"> Inspect monthly and after every 0.5-inch or larger storm event. If mosquitoes are observed, increase inspection frequency to after every 0.1-inch or larger storm event. Maintain when needed.
<p>Underdrain clogged</p>	<p>Clear blockage.</p>	<p>Inspect if standing water is observed for longer than 24-96 hours following a storm event.</p> <p>Maintain when needed.</p>

“25% full” is defined as 1/4 of the depth from the design bottom elevation to the crest of the outflow structure (e.g., if the height to the outflow opening is 12 inches from the bottom elevation, then the materials must be removed when there is 3 inches of accumulation – this should be marked on the outflow structure).

BIOPOD™ SYSTEM

with StormMix™ Media

Inspection & Maintenance Guide



BIOPOD™ BIOFILTER WITH STORMMIX™ BIOFILTRATION MEDIA

DESCRIPTION

The BioPod™ Biofilter System (BioPod) is a storm water biofiltration treatment system used to remove pollutants from storm water runoff. Impervious surfaces and other urban and suburban landscapes generate a variety of contaminants that can enter storm water and pollute downstream receiving waters unless treatment is provided. The BioPod system uses proprietary StormMix™ biofiltration media to capture and retain pollutants including total suspended solids (TSS), metals, nutrients, gross solids, trash and debris as well as petroleum hydrocarbons.

FUNCTION

The BioPod system uses engineered, high-flow rate filter media to remove storm water pollutants, allowing for a smaller footprint than conventional bioretention systems. Contained within a compact precast concrete vault, the BioPod system consists of a biofiltration chamber and an optional integrated high-flow bypass. The biofiltration chamber is filled with horizontal layers of aggregate, biofiltration media and mulch. Storm water passes vertically down through the mulch and biofiltration media for treatment. The mulch provides pretreatment by retaining most of the solids or sediment. The biofiltration media provides further treatment by retaining finer sediment and dissolved pollutants. The aggregate allows the media bed to drain evenly for discharge through an underdrain pipe or by infiltration.

INSPECTION & MAINTENANCE OVERVIEW

State and local regulations require all storm water management systems to be inspected on a regular basis and maintained as necessary to ensure performance and protect downstream receiving waters. Without maintenance, excessive pollutant buildup can limit system performance by reducing the operating capacity of the system and increasing the potential for scouring of pollutants during periods of high flow.

Some configurations of the BioPod may require periodic irrigation to establish and maintain vegetation. Vegetation will typically become established about two years after planting. Irrigation requirements are ultimately dependent on climate, rainfall and the type of vegetation selected.

INSPECTION & MAINTENANCE FREQUENCY

Periodic inspection is essential for consistent system performance and is easily completed. Inspection is typically conducted a minimum of twice per year, but since pollutant transport and deposition varies from site to site, a site-specific maintenance frequency should be established during the first two or three years of operation.



INSPECTION EQUIPMENT

The following equipment is helpful when conducting BioPod inspections:

- | Recording device (pen and paper form, voice recorder, iPad, etc.)
- | Suitable clothing (appropriate footwear, gloves, hardhat, safety glasses, etc.)
- | PPE as required for entry
- | Traffic control equipment (cones, barricades, signage, flagging, etc.)
- | Manhole hook or pry bar
- | Flashlight
- | Tape measure
- | Socket

INSPECTION PROCEDURES

BioPod inspections are visual and are conducted without entering the unit. To complete an inspection, safety measures including traffic control should be deployed before the access covers or tree grates are removed. Once the covers have been removed, the following items should be checked and recorded (see form provided on page 6) to determine whether maintenance is required:

- | If the BioPod unit is equipped with an internal bypass, inspect the inlet rack (or inlet chamber on underground units) and outlet chamber and note whether there are any broken or missing parts. In the unlikely event that internal parts are broken or missing, contact Oldcastle Storm water at (800) 579-8819 to determine appropriate corrective action.
- | Note whether the curb inlet, inlet pipe, or inlet rack is blocked or obstructed.
- | If the unit is equipped with an internal bypass, observe, quantify and record the accumulation of trash and debris in the inlet rack or inlet chamber. The significance of accumulated trash and debris is a matter of judgment. Often, much of the trash and debris may be removed manually at the time of inspection if a separate maintenance visit is not yet warranted.
- | If it has not rained within the past 24 hours, note whether standing water is observed in the biofiltration chamber.
- | Finally, observe, quantify and record presence of invasive vegetation and the amount of trash and debris and sediment load in the biofiltration chamber. Erosion of the mulch and biofiltration media bed should also be recorded. Often, much of the invasive vegetation and trash and debris may be removed manually at the time of inspection if a separate maintenance visit is not yet warranted. Sediment load may be rated light, medium or heavy depending on the conditions. Loading characteristics may be determined as follows:
 - **Light sediment load** – sediment is difficult to distinguish among the mulch fibers at the top of the mulch layer; the mulch appears almost new.
 - **Medium sediment load** – sediment accumulation is apparent and may be concentrated in some areas; probing the mulch layer reveals lighter sediment loads under the top 1" of mulch.
 - **Heavy sediment load** – sediment is readily apparent across the entire top of the mulch layer; individual mulch fibers are difficult to distinguish; probing the mulch layer reveals heavy sediment load under the top 1" of mulch.

MAINTENANCE INDICATORS

Maintenance should be scheduled if any of the following conditions are identified during inspection:

- | The concrete structure is damaged or the tree grate or access cover is damaged or missing
- | The inlet obstructed
- | Standing water is observed in the biofiltration chamber more than 24 hours after a rainfall event (use discretion if the BioPod is located downstream of a storage system that attenuates flow)
- | Trash and debris in the inlet rack cannot be easily removed at the time of inspection
- | Trash and debris, invasive vegetation or sediment load in the biofiltration chamber is heavy or excessive erosion has occurred

MAINTENANCE EQUIPMENT

The following equipment is helpful when conducting BioPod maintenance:

- | Suitable clothing (appropriate footwear, gloves, hardhat, safety glasses, etc.)
- | PPE as required for entry
- | Traffic control equipment (cones, barricades, signage, flagging, etc.)
- | Manhole hook or pry bar
- | Flashlight
- | Tape measure
- | Rake, hoe, shovel and broom
- | Bucket
- | Pruners
- | Vacuum truck (optional)
- | Socket

MAINTENANCE PROCEDURES

Maintenance should be conducted during dry weather when no flows are entering the system. In most cases, maintenance may be conducted without entering. Entry may be required to maintain BioPod Underground units, depending on system depth. Once safety measures such as traffic control are deployed, the access covers may be removed and the following activities may be conducted to complete maintenance:

- | Remove all trash and debris from the **curb inlet and inlet rack manually or by using a vacuum truck as required.**
- | Remove all trash and debris and invasive vegetation from the biofiltration chamber manually or by using a vacuum truck as required.
- | If the sediment load is medium or light but erosion of the biofiltration media bed is evident, redistribute the mulch with a rake or replace missing mulch as appropriate. If erosion persists, rocks may be placed in the eroded area to help dissipate energy and prevent recurring erosion.
- | **If the sediment load is heavy, remove the mulch layer using a hoe, rake, shovel and bucket, or by using a vacuum truck as required. If the sediment load is particularly heavy, inspect the surface of the biofiltration media once the mulch has been removed. If the media appears clogged with sediment, remove and replace one or two inches of biofiltration media prior to replacing the mulch* layer.**
- | Prune vegetation as appropriate and replace damaged or dead plants as required.
- | Replace the tree grate and/or access covers and sweep the area around the BioPod to leave the site clean.
- | All material removed from the BioPod during maintenance must be disposed of in accordance with local environmental regulations. In most cases, the material may be handled in the same manner as disposal of material removed from sumped catch basins or manholes.



* Natural, shredded hardwood mulch should be used in the BioPod. Timely replacement of the mulch layer according to the maintenance indicators described above should protect the biofiltration media below the mulch layer from clogging due to sediment accumulation. However, whenever the mulch is replaced, the BioPod should be visited 24 hours after the next major storm event to ensure that there is no standing water in the biofiltration chamber. Standing water indicates that the biofiltration media below the mulch layer is clogged and must be replaced. Please contact Oldcastle Infrastructure at (800) 579-8819 to purchase the proprietary StormMix™ biofiltration media.



BIOPOD TREE



BIOPOD SURFACE



BIOPOD PLANTER



BIOPOD UNDERGROUND

EXEMPT FROM FEES pursuant to Gov't Code §§ 6103, 27383, and 27388.1 (filing requested/executed by municipality)

RECORDING REQUESTED BY, AND WHEN RECORDED RETURN TO:

City Engineer
City of Escondido
201 North Broadway
Escondido, CA 92025-2798

This Space for Recorder's Use Only

STORM WATER CONTROL FACILITY MAINTENANCE AGREEMENT

APN NO. 229-171-29, 229-171-30

This STORM WATER CONTROL FACILITY MAINTENANCE AGREEMENT (“Agreement”) is entered into between the City of Escondido, a California municipal corporation (“City”) and 501 W. Mission, LLC (“Owner”), and in accordance with City of Escondido Grading Plan No. [GP Number] (“Grading Plan”). (The City and Owner may each be referred to herein as a “Party” and collectively as the “Parties.”)

