

**City of Escondido**  
**PRIORITY DEVELOPMENT PROJECT (PDP) SWQMP**

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\_\_\_\_\_

**ASSESSOR'S PARCEL NUMBER(S):**

\_\_\_\_\_

**ENGINEER OF WORK:**

\_\_\_\_\_

PREPARED FOR:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

PDP SWQMP PREPARED BY:

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\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

DATE OF SWQMP:

\_\_\_\_\_

PLANS PREPARED BY:

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\_\_\_\_\_  
\_\_\_\_\_  
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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

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## 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:

# PRIORITY DEVELOPMENT PROJECT (PDP) SWQMP

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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		

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## 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. <b>Complete Form I-1.</b>
	<input type="checkbox"/> PDP	<u>Standard and PDP</u> requirements apply, including <u>PDP SWQMP</u> . <b>SWQMP Required.</b>
	<input type="checkbox"/> PDP with ACP	If participating in offsite alternative compliance, <b>complete Step 5.1</b> (Offsite Alternative Compliance Participation Form) <b>and an ACP SWQMP.</b>
	<input type="checkbox"/> PDP Exemption	<b>Go to Step 1.2 below.</b>



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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"> <li>(i) Designed and constructed to direct storm water runoff to adjacent vegetated areas, or other non-erodible permeable areas; OR</li> <li>(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</li> <li>(iii) Designed and constructed with permeable pavements or surfaces in accordance with County of San Diego Green Streets Infrastructure;</li> </ul>	<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><b>PDP Exempt.</b></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 <sup>1</sup>		
The total proposed newly created or replaced impervious area is: _____ ft <sup>2</sup>		
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) 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: <ul style="list-style-type: none"> <li>(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 <a href="http://www.osha.gov/pls/imis/sicsearch.html">www.osha.gov/pls/imis/sicsearch.html</a>.</i></li> <li>(ii) Hillside development projects. This category includes development on any natural slope that is twenty-five percent or greater.</li> <li>(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.</li> <li>(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.</li> </ul>
Yes <input type="checkbox"/>	No <input type="checkbox"/>	(d) 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). <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>

<sup>1</sup> 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 <a href="http://www.osha.gov/pls/imis/sicsearch.html">www.osha.gov/pls/imis/sicsearch.html</a>.</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>
<b>The following is for redevelopment PDPs only:</b>			
The area of existing (pre-project) impervious area at the project site is:		A	_____ ft <sup>2</sup>
The total proposed newly created or replaced impervious area is:		B	_____ ft <sup>2</sup>
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"/> <b>less than or equal to fifty percent (50%)</b> – only newly created or replaced impervious areas are considered a PDP and subject to stormwater requirements</p> <p>OR</p> <p><input type="checkbox"/> <b>greater than fifty percent (50%)</b> – 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> <ul style="list-style-type: none"> <li><input type="checkbox"/> Existing development</li> <li><input type="checkbox"/> Previously graded but not built out</li> <li><input type="checkbox"/> Demolition completed without new construction</li> <li><input type="checkbox"/> Agricultural or other non-impervious use</li> <li><input type="checkbox"/> Vacant, undeveloped/natural</li> </ul> <p>Description / Additional Information:</p>	
<p>Existing Land Cover Includes (select all that apply and provide each area on site):</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Vegetative Cover _____ Acres (_____ Square Feet)</li> <li><input type="checkbox"/> Non-Vegetated Pervious Areas _____ Acres (_____ Square Feet)</li> <li><input type="checkbox"/> Impervious Areas _____ Acres (_____ Square Feet)</li> </ul> <p>Description / Additional Information:</p>	
<p>Underlying Soil belongs to Hydrologic Soil Group (select all that apply):</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> NRCS Type A</li> <li><input type="checkbox"/> NRCS Type B</li> <li><input type="checkbox"/> NRCS Type C</li> <li><input type="checkbox"/> NRCS Type D</li> </ul>	
<p>Approximate Depth to Groundwater (GW) (or N/A for no infiltration BMPs):</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Groundwater Depth &lt; 5 feet</li> <li><input type="checkbox"/> 5 feet &lt; Groundwater Depth &lt; 10 feet</li> <li><input type="checkbox"/> 10 feet &lt; Groundwater Depth &lt; 20 feet</li> <li><input type="checkbox"/> Groundwater Depth &gt; 20 feet</li> </ul>	
<p>Existing Natural Hydrologic Features (select all that apply):</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Watercourses</li> <li><input type="checkbox"/> Seeps</li> <li><input type="checkbox"/> Springs</li> <li><input type="checkbox"/> Wetlands</li> <li><input type="checkbox"/> None</li> <li><input type="checkbox"/> Other</li> </ul> <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:			
<b>Insert acreage or square feet for the different land cover types in the table below:</b>			
Change in Land Cover Type Summary			
Land Cover Type	Existing (acres or ft <sup>2</sup> )	Proposed (acres or ft <sup>2</sup> )	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			

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## 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"><li><input type="checkbox"/> Yes, hydromodification management requirements for flow control and preservation of critical coarse sediment yield areas are applicable.</li><li><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.</li><li><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.</li><li><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.</li></ul> <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><b>HMP Exemption Exhibit</b></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>	



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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"/> <b>N/A - This Section only required if hydromodification management requirements apply</b>	
List and describe point(s) of compliance (POCs) for flow control for hydromodification management (see Section 6.3.1). For each POC, provide a POC identification name or number correlating to the project's HMP Exhibit and a receiving channel identification name or number correlating to the project's HMP Exhibit.	
Has a geomorphic assessment been performed for the receiving channel(s)? <input type="checkbox"/> No, the low flow threshold is 0.1Q2 (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	
If a geomorphic assessment has been performed, provide title, date, and preparer:	
Discussion / Additional Information: (optional)	
Select method used to determine low flow threshold: <input type="checkbox"/> Sizing Factor Method <input type="checkbox"/> US Geological Survey (USGS) Equation <input type="checkbox"/> Continuous Simulation Modeling	

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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"> <li>• "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.</li> <li>• "No" means the BMP is applicable to the project but it is not feasible to implement. Discussion / justification must be provided.</li> <li>• "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.</li> </ul>				
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?		
<b>4.2.6 Additional BMPs Based on Potential Sources of Runoff Pollutants (must answer for each source listed below):</b>			
<input type="checkbox"/> Onsite storm drain inlets	<input 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 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 type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
<input type="checkbox"/> Refuse areas	<input 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 type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
<input type="checkbox"/> Miscellaneous drain or wash water	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
<input type="checkbox"/> Plazas, sidewalks, and parking lots	<input 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"> <li>• "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.</li> <li>• "No" means the BMP is applicable to the project but it is not feasible to implement. Discussion / justification must be provided.</li> <li>• "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.</li> </ul>				
Site Design Requirement		Applied?		
<b>4.3.1</b> 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
<b>4.3.2</b> 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:				
<b>4.3.3</b> Minimize Impervious Area		<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Discussion / justification if 4.3.3 not implemented:				
<b>4.3.4</b> 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?		
<b>4.3.5 Impervious Area Dispersion</b>	<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
<b>4.3.6 Runoff Collection</b>	<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
<b>4.3.7 Landscaping with Native or Drought Tolerant Species</b>	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Discussion / justification if 4.3.7 not implemented:			
<b>4.3.8 Harvesting and Using Precipitation</b>	<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
<b>PDP Structural BMPs</b>	
<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><b>Description of Structural BMP Strategy</b> 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

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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	
<b>Structural BMP Summary Information</b>	
<b>(Copy this page as needed to provide information for each individual proposed structural BMP)</b>	
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

<b>THIS FORM IS NOT APPLICABLE AT THIS TIME: An Alternative Compliance Program is under consideration by the City of Escondido.</b>	
<b>PDP INFORMATION</b>	
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	
<b>ACP Information</b>	
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"> <li>-Worksheet B.1-DMA Summary (Optional)</li> <li>-Worksheet B.2-1- DCV (Required)</li> <li>-Worksheet B.3-1- H&amp;U Checklist (Required)</li> <li>-Worksheet B.4-1-Simple Sizing Inf. (if applicable)</li> <li>-Worksheet B.5-1-Biofilt. Sizing (Pollutant)(if applicable)</li> <li>-Worksheet B.5-2-Biofilt. Sizing (Volume) (if applicable)</li> <li>-Worksheet B.5-3-Biofilt. Volume Ret. (if applicable)</li> <li>-Worksheet B.5-4-Biofilt. Alt. Min. Footprint(if applicable)</li> <li>-Worksheet B.5-5-Biofilt. w/Upstream Stor. (if applicable)</li> <li>-Worksheet B.5-6-Biofilt. Ret. No Inf. (if applicable)</li> <li>-Worksheet B.5-7-Vol. Ret. Amended Soils (if applicable)</li> <li>-Worksheet B.6-1-Flow-Thru Design Flow (if applicable)</li> <li>-Form I-10-Compact Biofilt. Checklist (if applicable)</li> <li>-Summary Worksheet (optional)</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Worksheet B.1 (Optional)</li> <li><input type="checkbox"/> Worksheet B.2-1 (Required)</li> <li><input type="checkbox"/> Worksheet B.3-1 (Required)</li> <li><input type="checkbox"/> Worksheet B.4-1 (if applicable)</li> <li><input type="checkbox"/> Worksheet B.5-1 (if applicable)</li> <li><input type="checkbox"/> Worksheet B.5-2 (if applicable)</li> <li><input type="checkbox"/> Worksheet B.5-3 (if applicable)</li> <li><input type="checkbox"/> Worksheet B.5-4 (if applicable)</li> <li><input type="checkbox"/> Worksheet B.5-5 (if applicable)</li> <li><input type="checkbox"/> Worksheet B.5-6 (if applicable)</li> <li><input type="checkbox"/> Worksheet B.5-7 (if applicable)</li> <li><input type="checkbox"/> Worksheet B.6-1 (if applicable)</li> <li><input type="checkbox"/> Form I-10 (if applicable)</li> <li><input type="checkbox"/> Summary Worksheet (optional)</li> </ul>
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"> <li><input type="checkbox"/> Included</li> <li><input type="checkbox"/> Not included because the entire project will use harvest and use BMPs</li> <li><input type="checkbox"/> Not included because an Infiltration Feasibility Condition Letter is submitted</li> </ul>
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"> <li><input type="checkbox"/> Included</li> <li><input type="checkbox"/> Not included because the entire project will use harvest and use BMPs</li> <li><input type="checkbox"/> Not included because an Infiltration Feasibility Condition Letter is submitted</li> </ul>
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"> <li><input type="checkbox"/> Included</li> </ul>
Attachment 1e	<p>Individual Structural BMP DMA Mapbook (Required)</p> <ul style="list-style-type: none"> <li>-Place each map on 8.5"x11" paper.</li> <li>-Show at a minimum the DMA, Structural BMP, and any existing hydrologic features within the DMA.</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Included</li> </ul>