WHEREAS, installation and maintenance of Storm Water Control Facilities (“SWCF”) is required pursuant to the Escondido Municipal Code, by the California Regional Water Quality Control Board (“RWQCB”), and by the City as a condition of approval of property development; and

WHEREAS, Owner is the owner of certain real property identified as APN 229-171-29 & 229-171-30; located at SE Corner of Mission ave & Center City Pkwy, Escondido, CA 92025; and more particularly described in Exhibit A, attached hereto and incorporated herein by this reference (“Property”); and

WHEREAS, Owner has proposed development of the Property that provides benefit to the general public and the City and meets the requirements of RWQCB Order R9-2013-0001, as amended by Order Nos. R9-2015-0001 and R9-2015-0100 (National Pollution Discharge Elimination System No. CAS0109266); and

WHEREAS, the current and future subdivision Owner shall use the SWCF as installed per the Grading Plan and the provisions of the Storm Water Quality Management Plan prepared by the Owner and approved by the CITY on [Approval Date] (“Storm Water Plan”); and

WHEREAS, it is the mutual desire of the Parties to establish a method for the maintenance and repair of the SWCF, and that the SWCF be maintained in a safe and usable condition by the Owner; and

WHEREAS, the City shall have the right but not the obligation to enforce full compliance with the terms and conditions of this Agreement; and

WHEREAS, it is the mutual intention of the Parties that this Agreement constitute a covenant running with the land, binding upon each successive person having or acquiring any right, title, or interest in all or any portion of the Property.

NOW, THEREFORE, in consideration of the above premises, the mutual covenants and promises below, and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the Parties agree as follows:

1. The Property is benefited by this Agreement, and the Owner is expressly bound hereby for the benefit of the land. In the event any of the herein described parcels of land are subdivided further, the Owner, or its heirs, assigns, and successors in interest of each such newly created parcel, shall be liable under this Agreement for its then pro rata share of expenses and such pro rata shares of expenses shall be computed to reflect such newly created parcels.

2. The cost and expense of maintaining the SWCF shall be the responsibility of, and paid by, the Owner. The SWCF shall be constructed and maintained by the Owner in accordance with the Grading Plan and Storm Water Plan.

3. Repair and maintenance responsibilities for all structural SWCF and required Best Management Practices (“BMPs”) are set forth in the Storm Water Plan. Owner shall, as changes occur, provide the City with the name, title, and phone number of the persons or entities responsible for maintenance and reporting activities; funding, schedules, and procedures for inspection and maintenance of the SWCF; implementation of worker training requirements; and any other activities necessary to ensure compliance with BMPs. The Storm Water Plan shall provide for the servicing of all SWCF as needed, and at least once during August or September of each year, and for the retention of inspection and maintenance records for at least three years. Owner shall submit annual certification to the City’s Department of Engineering Services between September 1 and October 1 of each year. The certification shall document all maintenance performed and compliance with applicable permits.

4. The City shall have the right to inspect the SWCF and related records as needed to ensure the SWCF is being properly maintained.

5. If any individual Owner fails to pay its share of costs and expenses as required to use, maintain, or repair the SWCF, then the City shall be entitled without further notice to institute legal action for the collection of funds advanced on behalf of the individual Owner that did not pay its share of costs and expenses and shall be entitled to recover in such action, in addition to the funds advanced, interest thereon at the current prime rate of interest, until paid; all costs and disbursements of such action, including such sum or sums as the court may fix; and reasonable attorney’s fees.

6. Any liability of the Owner to any worker employed to make repairs or provide maintenance under this Agreement, or to third persons, as well as any liability of the Owner for damage to the property of any such worker, or any third persons, as a result of or arising out of repairs and maintenance under this Agreement, shall be borne solely by the Owner (and if jointly owned,

then in the same percentage as each individual Owner bears the costs and expenses of such repairs and maintenance). In the case of more than one Owner, each individual Owner shall be responsible for and maintain its own insurance. By this Agreement, the Parties do not intend to provide for the sharing of liability with respect to personal injury or property damage other than that attributable to the repairs and maintenance undertaken under this Agreement. Each Owner agrees to indemnify any other Owner from any and all liability for injury to an individual Owner or damage to its property when such injury or damage results from, arises out of, or is attributable to any maintenance or repairs undertaken pursuant to this Agreement.

7. Indemnification, Duty to Defend, Hold Harmless.

7.1 To the fullest extent permitted by law, Owner shall jointly and severally indemnify, defend with legal counsel reasonably satisfactory to the City, and hold harmless the City and the City's officers, officials, directors, employees, agents, volunteers, and Councilmembers (collectively, "Indemnitees") from and against any and all claims, demands, actions, causes of action, proceedings (including but not limited to legal and administrative proceedings of any kind), suits, fines, penalties, sanctions, judgments, levies, liens, orders (including without limitation any RWQCB Orders), assessments, costs, expenses, liabilities, losses, damages, or injuries, in law or equity, including without limitation the payment of all consequential damages and attorney's fees and other related litigation costs and expenses, of every nature caused by, arising out of, or in connection with Owner's obligations under this Agreement or Owner's obligations for implementation of storm water management in accordance with RWQCB Order R9-2013-0001 and subsequent amendments (collectively, "Claims"), including any reasonable attorney's fees, costs, and expenses incurred by the Indemnitees in responding to or defending any Claims, except where caused by the active negligence, sole negligence, or willful misconduct of the Indemnitees.

7.2 Owner's duty to defend the Indemnitees is separate, independent, and free-standing from Owner's duty to indemnify and hold harmless the Indemnitees. Owner's defense obligation shall arise immediately upon receipt by the City or Owner of any written notice of any alleged Claims, or a written Notice of Violation or equivalent notice of intent from the RWQCB or other enforcement agency to levy any fines, penalties, or sanctions against Indemnitees, and shall continue until the entry of any final and non-appealable judgment or order, including without limitation any final and non-appealable RWQCB Order or other agency enforcement order.

7.3 The indemnity protections provided by this Agreement are not intended to exceed the indemnity available under applicable law. If the indemnity protections are found by a court to be unlawful in any way, the protection shall be curtailed or adjusted, but only to the minimum extent required to conform to applicable law.

7.4 All terms and provisions within this Section 7 shall survive termination of this Agreement.

8. If, in the City's sole judgment, the SWCF is not being maintained to the standards required by this Agreement, the City may thereupon provide written notice to the Owner to initiate repairs or construction within 90 days. Upon the Owner's failure to demonstrate good faith to make repairs or construction within 90 days, the City may make all necessary repairs to the SWCF or construct the SWCF in a manner to meet the standards set forth in this Agreement and to then assess

costs to the Owner.

9. If the City elects to make necessary maintenance or repairs in accordance with this Agreement, such maintenance and repairs shall be accepted “as is” by the Owner without any warranty of workmanship and be guaranteed and indemnified by Owner in accordance with this Agreement.

10. The obligations and benefits provided for in this Agreement shall run with the land obligated and benefited, respectively, and shall be binding on all persons having or acquiring any right, title, or interest in the Property or any part thereof. As such, it is the intent of the Parties that this Agreement and the promises, covenants, rights, and obligations set forth herein (i) shall be and are covenants running with the Property, encumbering the Property for the term of this Agreement, and binding upon Owner’s successors in title and all subsequent owners and operators of the Property; (ii) are not merely personal covenants of the Owner; and (iii) shall bind Owner and its respective heirs, executors, administrators, successors, and assigns.

11. Amendments. This Agreement may not be amended, modified, waived, or supplemented except by an agreement in writing signed by all of the Parties, and then only in the specific instance and for the specific purpose given.

12. Governing Law. This Agreement shall be governed by the laws of the State of California. In the event any provision of this Agreement is held to be unenforceable or invalid by any court of competent jurisdiction, the validity and enforceability of the remaining provisions shall not be affected thereby.

13. Entire Agreement. This Agreement, together with its attachments or other documents, if any, described or incorporated herein, contains the entire agreement and understanding concerning the subject of this Agreement and supersedes and replaces all prior negotiations, understandings, or proposed agreements, written or oral, except as otherwise provided herein. Each of the Parties hereto acknowledges that no other Party, nor the agents nor the attorneys for any Party, has made any promise, representation, or warranty whatsoever, express or implied, not contained herein, to induce the execution of this Agreement and acknowledges that this Agreement has not been executed in reliance upon any promise, representation, or warranty not contained herein.

14. Severability. This Agreement shall be performed and shall be enforceable to the full extent allowed by applicable law, and the illegality, invalidity, waiver, or unenforceability of any provision of this Agreement shall not affect the legality, validity, applicability, or enforceability of the remaining provisions of this Agreement.

15. Capacity. Each individual signing this Agreement represents and warrants that he or she has been authorized to do so by proper action of the Party on whose behalf he or she has signed.

16. Advice of Counsel. The Parties hereby acknowledge that they have executed this Agreement after having the opportunity to consult with, and receive the advice of, their own counsel.

17. Attorney’s Fees. In any action to enforce the terms of this Agreement, the Parties agree that the prevailing party shall be entitled to its actual attorney’s fees and all costs, fees, and expenses, including the fees of expert witnesses and consultants, whether or not such costs, fees, and

expenses are recoverable or allowed as costs under section 1033.5 of the California Code of Civil Procedure. Such fees and costs shall be proven and awarded by the court after the conclusion of the trial on all other issues by way of a cost bill and motion. In addition to the foregoing award of attorney's fees and costs, the prevailing party shall be entitled to its attorney's fees and costs incurred in any post-judgment proceeding to collect or enforce any judgment. This provision is separate and shall survive the merger of this provision into any judgment on this Agreement.

18. Counterparts. This Agreement may be executed on separate counterparts that, upon completion, may be assembled into and shall be construed as one document.

19. Recitals. The Recitals set forth in this Agreement are included herein by reference as part of this Agreement and the Parties agree that said Recitals are essential facts to this Agreement.

20. Effective Date. Unless a different date is provided in this Agreement, the effective date of this Agreement shall be the latest date of execution set forth by the names of the signators below.

IN WITNESS WHEREOF, this Agreement is executed by the Parties or their duly authorized representatives as of the Effective Date:

CITY OF ESCONDIDO

Date: _____

Julie Procopio, Director of Engineering Services

[OWNER]

Date: _____

Signature

Name/Title (please print)

(ALL ABOVE SIGNATURES MUST BE NOTARIZED)

Approved as to Form:

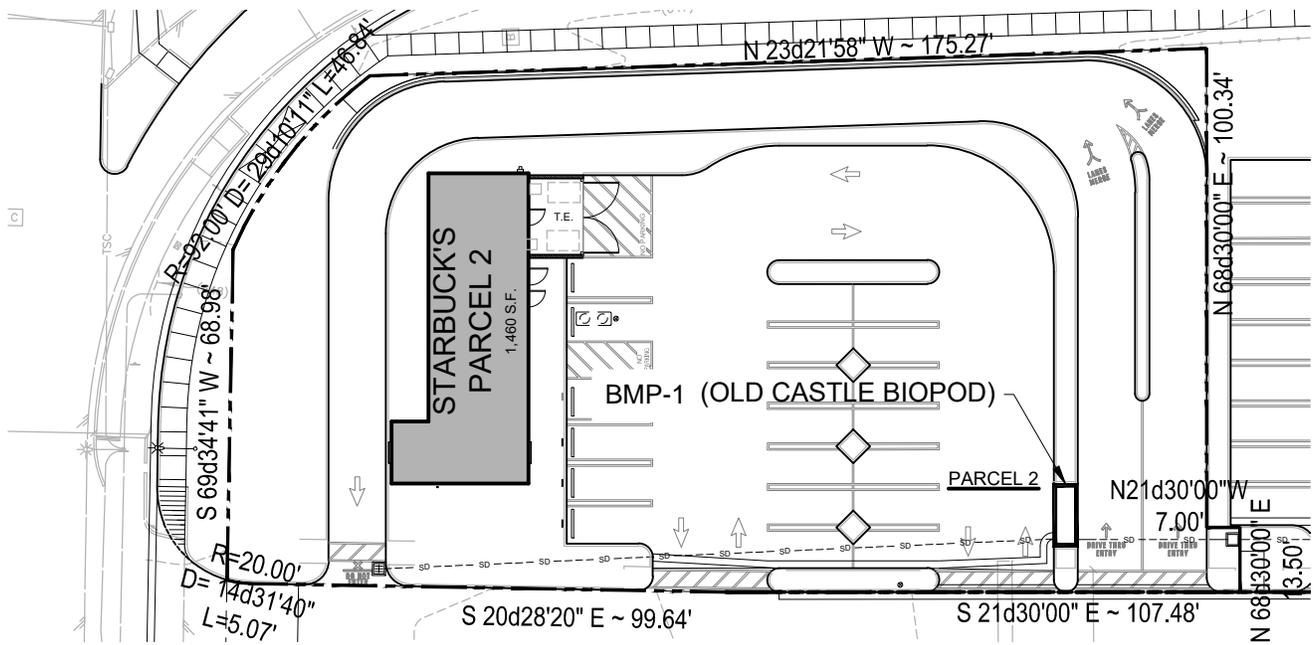
OFFICE OF THE CITY ATTORNEY
Michael R. McGuinness, City Attorney

BY: _____

EXHIBIT A

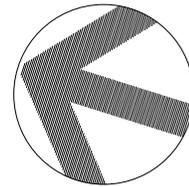
Legal Description of Property

SEE NEXT PAGE



LEGAL DESCRIPTION: 22,152 SF (0.51 AC) PROPERTY LOCATED AT W. MISSION AVE & CENTRE CITY PKWY, ESCONDIDO, CA. PARCEL 2, APN 229-171-29, 229-171-30.

NORTH



SCALE: 1"=40'

SWCFMA SITE PLAN

PARCEL 2
 W. MISSION AVE & CENTRE CITY PKWY
 ESCONDIDO, CA 92025

PRIORITY DEVELOPMENT PROJECT (PDP) SWQMP

ATTACHMENT 4

City of Escondido PDP Structural BMP Verification for Permitted Land Development Projects

This is the cover sheet for Attachment 4.

City of Escondido Storm Water Structural BMP Verification Form Page 1 of 3	
Project Summary Information	
Project Name	
Permit Number (e.g., grading/improvement plan number)	
Project Address	
Assessor's Parcel Number(s) (APN(s))	
Project Watershed (Complete Hydrologic Unit, Area, and Subarea Name with Numeric Identifier)	
Maintenance Notification / Agreement No.	
Responsible Party for Construction Phase	
Developer's Name	
Address	
Email Address	
Phone Number	
Engineer of Work	
Engineer's Phone Number	
Responsible Party for Ongoing Maintenance	
Owner's Name(s)*	
Address	
Email Address	
Phone Number	
*Note: If a corporation or LLC, provide information for principal partner or Agent for Service of Process. If an HOA, provide information for the Board or property manager at time of project closeout.	

PRIORITY DEVELOPMENT PROJECT (PDP) SWQMP

Checklist for Engineer of Work (EOW) to submit to Field Engineering:

- Copy of the final accepted SWQMP and any accepted addendum.
- Copy of the most current plan showing the Storm Water Structural BMP Table, plans/cross-section sheets of the Structural BMPs and the location of each verified as-built Structural BMP.
- Photograph of each Structural BMP.
- Photograph(s) of each Structural BMP during the construction process to illustrate proper construction.
- Copy of the approved Structural BMP maintenance agreement and associated security

By signing below, I certify that the Structural BMP(s) for this project have been constructed and all BMPs are in substantial conformance with the approved plans and applicable regulations. I understand the City reserves the right to inspect the above BMPs to verify compliance with the approved plans and Storm Water Ordinance. Should it be determined that the BMPs were not constructed to plan or code, corrective actions may be necessary before permits can be closed.

Please sign your name and seal.

Professional Engineer's Printed Name:

Professional Engineer's Signed Name:

Date: _____

[SEAL]

PRIORITY DEVELOPMENT PROJECT (PDP) SWQMP

ATTACHMENT 5

Copy of Plan Sheets Showing Permanent Storm Water BMPs, Source Control, and Site Design BMPs

This is the cover sheet for Attachment 5.