# **PRIORITY DEVELOPMENT PROJECT (PDP) SWQMP**

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**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

# PRIORITY DEVELOPMENT PROJECT (PDP) SWQMP

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## Worksheet B.2-1. BMP Design Capture Volume

Design Capture Volume		Worksheet B-2.1		
1	85 <sup>th</sup> 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



# 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 ⇒</p> <p>↓</p>	<p>3b. Is the 36-hour demand greater than 0.25DCV but less than the full DCV?</p> <p>Yes / No ⇒</p> <p>↓</p>	<p>3c. Is the 36-hour demand less than 0.25DCV?</p> <p>Yes</p> <p>↓</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 ( $DCV/A_{\text{BMP}}$ )	$D_{\text{avg}}=$		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)			

# 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 <sup>th</sup> percentile 24-hour rainfall depth		inches
4	Design capture volume [Line 1 x Line 2 x (Line 3/12)]		cu. ft.
<b>BMP Parameters</b>			
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.
<b>Baseline Calculations</b>			
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
<b>Option 1 – Biofilter 1.5 times the DCV</b>			
16	Required biofiltered volume [1.5 x Line 4]		cu. ft.
17	Required Footprint [Line 16/ Line 15] x 12		sq. ft.
<b>Option 2 - Store 0.75 of remaining DCV in pores and ponding</b>			
18	Required Storage (surface + pores) Volume [0.75 x Line 4]		cu. ft.
19	Required Footprint [Line 18/ Line 14] x 12		sq. ft.
<b>Footprint of the BMP</b>			
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	

# PRIORITY DEVELOPMENT PROJECT (PDP) SWQMP

## Worksheet B.5-2: Sizing Method for Volume Retention Criteria

Sizing Method for Volume Retention Criteria		Worksheet B.5-2	
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 <sup>th</sup> percentile 24-hour rainfall depth		inches
4	Design capture volume [Line 1 x Line 2 x (Line 3/12)]		cu. ft.
<b>Volume Retention Requirement</b>			
5	<p>Measured infiltration rate in the DMA</p> <p>Note:</p> <p>When mapped hydrologic soil groups are used enter 0.10 for NRCS Type D soils and for NRCS Type C soils enter 0.30</p> <p>When in no infiltration condition and the actual measured infiltration rate is unknown enter 0.0 if there are geotechnical and/or groundwater hazards identified in Appendix C or enter 0.05</p>		in/hr.
6	Factor of safety	2	
7	Reliable infiltration rate, for biofiltration BMP sizing [Line 5/ Line 6]		in/hr.
8	<p>Average annual volume reduction target (Figure B.5-2)</p> <p>When Line 7 &gt; 0.01 in/hr. = Minimum (40, 166.9 x Line 7 +6.62)</p> <p>When Line 7 ≤ 0.01 in/hr. = 3.5%</p>		%
9	<p>Fraction of DCV to be retained (Figure B.5-3)</p> <p>When Line 8 &gt; 8% = 0.0000013 x Line 8<sup>3</sup> - 0.000057 x Line 8<sup>2</sup> + 0.0086 x Line 8 - 0.014</p> <p>When Line 8 ≤ 8% = 0.023</p>		
10	Target volume retention [Line 9 x Line 4]		cu. ft.