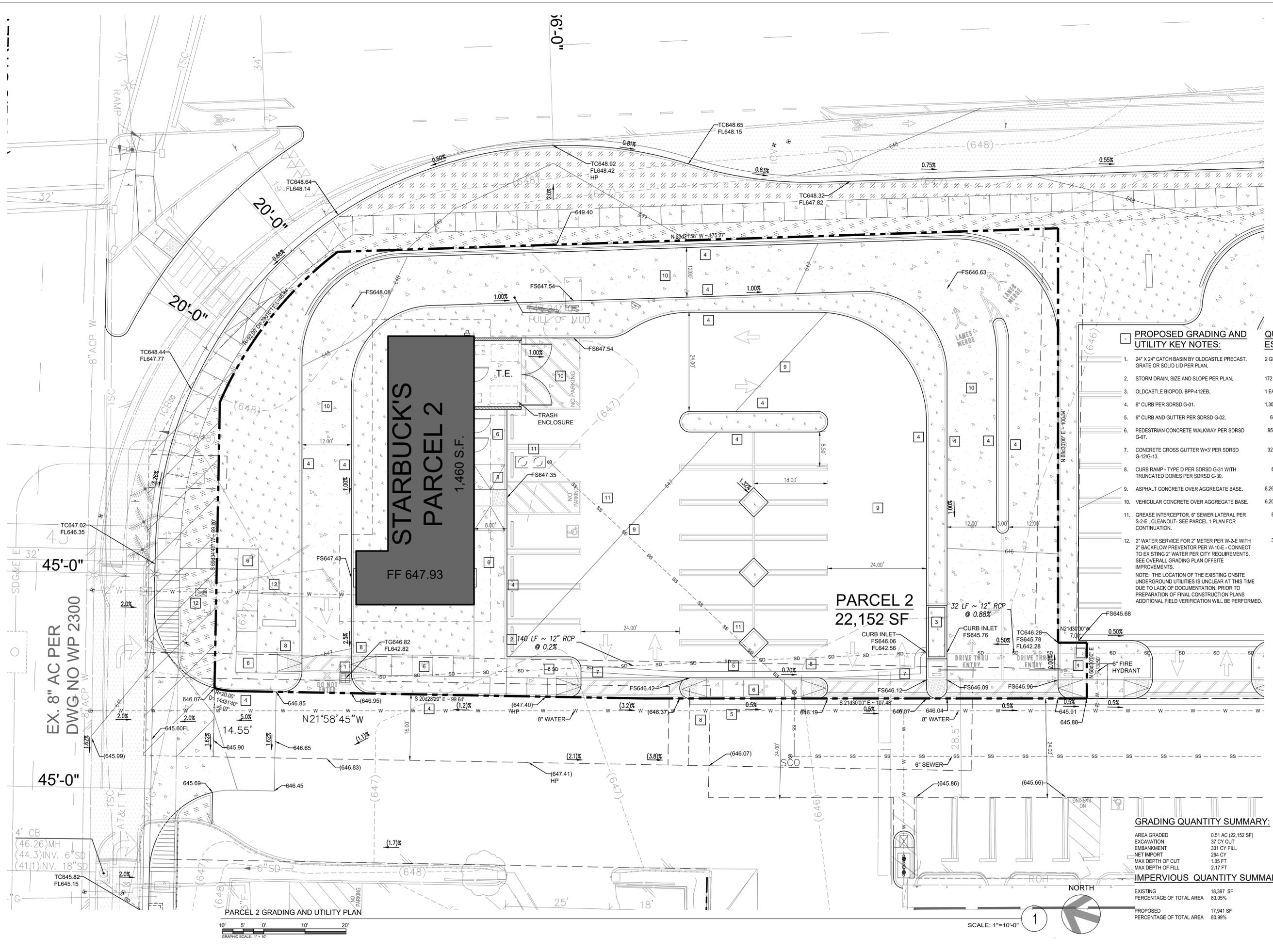
Use this checklist to ensure the required information has been included on the plans:

The plans must identify:

- Structural BMP(s) with ID numbers matching Step 5 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 City staff
- 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 must be provided. Photocopies of general brochures are not acceptable.
- Include all source control and site design measures described in Steps 3 and 4 of the SWQMP. Can be included as a separate exhibit as necessary.

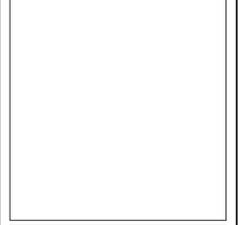
***Note: Plan sheets included in this attachment can be full size or half size.**

Missing items typically not required at planning level.



Revisions:

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PROPOSED DEVELOPMENT
PARCEL 2
 CENTRE CITY PARKWAY AND MISSION AVENUE
 ESCONDIDO, CA 92025

CLIENT:
501 WEST MISSION, LLC
 606 PATRICK COX
 14493 OLD CREEK ROAD
 SAN DIEGO, CA 92131

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DATE:	MAY 7, 2024
PROJECT NO.:	WM2301
DRAWN:	
SCALE:	AS SHOWN
SHEET TITLE:	GRADING AND UTILITY PLAN PARCEL 2
SHEET #	C100

PROPOSED GRADING AND UTILITY KEY NOTES:

- 24" X 24" CATCH BASIN BY OLDCASTLE PRECAST. GRATE OR SOLID LID PER PLAN.
- STORM DRAIN, SIZE AND SLOPE PER PLAN.
- OLDCASTLE BIPOD. BPP-412EB.
- 6" CURB PER SDRSD G-01.
- 6" CURB AND GUTTER PER SDRSD G-02.
- PEDESTRIAN CONCRETE WALKWAY PER SDRSD G-07.
- CONCRETE CROSS GUTTER W-3 PER SDRSD G-12/G-13.
- CURB RAMP - TYPE D PER SDRSD G-31 WITH TRUNCATED DOMES PER SDRSD G-30.
- ASPHALT CONCRETE OVER AGGREGATE BASE.
- VEHICULAR CONCRETE OVER AGGREGATE BASE.
- GREASE INTERCEPTOR, 6" SEWER LATERAL PER S-2-E. CLEANOUT-SEE PARCEL 1 PLAN FOR CONTINUATION.
- 2" WATER SERVICE FOR 2" METER PER W-2-E WITH 2" BACKFLOW PREVENTOR PER W-10-E - CONNECT TO EXISTING 2" WATER PER CITY REQUIREMENTS. SEE OVERALL GRADING PLAN OFFSITE IMPROVEMENTS.
NOTE: THE LOCATION OF THE EXISTING ONSITE UNDERGROUND UTILITIES IS UNCLEAR AT THIS TIME DUE TO LACK OF DOCUMENTATION. PRIOR TO PREPARATION OF FINAL CONSTRUCTION PLANS ADDITIONAL FIELD VERIFICATION WILL BE PERFORMED.

QUANTITY ESTIMATE:

2 GRATE LID
172 LF 12"
1 EACH 4'X12
1,309 LF
66 LF
950 SF
327 SF
8 EACH
8,269 SF
6,207 SF
83 LF
34 LF

GRADING QUANTITY SUMMARY:

AREA GRADED	0.51 AC (22,152 SF)
EXCAVATION	37 CY CUT
EMBANKMENT	331 CY FILL
NET IMPORT	294 CY
MAX DEPTH OF CUT	1.05 FT
MAX DEPTH OF FILL	2.17 FT

IMPERVIOUS QUANTITY SUMMARY:

EXISTING	18,397 SF
PERCENTAGE OF TOTAL AREA	83.05%
PROPOSED	17,841 SF
PERCENTAGE OF TOTAL AREA	80.99%





TOTAL SITE AREA	= 22,152 SF
IMPERVIOUS AREA (T)	= 18,397 SF
	= 0.42 AC
IMPERVIOUS%	= 83.05
PERVIOUS AREA (T)	= 3,755 SF
	= 0.09 AC
C VALUE	= 0.81
RAINFALL INTENSITY (I)	= 4.4 IN/HR
DISCHARGE (Q)	= C IA
	= 1.81 CFS

DRAINAGE AREA-1	
AREA	= 10,448 SF
	= 0.24 AC
IMPERVIOUS AREA (1)	= 8,245 SF
	= 0.19 AC
IMPERVIOUS%	= 79
PERVIOUS AREA (1)	= 2,203 SF
	= 0.05 AC
C VALUE	= 0.81
DISCHARGE (Q)	= C IA
	= 0.85 CFS

DRAINAGE AREA-2	
AREA	= 6,544 SF
	= 0.15 AC
IMPERVIOUS AREA (2)	= 5,312 SF
	= 0.12 AC
IMPERVIOUS%	= 81
PERVIOUS AREA (2)	= 1,232 SF
	= 0.03 AC
C VALUE	= 0.81
DISCHARGE (Q)	= C IA
	= 0.54 CFS

DRAINAGE AREA-3	
AREA	= 5,160 SF
	= 0.12 AC
IMPERVIOUS AREA (3)	= 4,840 SF
	= 0.11 AC
IMPERVIOUS%	= 94
PERVIOUS AREA (3)	= 319 SF
	= 0.01 AC
C VALUE	= 0.81
DISCHARGE (Q)	= C IA
	= 0.42 CFS

EX. 8" AC PER
DWG NO WP 2300

PARCEL 2
22,152 SF

PARCEL 2 DRAINAGE PLAN
GRAPHIC SCALE: 1" = 10'

SCALE: 1"=10'-0"