# PRIORITY DEVELOPMENT PROJECT (PDP) SWQMP

## Worksheet B.5-3: Volume Retention from Biofiltration with Partial Retention BMPs

Volume Retention from Biofiltration with Partial Retention BMPs		Worksheet B.5-3	
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 <sup>th</sup> percentile 24-hour rainfall depth		inches
4	Design capture volume [Line 1 x Line 2 x (Line 3/12)]		cu. ft.
<b>BMP Parameters</b>			
5	Footprint of the BMP		sq. ft.
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	Media retained pore space [50% of (Field Capacity-Wilting Point)]	0.05	in/in
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	Porosity of aggregate storage	0.4	in/in
10	Measured infiltration rate in the DMA  Note: When mapped hydrologic soil groups are used enter 0.10 for NRCS Type D soils and for NRCS Type C soils enter 0.30		in/hr.
11	Factor of safety	2	
12	Reliable infiltration rate, for biofiltration BMP sizing [Line 10/ Line 11]		in/hr.
<b>Evapotranspiration: Average Annual Volume Retention</b>			
13	Effective evapotranspiration depth [Line 6 x Line 7]		inches
14	Retained pore volume [(Line 13 x Line 5)/12]		cu. ft.
15	Fraction of DCV retained in pore spaces [Line 14/Line 4]		
16	Evapotranspiration average annual capture [use ET Nomographs in Figure B.5-5, Refer to Appendix B.5.4]		%
<b>Infiltration: Average Annual Volume Retention</b>			
17	Drawdown for infiltration storage [(Line 8 x Line 9)/Line 12]		hours
18	Equivalent DCV fraction from evapotranspiration (use Line 16 and Line 17 in Figure B.4-1; Refer to Appendix B.4.2.2)		
19	Infiltration volume storage [(Line 5 x Line 8 x Line 9)/12]		cu. ft.
20	Infiltration storage: Fraction of DCV [Line 19 /Line 4]		
21	Total Equivalent Fraction of DCV [Line 18 + Line 20]		
22	Biofiltration BMP average annual capture [use Line 21 and 17 in Figure B.4-1]		%
23	Fraction of DCV retained (Figure B.5-3) $0.0000013 \times \text{Line } 22^3 - 0.000057 \times \text{Line } 22^2 + 0.0086 \times \text{Line } 22 - 0.014$		
24	Volume retention achieved by biofiltration BMP [Line 23 x Line 4]		cu. ft.

# PRIORITY DEVELOPMENT PROJECT (PDP) SWQMP

## Worksheet B.5-4: Calculation of Alternative Minimum Footprint Sizing Factor for Non-Standard Biofiltration

Alternative Minimum Footprint Sizing Factor for Non-Standard Biofiltration		Worksheet B.5-4	
1	Area draining to the BMP		sq. ft.
2	Adjusted Runoff Factor for drainage area (Refer to Appendix B.1 and B.2)		
3	Load to Clog (default value when using Appendix E fact sheets is 2.0)		lb/sq. ft.
4	Allowable Period to Accumulate Clogging Load ( $T_L$ ) (default value is 10)		years
Volume Weighted EMC Calculation			
Land Use	Fraction of Total DCV	TSS EMC (mg/L)	Product
Single Family Residential		123	
Commercial		128	
Industrial		125	
Education (Municipal)		132	
Transportation		78	
Multi-family Residential		40	
Roof Runoff		14	
Low Traffic Areas		50	
Open Space		216	
Other, specify:			
Other, specify:			
Other, specify:			
5	Volume Weighted EMC (sum of all products)		mg/L
Sizing Factor for Clogging			
6	Adjustment for pretreatment measures Where: Line 6 = 0 if no pretreatment; Line 6 = 0.25 when pretreatment is included; Line 6 = 0.5 if the pretreatment has an active Washington State TAPE approval rating for "pre-treatment."		
7	Average Annual Precipitation [Provide documentation of the data source in the discussion box; SanGIS has a GIS layer for average annual precipitation]		inches
8	Calculate the Average Annual Runoff (Line 7/12) x Line 1 x Line 2		cu-ft/yr
9	Calculate the Average Annual TSS Load (Line 8 x 62.4 x Line 5 x (1 - Line 6))/10 <sup>6</sup>		lb/yr
10	Calculate the BMP Footprint Needed (Line 9 x Line 4)/Line 3		sq. ft.
11	Calculate the Minimum Footprint Sizing Factor for Clogging [ Line 10/ (Line 1 x Line 2)]		
Discussion:			

# PRIORITY DEVELOPMENT PROJECT (PDP) SWQMP

## Worksheet B.5-5: Optimized Biofiltration BMP Footprint when Downstream of a Storage Unit

Optimized Biofiltration BMP Footprint when Downstream of a Storage Unit		Worksheet B.5-5	
1	Area draining to the storage unit and biofiltration BMP		sq. ft.
2	Adjusted runoff factor for drainage area (Refer to Appendix B.1 and B.2)		
3	Effective impervious area draining to the storage unit and biofiltration BMP [Line 1 x Line 2]		sq. ft.
4	Remaining DCV after implementing retention BMPs		cu. ft.
5	Design infiltration rate (measured infiltration rate / 2)		ft./hr.
6	Media Thickness [1.5 feet minimum], also add mulch layer and washed ASTM 33 fine aggregate sand thickness to this line for sizing calculations		ft.
7	Media filtration rate to be used for sizing (0.42 ft/hr. with no outlet control; if the filtration rate is controlled by the outlet use the outlet controlled rate)		ft./hr.
8	Media retained pore space	0.05	in./in.
<b>Storage Unit Requirement</b>			
9	Drawdown time of the storage unit, minimum (from the elevation that bypasses the biofiltration BMP, overflow elevation)		hours
10	Storage required to achieve greater than 92 percent capture (see Table B.5-5)		fraction
11	Storage required in cubic feet (Line 4 x Line 10)		cu. ft.
12	Storage provided in the design, minimum (from the elevation that bypasses the biofiltration BMP, overflow elevation)		cu. ft.
13	Is Line 12 $\geq$ Line 11. If no increase storage provided until this criteria is met	<input type="checkbox"/> Yes <input type="checkbox"/> No	
<b>Criteria 1: BMP Footprint Biofiltration Capacity</b>			
14	Peak flow from the storage unit to the biofiltration BMP (using the elevation used to evaluate the percent capture)		cfs
15	Required biofiltration footprint [(3,600 x Line 14)/Line 7]		sq. ft.
<b>Criteria 2: Alternative Minimum Sizing Factor (Clogging)</b>			
16	Alternative Minimum Footprint Sizing Factor [Line 11 of Worksheet B.5-4]		Fraction
17	Required biofiltration footprint [Line 3 x Line 16]		sq. ft.
<b>Criteria 3: Retention requirement [Not applicable for No Infiltration Condition]</b>			
18	Retention Target (Line 10 in Worksheet B.5-2)		cu. ft.
19	Average discharge rate from the storage unit to the biofiltration BMP		cfs
20	Depth retained in the optimized biofiltration BMP {Line 6 x Line 8} + {(Line 4)/(2400 x Line 19)} x Line 5}		ft.
21	Required optimized biofiltration footprint (Line 18/Line 20)		sq. ft.
<b>Optimized Biofiltration Footprint</b>			
22	Optimized biofiltration footprint, maximum (Line 15, Line 17, Line 21)		sq. ft.

# PRIORITY DEVELOPMENT PROJECT (PDP) SWQMP

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

Volume Retention for No Infiltration Condition				Worksheet B.5-6		
1	Area draining to the biofiltration BMP					sq. ft.
2	Adjusted runoff factor for drainage area (Refer to Appendix B.1 and B.2)					
3	Effective impervious area draining to the BMP [Line 1 x Line 2]					sq. ft.
4	Required area for Evapotranspiration [Line 3 x 0.03]					sq. ft.
5	Biofiltration BMP Footprint					sq. ft.
<b>Landscape Area (must be identified on DS-3247)</b>						
	<b>Identification</b>	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>
6	Landscape area that meet the requirements in SD-B and SD-F Fact Sheet (sq. ft.)					
7	Impervious area draining to the landscape area (sq. ft.)					
8	Impervious to Pervious Area ratio [Line 7/Line 6]					
9	Effective Credit Area If Line 8 >1.5, use Line 6; if not use Line 7/1.5					
10	Sum of Landscape area [sum of Lines 9A-9E]					sq. ft.
11	Provided footprint for evapotranspiration [Line 5 + Line 10]					sq. ft.
<b>Volume Retention Performance Standard</b>						
12	Is Line 11 $\geq$ Line 4? If yes, then volume retention performance standard for no infiltration condition is met. If no, proceed to Line 13				<input type="checkbox"/> Yes <input type="checkbox"/> No	
13	Fraction of the performance standard met through the BMP footprint and/or landscaping [Line 11/Line 4]					
14	Target Volume Retention [Line 10 from Worksheet B.5.2]					cu. ft.
15	Volume retention required from other site design BMPs [(1-Line 13) x Line 14]					cu. ft.
<b>Site Design BMP</b>						
	<b>Identification</b>	<b>Site Design Type</b>			<b>Credit</b>	
16	<b>A</b>					cu. ft.
	<b>B</b>					cu. ft.
	<b>C</b>					cu. ft.
	<b>D</b>					cu. ft.
	<b>E</b>					cu. ft.
	Sum of volume retention benefits from other site design BMPs (e.g. trees; rain barrels etc.). [sum of Lines 16A-16E] Provide documentation of how the site design credit is calculated in the PDP SWQMP.					cu. ft.
17	Is Line 16 $\geq$ Line 15? If yes, then volume retention performance standard for no infiltration condition is met. If no, implement additional site design BMPs.				<input type="checkbox"/> Yes <input type="checkbox"/> No	



# PRIORITY DEVELOPMENT PROJECT (PDP) SWQMP

## Worksheet B.5-7: Volume Retention from Amended Soils

Volume Retention From Amended Soils		Worksheet B.5-7	
1	Impervious area draining to the pervious area		sq. ft.
2	Pervious area (must meet the requirements in SD-B and SD-F Fact Sheets)		sq. ft.
3	Dispersion Ratio [Line 1/Line 2] Note: This worksheet is not applicable when Line 3 > 50 or Line 3 < 0.25		
4	Adjusted runoff factor $[(\text{Line } 1 * 0.9 + \text{Line } 2 * 0.1) / (\text{Line } 1 + \text{Line } 2)]$		
5	85 <sup>th</sup> percentile 24-hour rainfall depth		inches
6	Design capture volume $[(\text{Line } 1 + \text{Line } 2) * \text{Line } 4 * (\text{Line } 5/12)]$		cu. ft.
7	Amendment Depth (Choose from 3", 6", 9", 12", 15" and 18")		inches
8	Storage $[(\text{porosity} - \text{field capacity}) + 0.5 * (\text{field capacity} - \text{wilting point})]$	0.25	in./in.
9	Pervious Storage $[\text{Line } 2 * (\text{Line } 7/12) * \text{Line } 8]$		cu. ft.
10	Fraction of DCV $[\text{Line } 9 / \text{Line } 6]$		
11	Measured Infiltration Rate  When mapped hydrologic soil groups are used enter 0.10 for NRCS Type D soils and for NRCS Type C soils enter 0.30  When in no infiltration condition and the actual measured infiltration rate is unknown enter 0.0 if there are geotechnical and/or groundwater hazards identified in Appendix C or enter 0.05		in/hr.
12	Factor of Safety	2	
13	Reliable Infiltration Rate $[\text{Line } 11/\text{Line } 12]$		in/hr.
14	Dispersion Credit (Based on Figures B.5.6 to B.5.11; Line 10 and Line 13)		
15	Volume retention due to amendment $[\text{Line } 1 * (\text{Line } 5/12) * \text{Line } 14]$		cu. ft.