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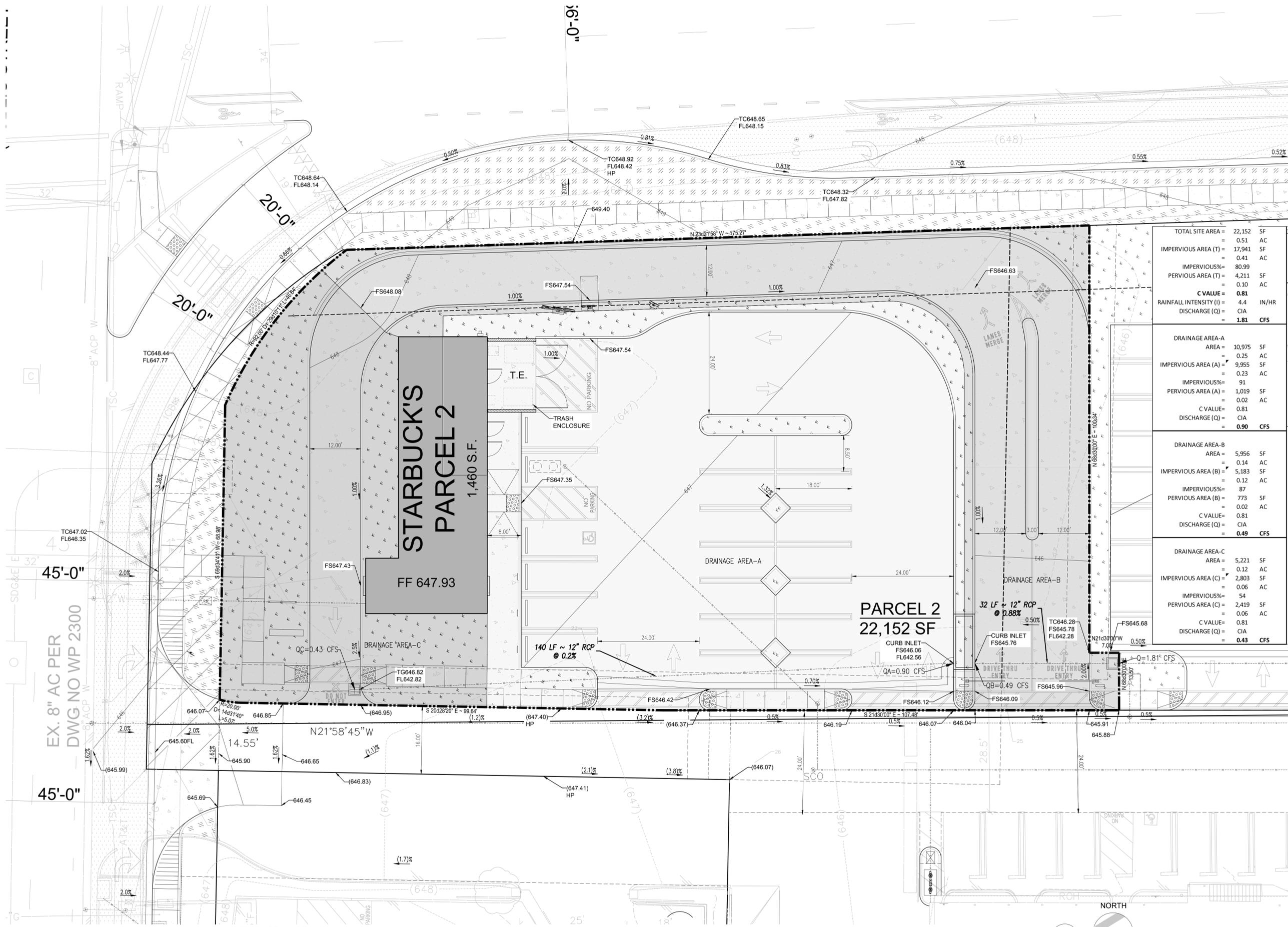
PROJECT
**PROPOSED DEVELOPMENT
PARCEL 2**
CENTRE CITY PARKWAY AND MISSION AVENUE
ESCONDIDO, CA 92025

CLIENT:
501 WEST MISSION, LLC
616 PATRICK COX
14483 OLD CREEK ROAD
SAN DIEGO, CA 92131

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DATE: MAY 7, 2024
PROJECT NO.: WM2301
DRAWN:
SCALE: AS SHOWN
SHEET TITLE:
**DRAINAGE PLAN
EXISTING
PARCEL 2**

SHEET #
C101



TOTAL SITE AREA =	22,152 SF
IMPERVIOUS AREA (T) =	17,941 SF
PERVIOUS AREA (T) =	4,211 SF
IMPERVIOUS% =	80.99
PERVIOUS% =	19.01
C VALUE =	0.81
RAINFALL INTENSITY (I) =	4.4 IN/HR
DISCHARGE (Q) =	1.81 CFS

DRAINAGE AREA-A	AREA = 10,975 SF
IMPERVIOUS AREA (A) =	0.25 AC
PERVIOUS AREA (A) =	9,955 SF
IMPERVIOUS% =	0.23 AC
PERVIOUS% =	91
C VALUE =	0.81
DISCHARGE (Q) =	0.90 CFS

DRAINAGE AREA-B	AREA = 5,956 SF
IMPERVIOUS AREA (B) =	0.14 AC
PERVIOUS AREA (B) =	5,183 SF
IMPERVIOUS% =	0.12 AC
PERVIOUS% =	87
C VALUE =	0.81
DISCHARGE (Q) =	0.49 CFS

DRAINAGE AREA-C	AREA = 5,221 SF
IMPERVIOUS AREA (C) =	0.12 AC
PERVIOUS AREA (C) =	2,803 SF
IMPERVIOUS% =	0.06 AC
PERVIOUS% =	54
C VALUE =	0.81
DISCHARGE (Q) =	0.43 CFS

PARCEL 2 DRAINAGE PLAN
 GRAPHIC SCALE: 1" = 10'

Revisions:

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MOUR GROUP
 ENGINEERING + DESIGN
 6593 RIVERDALE ST.
 SAN DIEGO, CA 92120
 PH. 619.727.4800

PROJECT
**PROPOSED DEVELOPMENT
 PARCEL 2**
 CENTRE CITY PARKWAY AND MISSION AVENUE
 ESCONDIDO, CA 92025

CLIENT:
501 WEST MISSION, LLC
 616 PATRICK COX
 14483 OLD CREEK ROAD
 SAN DIEGO, CA 92131

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DATE: MAY 7, 2024
 PROJECT NO.: WM2301
 DRAWN: MOUR GROUP
 SCALE: AS SHOWN
 SHEET TITLE:
**DRAINAGE PLAN
 PROPOSED
 PARCEL 2**
 SHEET #
C102

SOURCE CONTROL(SC)/SITE DESIGN(SD):

ITEMS	FACT SHEET/DESIGN-REQMT
PREVENT ILLICIT DISCHARGE INTO MS4	4.2.1
STORM DRAIN STENCILING OR SIGNAGE	4.2.2
PROTECT TRASH STORAGE AREAS	4.2.5
MINIMIZE IMPERVIOUS AREA	4.3.3
LANDSCAPING WITH NATIVE OR DROUGHT TOLERANT SPECIES	4.3.7
ONSITE STORM DRAIN INLET LABELING	SC-A
REFUSE AREAS EXPOSURE REDUCTION	SC-G

DMA SITE MAP NOTES

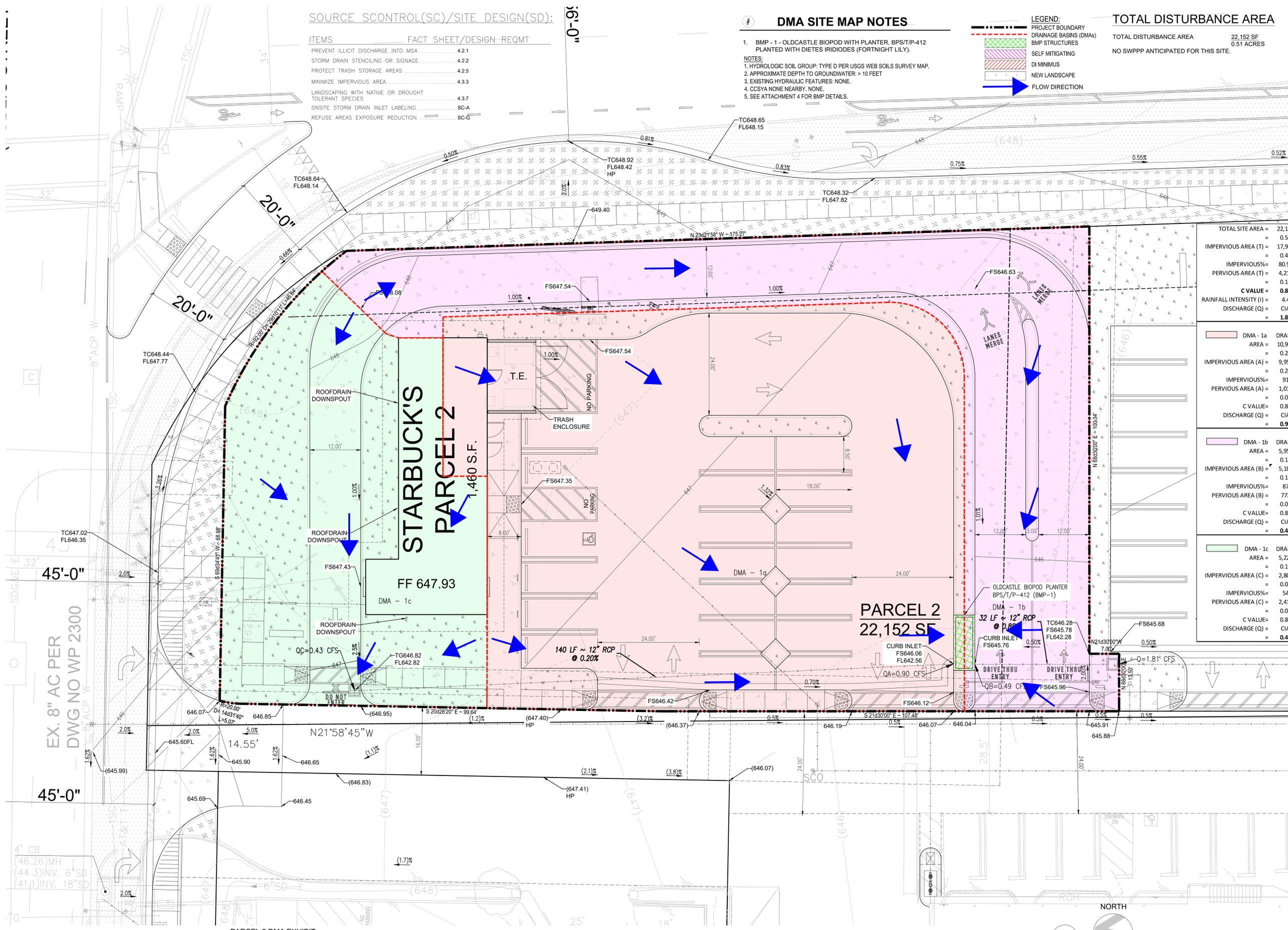
- BMP - 1 - OLDCASTLE BIOPOD WITH PLANTER, BPS/T/P-412 PLANTED WITH DIETES IRIDIODES (FORTNIGHT LILY).
- NOTES:
- HYDROLOGIC SOIL GROUP: TYPE D PER USGS WEB SOILS SURVEY MAP.
 - APPROXIMATE DEPTH TO GROUNDWATER: > 10 FEET
 - EXISTING HYDRAULIC FEATURES: NONE.
 - COSEA NONE NEARBY, NONE.
 - SEE ATTACHMENT 4 FOR BMP DETAILS.

LEGEND:

- PROJECT BOUNDARY
- DRAINAGE BASINS (DMAs)
- BMP STRUCTURES
- SELF MITIGATING
- DI MINIMUS
- NEW LANDSCAPE
- FLOW DIRECTION

TOTAL DISTURBANCE AREA

TOTAL DISTURBANCE AREA 22,152 SF
0.51 ACRES
NO SWPPP ANTICIPATED FOR THIS SITE.



Category	Value	Unit
TOTAL SITE AREA	22,152	SF
IMPERVIOUS AREA (T)	17,941	SF
IMPERVIOUS%	80.99	%
PERVIOUS AREA (T)	4,211	SF
PERVIOUS%	19.01	%
C VALUE	0.81	
RAINFALL INTENSITY (I)	4.4	IN/HR
DISCHARGE (Q)	CIA	
	1.81	CFS

DMA	Drains To	Area	Impervious Area	Impervious%	Pervious Area	Pervious%	C Value	Discharge (Q)
DMA - 1a	DRAINS TO BMP 1	10,975 SF	9,955 SF	90.7%	1,019 SF	9.3%	0.81	CIA
DMA - 1b	DRAINS TO BMP 1	5,956 SF	5,183 SF	87.0%	773 SF	13.0%	0.81	CIA
DMA - 1c	DRAINS TO BMP 1	5,221 SF	2,803 SF	53.7%	2,419 SF	46.3%	0.81	CIA

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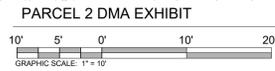
MOUR GROUP
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6593 RIVERDALE ST.
SAN DIEGO, CA 92120
PH. 619.727.4800

PROJECT: **PROPOSED DEVELOPMENT PARCEL 2**
CENTRE CITY PARKWAY AND MISSION AVENUE
ESCONDIDO, CA 92025

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DATE:	MAY 7, 2024
PROJECT NO.:	WM2301
DRAWN:	MOUR GROUP
SCALE:	AS SHOWN
SHEET TITLE:	DMA EXHIBIT
	PARCEL 2
SHEET #	C103



SCALE: 1"=10'-0"



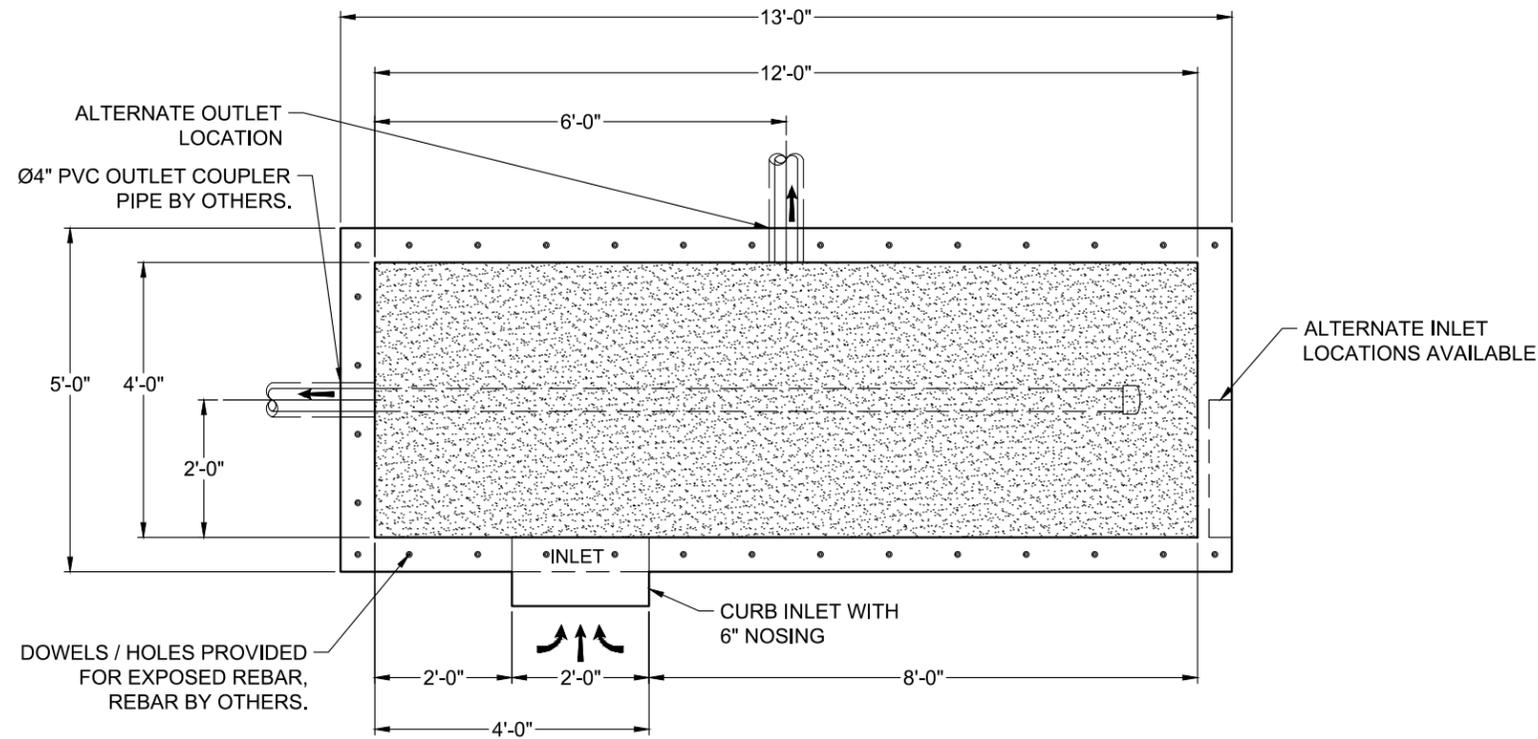
Surface/Tree/Planter - External Bypass									
Model	Structure Size (ft x ft)	Max Pipe Size (in)	Rim to Invert Depth ^(d) (ft)	Media (cy)	Mulch (cy)	Drain Rock (cy)	Treatment Flow Rates		Max Peak Flow (cfs)
							WA DOE 1.6 gpm/sf (cfs)	NJCAT 1.8 gpm/sf (cfs)	
BPS/T/T-44	4 x 4	4	3.77	0.89	0.10	0.30	0.057	0.064	N/a
BPS/T/P-46	4 x 6	4	3.77	1.33	0.15	0.44	0.085	0.096	N/a
BPS/T/P-48	4 x 8	4	3.77	1.78	0.20	0.59	0.114	0.128	N/a
BPS/T/P-412	4 x 12	4	3.77	2.67	0.30	0.89	0.171	0.192	N/a
BPS/T/P-68	6 x 8	4	3.77	2.67	0.30	0.89	0.171	0.192	N/a
BPS/T/P-612	6 x 12	4	3.77	4.00	0.44	1.33	0.256	0.288	N/a
BPS/T/P-812	8 x 12	6	3.77	5.33	0.59	1.78	0.341	0.384	N/a
BPS/T/P-816	8 x 16	6	3.77	7.11	0.79	2.37	0.455	0.512	N/a

Notes:

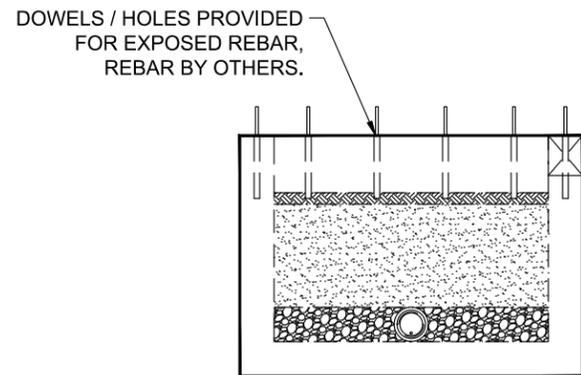
- (a) For depths less than minimum, contact Solution Engineering for design assistance.
- (b) For depths greater than the maximum, contact Solution Engineering for design assistance.
- (c) Panel vault configuration only available in PNW. Check with local manufacturing for form availability.
- (d) Rim to invert depth for Planter Model, external bypass, is 3.50 ft.