# 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-feet
2	DCV retained	$DCV_{retained}$		cubic-feet
3	DCV biofiltered	$DCV_{biofiltered}$		cubic-feet
4	DCV requiring flow-thru (Line 1 – Line 2 – 0.67*Line 3)	$DCV_{flow-thru}$		cubic-feet
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	<b>For Proprietary Biofiltration Only:</b> $Q_{Bio}=1.5 \times Q$	$Q_{Bio}$ =		cfs

# 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><b>Section 1: Biofiltration Criteria Checklist (Appendix F)</b></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><b>Criteria 1 and 3:</b></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"> <li>Infiltration Feasibility Condition Letter; or</li> <li>Worksheet C.4-1: Form I-8A and Worksheet C.4-2: Form I-8B.</li> </ul> <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><b>Stop.</b> 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 <b>proceed to Criteria 2.</b></p> <p>If the required volume reduction is not achieved, compact biofiltration BMP is not allowed. <b>Stop.</b></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 <b>proceed to Criteria 2.</b></p> <p>If the criteria in Table B.5-1 is not met, compact biofiltration BMP is not allowed. <b>Stop.</b></p>

# PRIORITY DEVELOPMENT PROJECT (PDP) SWQMP

Compact (high rate) Biofiltration BMP Checklist		Form I-10
<b>Provide basis for Criteria 1 and 3:</b>		
<b>Feasibility Analysis:</b>		
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.		
<b>If Partial Infiltration Condition:</b>		
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.		
<b>If No Infiltration Condition:</b>		
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
<b>Criteria 2:</b> 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 <b>Appendix F.2.2</b> 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.) <b>Proceed to Criteria 4.</b>
	<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. <b>Proceed to Criteria 4.</b>
	<input type="checkbox"/> Does not Meet either	<b>Stop.</b> Compact biofiltration BMP is not allowed.

# PRIORITY DEVELOPMENT PROJECT (PDP) SWQMP

Compact (high rate) Biofiltration BMP Checklist		Form I-10
<p><b>Provide basis for Criteria 2:</b> 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><b>Criteria 4:</b> 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. <b>Proceed to Criteria 5.</b></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. <b>Proceed to Criteria 5.</b></p>
	<input type="checkbox"/> No	<p><b>Stop.</b> Compact biofiltration BMP is not allowed.</p>
<p><b>Provide basis for Criteria 4:</b> 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
<b>Criteria 5:</b> 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. <b>Proceed to Criteria 6.</b>
	<input type="checkbox"/> No	<b>Stop.</b> Compact biofiltration BMP is not allowed.
<b>Provide basis for Criteria 5:</b>  Provide documentation that appropriate biological activity is supported by the compact biofiltration BMP to maintain treatment process.		
Criteria	Answer	Progression
<b>Criteria 6:</b> 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. <b>Proceed to Criteria 7.</b>
	<input type="checkbox"/> No	<b>Stop.</b> Compact biofiltration BMP is not allowed.
<b>Provide basis for Criteria 6:</b>  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><b>Criteria 7:</b> 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><b>Stop.</b> 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><b>Stop.</b> Consult the City Engineer for a determination.</p>
	<input type="checkbox"/> No	<p><b>Stop.</b> Compact biofiltration BMP is not allowed.</p>
<p><b>Provide basis for Criteria 7:</b></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 Conditions<sup>2</sup>

Categorization of Infiltration Feasibility Condition based on Geotechnical Conditions		Worksheet C.4-1: Form I-8A <sup>3</sup>
<b>Part 1 - Full Infiltration Feasibility Screening Criteria</b>		
<b>DMA(s) Being Analyzed:</b>		<b>Project Phase:</b>
<b>Criteria 1: Infiltration Rate Screening</b>		
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 data<sup>4</sup>?</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><b>Infiltration Testing Method.</b> 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>	

<sup>2</sup> 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.

<sup>3</sup> 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.