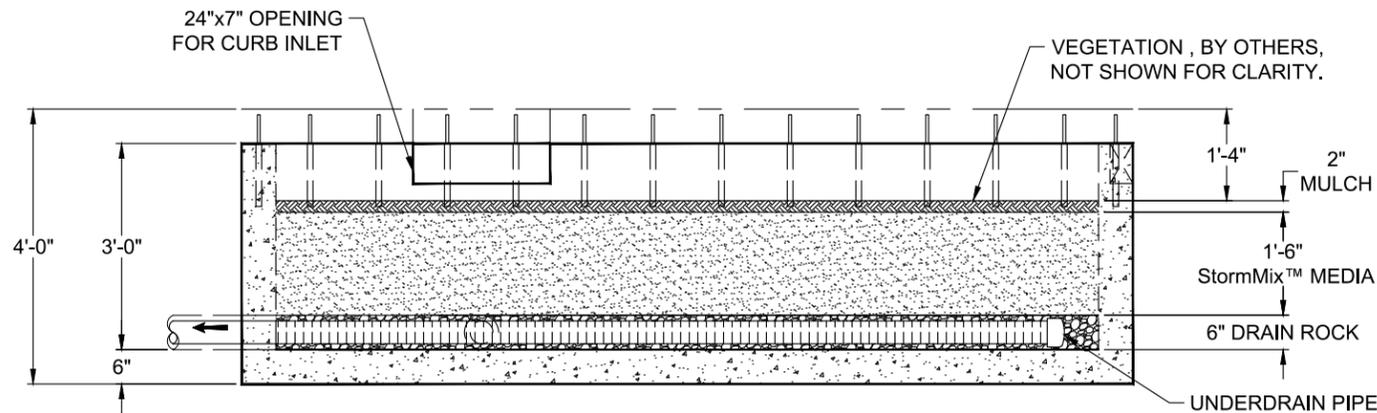
SITE SPECIFIC DATA					
Structure ID	ID				
Treatment Flow Rate (cfs)	-				
Peak Flow Rate (cfs)	NA				
Rim Elevation	-				
Pipe Data	Pipe Location	Pipe Size	Pipe Type	Invert Elevation	
Outlet	-	-	-	-	
Notes:					
PERFORMANCE SPECIFICATIONS					
Treatment Flow Capacities:					
NJDEP 80% Removal, 75 micron	0.192 cfs				
WA Ecology GULD - Basic, Enhanced & Phosphorus	0.171 cfs				
Bypass Capacity	NA				
*Contact Oldcastle for alternative treatment flow capacities.					



PLAN VIEW



LEFT END VIEW



ELEVATION VIEW

NOTES:

- DESIGN LOADINGS:
 - 300 PSF PEDESTRIAN LOADING
 - DESIGN SOIL COVER: 0' MAXIMUM
 - ASSUMED WATER TABLE: BELOW BASE OF PRECAST (ENGINEER-OF-RECORD TO CONFIRM SITE WATER TABLE ELEVATION)
 - LATERAL EARTH PRESSURE: 45 PCF (DRAINED)
 - LATERAL LIVE LOAD SURCHARGE: 80 PSF (APPLIED TO 8'-0" BELOW GRADE)
 - NO LATERAL SURCHARGE FROM ADJACENT BUILDINGS, WALLS, PIERS, OR FOUNDATIONS.
- CONCRETE 28-DAY MINIMUM COMPRESSIVE STRENGTH: 5,000 PSI MINIMUM.
- REINFORCING: REBAR, ASTM A615/A706, GRADE 60
- CEMENT: ASTM C150
- REQUIRED ALLOWABLE SOIL BEARING CAPACITY: 2,500 PSF
- REFERENCE STANDARD:
 - ASTM C890
 - ASTM C913
 - ACI 318-14
- THIS STRUCTURE IS DESIGNED TO THE PARAMETERS NOTED HEREIN. ENGINEER-OF-RECORD SHALL VERIFY THAT NOTED PARAMETERS MEET OR EXCEED PROJECT REQUIREMENTS. IF DESIGN PARAMETERS ARE INCORRECT, REVIEWING ENGINEER/AUTHORITY SHALL NOTIFY OLDCASTLE INFRASTRUCTURE UPON REVIEW.
- INLET AND OUTLET HOLES WILL BE FACTORY CORED/CAST PER PLANS AND CUSTOMER REQUIREMENTS. INLET AND OUTLET LOCATIONS CAN BE MIRRORED.
- CONTRACTOR RESPONSIBLE TO VERIFY ALL SIZES, LOCATIONS, AND ELEVATIONS OF OPENINGS.
- CONTRACTOR RESPONSIBLE TO ENSURE ADEQUATE BEARING SURFACE IS PROVIDED (I.E. COMPACTED AND LEVEL PER PROJECT SPECIFICATIONS).
- SECTION HEIGHTS, SLAB/WALL THICKNESSES, AND KEYWAYS ARE SUBJECT TO CHANGE AS REQUIRED FOR SITE REQUIREMENTS AND/OR DUE TO PRODUCT AVAILABILITY AND PRODUCTION FACILITY CONSTRAINTS.
- MAXIMUM PICK WEIGHTS*:
 - BASE: XX,XXX LBS* (* COMBINED WEIGHT OF BASE INCLUDES BYPASS WEIR, DIVIDER WALL, ROCK & MEDIA)
- INTERNALS SHALL CONSIST OF UNDERDRAIN PIPE, ROCK, STORMMIX™ MEDIA, AND MULCH.



Ph: 800.579.8819 | www.oldcastleinfrastructure.com/stormwater
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BioPod™ Biofilter System (STANDARD)
 Planter vault with External Bypass

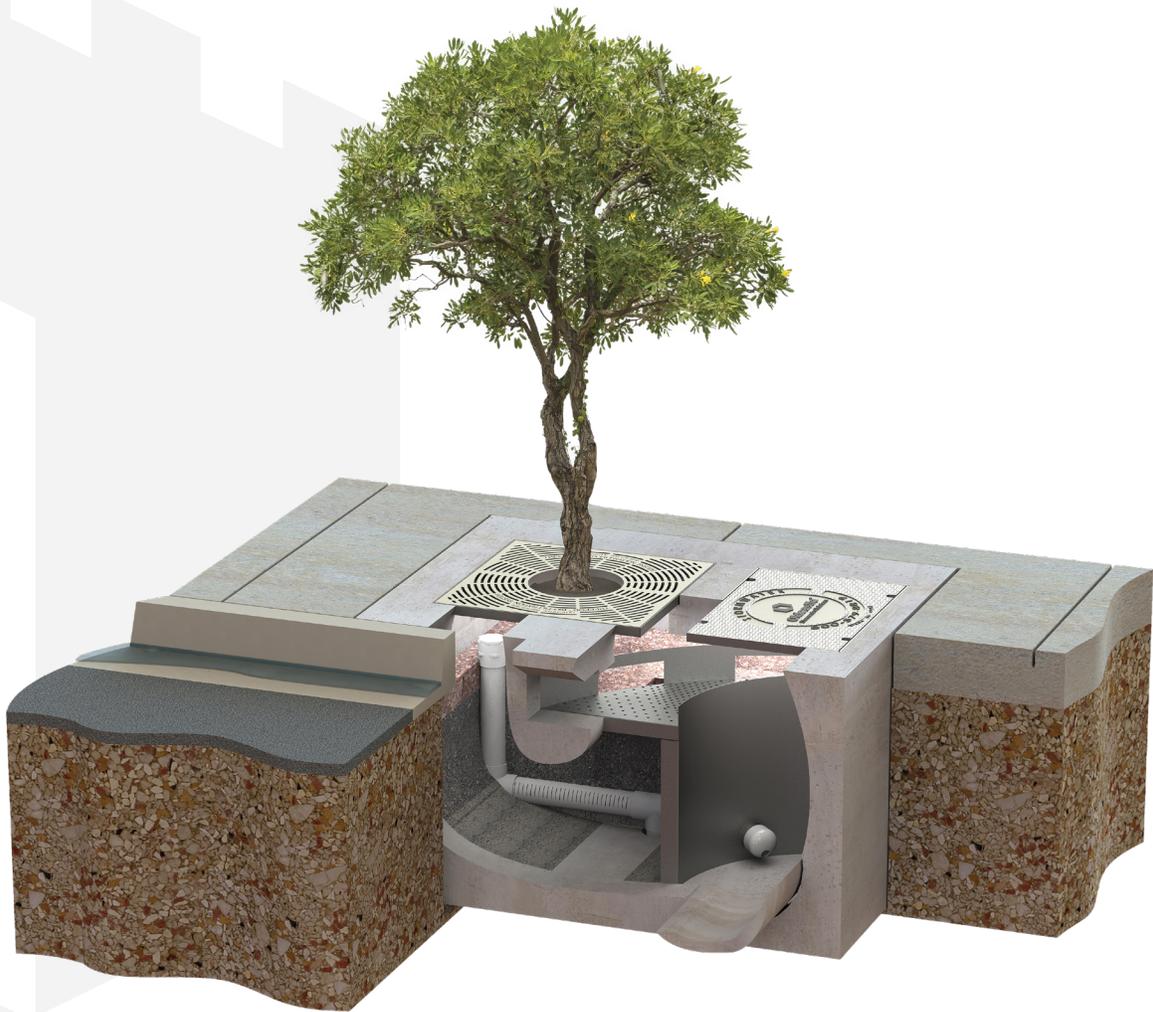
CUSTOMER	-	
PROJECT NAME	-	
SHEET NAME	REVISION	SHEET
Specifier Drawing	-	1 OF 1
BPP-412EB	REV DATE	-



BIOPOD™ SYSTEM

with StormMix™ Media

Inspection & Maintenance Guide



BIOPOD™ BIOFILTER WITH STORMMIX™ BIOFILTRATION MEDIA

DESCRIPTION

The BioPod™ Biofilter System (BioPod) is a storm water biofiltration treatment system used to remove pollutants from storm water runoff. Impervious surfaces and other urban and suburban landscapes generate a variety of contaminants that can enter storm water and pollute downstream receiving waters unless treatment is provided. The BioPod system uses proprietary StormMix™ biofiltration media to capture and retain pollutants including total suspended solids (TSS), metals, nutrients, gross solids, trash and debris as well as petroleum hydrocarbons.