<sup>4</sup> 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 <sup>3</sup>
1E	<p><b>Number of Percolation/Infiltration Tests.</b> 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><b>Factor of Safety.</b> 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><b>Full Infiltration Feasibility.</b> 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 <sup>3</sup>	
<b>Criteria 2: Geologic/Geotechnical Screening</b>			
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><b>Hydroconsolidation.</b> 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><b>Expansive Soils.</b> 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 <sup>3</sup>	
2B-3	<p><b>Liquefaction.</b> 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><b>Slope Stability.</b> 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><b>Other Geotechnical Hazards.</b> 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><b>Setbacks.</b> 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 <sup>3</sup>	
2C	<p><b>Mitigation Measures.</b> 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 <sup>5</sup>		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	

<sup>5</sup> 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 <sup>3</sup>
<b>Part 2 – Partial vs. No Infiltration Feasibility Screening Criteria</b>		
<b>DMA(s) Being Analyzed:</b>		<b>Project Phase:</b>
<b>Criteria 3: Infiltration Rate Screening</b>		
3A	<p><b>NRCS Type C, D, or “urban/unclassified”:</b> 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><b>Infiltration Testing Result:</b> 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 <sup>3</sup>	
<b>Criteria 4: Geologic/Geotechnical Screening</b>			
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><b>Hydroconsolidation.</b> 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><b>Expansive Soils.</b> 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><b>Liquefaction.</b> 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 <sup>3</sup>	
4B-4	<p><b>Slope Stability.</b> 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><b>Other Geotechnical Hazards.</b> 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><b>Setbacks.</b> 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><b>Mitigation Measures.</b> 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

<b>Categorization of Infiltration Feasibility Condition based on Geotechnical Conditions</b>	<b>Worksheet C.4-1: Form I-8A<sup>3</sup></b>
Summarize findings and basis; provide references to related reports or exhibits	
Empty space for summarizing findings	
<b>Part 2 – Partial Infiltration Geotechnical Screening Result<sup>6</sup></b>	<b>Result</b>
<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>

<sup>6</sup> 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 Conditions<sup>7</sup>

Categorization of Infiltration Feasibility Condition based on Groundwater and Water Balance Conditions		Worksheet C.4-2: Form I-8B <sup>8</sup>
<b>Part 1 - Full Infiltration Feasibility Screening Criteria</b>		
<b>DMA(s) Being Analyzed:</b>		<b>Project Phase:</b>
<b>Criteria 1: Groundwater Screening</b>		
1A	<p><b>Groundwater Depth.</b> 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><b>Contaminated Soil/Groundwater.</b> Are proposed full infiltration BMPs at least 250 feet away from contaminated soil or groundwater sites? This can be confirmed using GeoTracker (<a href="http://geotracker.waterboards.ca.gov">geotracker.waterboards.ca.gov</a>) 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>	

<sup>7</sup> 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.

<sup>8</sup> 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 <sup>8</sup>
1C	<p><b>Inadequate Soil Treatment Capacity.</b> Are full infiltration BMPs proposed in DMA soils that have adequate soil treatment capacity?</p> <p>The DMA has adequate soil treatment capacity if <b>ALL</b> 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"> <li>• 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</li> <li>• Cation Exchange Capacity (CEC) greater than 5 milliequivalents/100g; and</li> <li>• Soil organic matter is greater than 1%; and</li> <li>• Groundwater table is equal to or greater than 10 feet beneath the base of the full infiltration BMP.</li> </ul> <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><b>Other Groundwater Contamination Hazards.</b> 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 <sup>8</sup>
<b>Criteria 2: Water Balance Screening</b>		
2A	<p><b>Ephemeral Stream Setback.</b> Does the proposed full infiltration BMP meet both the following?</p> <ul style="list-style-type: none"> <li>The full infiltration BMP is located at least 250 feet away from an ephemeral stream; <b>AND</b></li> <li>The bottom surface of the full infiltration BMP is at a depth 20 feet or greater from seasonally high groundwater tables.</li> </ul> <p><input type="checkbox"/> Yes; Answer “Yes” to Criteria 2 Result.</p> <p><input type="checkbox"/> No; Continue to Step 2B.</p>	
2B	<p><b>Mitigation Measures.</b> 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><b>Additional studies.</b> 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 <sup>8</sup>
<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 <sup>9</sup>	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>

<sup>9</sup> 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 <sup>8</sup>
<b>Part 2 – Partial vs. No Infiltration Feasibility Screening Criteria</b>	
<b>DMA(s) Being Analyzed:</b>	<b>Project Phase:</b>
<b>Criteria 3: Groundwater Screening</b>	
<p><b>Contaminated Soil/Groundwater.</b> Are partial infiltration BMPs proposed at least 100 feet away from contaminated soil or groundwater sites? This can be confirmed using GeoTracker (<a href="http://geotracker.waterboards.ca.gov">geotracker.waterboards.ca.gov</a>) 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 <sup>8</sup>
<b>Criteria 4: Water Balance Screening</b>	
<p><b>Additional studies.</b> 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 <sup>10</sup>	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>

<sup>10</sup> 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 x 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

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Factor of Safety and Design Infiltration Rate Worksheet		Form I-9
<b>The Geotechnical Engineer certifies they completed Form I-9 (see Appendix C.4.3).</b>		
Professional Geotechnical Engineer's Printed Name:	<div style="border: 1px solid black; width: 100%; height: 100%; text-align: center; vertical-align: middle;">[SEAL]</div>	
Professional Geotechnical Engineer's Signed Name:		
Date: _____		

# PRIORITY DEVELOPMENT PROJECT (PDP) SWQMP

## ATTACHMENT 2

### BACKUP FOR PDP HYDROMODIFICATION CONTROL MEASURES

This is the cover sheet for Attachment 2.