FUNCTION

The BioPod system uses engineered, high-flow rate filter media to remove storm water pollutants, allowing for a smaller footprint than conventional bioretention systems. Contained within a compact precast concrete vault, the BioPod system consists of a biofiltration chamber and an optional integrated high-flow bypass. The biofiltration chamber is filled with horizontal layers of aggregate, biofiltration media and mulch. Storm water passes vertically down through the mulch and biofiltration media for treatment. The mulch provides pretreatment by retaining most of the solids or sediment. The biofiltration media provides further treatment by retaining finer sediment and dissolved pollutants. The aggregate allows the media bed to drain evenly for discharge through an underdrain pipe or by infiltration.

INSPECTION & MAINTENANCE OVERVIEW

State and local regulations require all storm water management systems to be inspected on a regular basis and maintained as necessary to ensure performance and protect downstream receiving waters. Without maintenance, excessive pollutant buildup can limit system performance by reducing the operating capacity of the system and increasing the potential for scouring of pollutants during periods of high flow.

Some configurations of the BioPod may require periodic irrigation to establish and maintain vegetation. Vegetation will typically become established about two years after planting. Irrigation requirements are ultimately dependent on climate, rainfall and the type of vegetation selected.

INSPECTION & MAINTENANCE FREQUENCY

Periodic inspection is essential for consistent system performance and is easily completed. Inspection is typically conducted a minimum of twice per year, but since pollutant transport and deposition varies from site to site, a site-specific maintenance frequency should be established during the first two or three years of operation.



INSPECTION EQUIPMENT

The following equipment is helpful when conducting BioPod inspections:

- | Recording device (pen and paper form, voice recorder, iPad, etc.)
- | Suitable clothing (appropriate footwear, gloves, hardhat, safety glasses, etc.)
- | PPE as required for entry
- | Traffic control equipment (cones, barricades, signage, flagging, etc.)
- | Manhole hook or pry bar
- | Flashlight
- | Tape measure
- | Socket

INSPECTION PROCEDURES

BioPod inspections are visual and are conducted without entering the unit. To complete an inspection, safety measures including traffic control should be deployed before the access covers or tree grates are removed. Once the covers have been removed, the following items should be checked and recorded (see form provided on page 6) to determine whether maintenance is required:

- | If the BioPod unit is equipped with an internal bypass, inspect the inlet rack (or inlet chamber on underground units) and outlet chamber and note whether there are any broken or missing parts. In the unlikely event that internal parts are broken or missing, contact Oldcastle Storm water at (800) 579-8819 to determine appropriate corrective action.
- | Note whether the curb inlet, inlet pipe, or inlet rack is blocked or obstructed.
- | If the unit is equipped with an internal bypass, observe, quantify and record the accumulation of trash and debris in the inlet rack or inlet chamber. The significance of accumulated trash and debris is a matter of judgment. Often, much of the trash and debris may be removed manually at the time of inspection if a separate maintenance visit is not yet warranted.
- | If it has not rained within the past 24 hours, note whether standing water is observed in the biofiltration chamber.
- | Finally, observe, quantify and record presence of invasive vegetation and the amount of trash and debris and sediment load in the biofiltration chamber. Erosion of the mulch and biofiltration media bed should also be recorded. Often, much of the invasive vegetation and trash and debris may be removed manually at the time of inspection if a separate maintenance visit is not yet warranted. Sediment load may be rated light, medium or heavy depending on the conditions. Loading characteristics may be determined as follows:
 - **Light sediment load** – sediment is difficult to distinguish among the mulch fibers at the top of the mulch layer; the mulch appears almost new.
 - **Medium sediment load** – sediment accumulation is apparent and may be concentrated in some areas; probing the mulch layer reveals lighter sediment loads under the top 1" of mulch.
 - **Heavy sediment load** – sediment is readily apparent across the entire top of the mulch layer; individual mulch fibers are difficult to distinguish; probing the mulch layer reveals heavy sediment load under the top 1" of mulch.

MAINTENANCE INDICATORS

Maintenance should be scheduled if any of the following conditions are identified during inspection:

- | The concrete structure is damaged or the tree grate or access cover is damaged or missing
- | The inlet obstructed
- | Standing water is observed in the biofiltration chamber more than 24 hours after a rainfall event (use discretion if the BioPod is located downstream of a storage system that attenuates flow)
- | Trash and debris in the inlet rack cannot be easily removed at the time of inspection
- | Trash and debris, invasive vegetation or sediment load in the biofiltration chamber is heavy or excessive erosion has occurred

MAINTENANCE EQUIPMENT

The following equipment is helpful when conducting BioPod maintenance:

- | Suitable clothing (appropriate footwear, gloves, hardhat, safety glasses, etc.)
- | PPE as required for entry
- | Traffic control equipment (cones, barricades, signage, flagging, etc.)
- | Manhole hook or pry bar
- | Flashlight
- | Tape measure
- | Rake, hoe, shovel and broom
- | Bucket
- | Pruners
- | Vacuum truck (optional)
- | Socket

MAINTENANCE PROCEDURES

Maintenance should be conducted during dry weather when no flows are entering the system. In most cases, maintenance may be conducted without entering. Entry may be required to maintain BioPod Underground units, depending on system depth. Once safety measures such as traffic control are deployed, the access covers may be removed and the following activities may be conducted to complete maintenance:

- | Remove all trash and debris from the **curb inlet and inlet rack manually or by using a vacuum truck as required.**
- | Remove all trash and debris and invasive vegetation from the biofiltration chamber manually or by using a vacuum truck as required.
- | If the sediment load is medium or light but erosion of the biofiltration media bed is evident, redistribute the mulch with a rake or replace missing mulch as appropriate. If erosion persists, rocks may be placed in the eroded area to help dissipate energy and prevent recurring erosion.
- | **If the sediment load is heavy, remove the mulch layer using a hoe, rake, shovel and bucket, or by using a vacuum truck as required. If the sediment load is particularly heavy, inspect the surface of the biofiltration media once the mulch has been removed. If the media appears clogged with sediment, remove and replace one or two inches of biofiltration media prior to replacing the mulch* layer.**
- | Prune vegetation as appropriate and replace damaged or dead plants as required.
- | Replace the tree grate and/or access covers and sweep the area around the BioPod to leave the site clean.
- | All material removed from the BioPod during maintenance must be disposed of in accordance with local environmental regulations. In most cases, the material may be handled in the same manner as disposal of material removed from sumped catch basins or manholes.



* Natural, shredded hardwood mulch should be used in the BioPod. Timely replacement of the mulch layer according to the maintenance indicators described above should protect the biofiltration media below the mulch layer from clogging due to sediment accumulation. However, whenever the mulch is replaced, the BioPod should be visited 24 hours after the next major storm event to ensure that there is no standing water in the biofiltration chamber. Standing water indicates that the biofiltration media below the mulch layer is clogged and must be replaced. Please contact Oldcastle Infrastructure at (800) 579-8819 to purchase the proprietary StormMix™ biofiltration media.



BIOPOD TREE



BIOPOD SURFACE



BIOPOD PLANTER



BIOPOD UNDERGROUND

BIPOD INSPECTION & MAINTENANCE LOG

BioPod Model _____ Inspection Date _____

Location _____

Condition of Internal Components

NOTES:

GOOD **DAMAGED** **MISSING**

Curb Inlet or Inlet Rack Blocked

NOTES:

YES **NO**

Standing Water in Biofiltration Chamber

NOTES:

YES **NO**

Trash and Debris in Inlet Rack

NOTES:

YES **NO**

Trash and Debris in Biofiltration Chamber

NOTES:

YES **NO**

Invasive Vegetation in Biofiltration Chamber

NOTES:

YES **NO**

Sediment in Biofiltration Chamber

NOTES:

LIGHT **MEDIUM** **HEAVY**

Erosion in Biofiltration Chamber

NOTES:

YES **NO**

Maintenance Requirements

YES - Schedule Maintenance **NO - Schedule Re-Inspection**