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

**Indicate which Items are Included behind this cover sheet:**

Attachment Sequence	Contents	Checklist
Attachment 2a	Flow Control Facility Design, including Structural BMP Drawdown Calculations and Overflow Design Summary (Required) See Chapter 6 and Appendix G of the Storm Water Design Manual	<input type="checkbox"/> Included <input type="checkbox"/> Submitted as separate stand-alone document
Attachment 2b	Hydromodification Management Exhibit (Required)	<input type="checkbox"/> Included  See Hydromodification Management Exhibit Checklist on the back of this Attachment cover sheet.
Attachment 2c	Management of Critical Coarse Sediment Yield Areas  See Section 6.2 and Appendix H of the Storm Water Design Manual.	<input type="checkbox"/> Exhibit depicting onsite and/or upstream sources of critical coarse sediment as mapped in the WMAA AND, <input type="checkbox"/> Demonstration that the project effectively avoids and bypasses sources of mapped critical coarse sediment OR, <input type="checkbox"/> Demonstration that the downstream system is not sensitive to preservation of Coarse Sediment Supply (Form I-11). <input type="checkbox"/> Demonstration that project does not generate a net impact on the receiving water.
Attachment 2d	Geomorphic Assessment of Receiving Channels (Optional) See Section 6.3.4 of the Storm Water Design Manual.	<input type="checkbox"/> Not performed <input type="checkbox"/> Included <input type="checkbox"/> Submitted as separate stand-alone document
Attachment 2e	Vector Control Plan (Required when structural BMPs will not drain in 96 hours)	<input type="checkbox"/> Included <input type="checkbox"/> Not required because BMPs will drain in less than 96 hours

# **PRIORITY DEVELOPMENT PROJECT (PDP) SWQMP**

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

The Hydromodification Management Exhibit must identify:

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

# PRIORITY DEVELOPMENT PROJECT (PDP) SWQMP

Downstream Systems Requirements for Preservation of Coarse Sediment Supply		Form I-11	
When it has been determined that potential critical coarse sediment yield areas exist within the project site, the next step is to determine whether downstream systems would be sensitive to reduction of coarse sediment yield from the project site. Use this form to document the evaluation of downstream systems requirements for preservation of coarse sediment supply.			
Project Name:			
Project Tracking Number / Permit Application Number:			
1	Will the project discharge runoff to a hardened MS4 system (pipe or lined channel) or an un-lined channel?	<input type="checkbox"/> Hardened MS4 system	Go to 2
		<input type="checkbox"/> Un-lined channel	Go to 4
2	Will the hardened MS4 system convey sediment (e.g., a concrete-lined channel with steep slope and cleansing velocity) or sink sediment (e.g., flat slopes, constrictions, treatment BMPs, or ponds with restricted outlets within the system will trap sediment and not allow conveyance of coarse sediment from the project site to an un-lined system).	<input type="checkbox"/> Convey	Go to 3
		<input type="checkbox"/> Sink	Go to 7
3	What kind of receiving water will the hardened MS4 system convey the sediment to?	<input type="checkbox"/> Un-lined channel	Go to 4
		<input type="checkbox"/> Lake	Go to 7
		<input type="checkbox"/> Reservoir <input type="checkbox"/> Bay	Go to 6
4	Is the un-lined channel impacted by deposition of sediment? This condition must be documented by the local agency.	<input type="checkbox"/> Yes	Go to 7
		<input type="checkbox"/> No	Go to 5
5	End – Preserve coarse sediment supply to protect un-lined channels from accelerated erosion due to reduction of coarse sediment yield from the project site unless further investigation determines the sediment is not critical to the receiving stream. Sediment that is critical to receiving streams is the sediment that is a significant source of bed material to the receiving stream (bed sediment supply) (see Section 6.2.3 and Appendix H.2 of the manual).		
6	End – Provide management measures for preservation of coarse sediment supply (protect beach sand supply).		
7	End – Downstream system does not warrant preservation of coarse sediment supply, no measures for protection of critical coarse sediment yield areas onsite are necessary. Use the space below to describe the basis for this finding for the project.		

# PRIORITY DEVELOPMENT PROJECT (PDP) SWQMP

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## 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

# PRIORITY DEVELOPMENT PROJECT (PDP) SWQMP

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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).

# 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	
<b>Project Summary Information</b>	
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.	
<b>Responsible Party for Construction Phase</b>	
Developer's Name	
Address	
Email Address	
Phone Number	
Engineer of Work	
Engineer's Phone Number	
<b>Responsible Party for Ongoing Maintenance</b>	
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]
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# PRIORITY DEVELOPMENT PROJECT (PDP) SWQMP

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## 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.**