# **NOTICE AND AGENDA**

# MANAGEMENT COMMITTEE for the MONTEREY REGIONAL STORMWATER MANAGEMENT PROGRAM

DATE: October 25, 2023
TIME: 9:30 a.m.
LOCATION: Monterey One Water Conference Room, 5 Harris Court, Building D, Monterey

### THIS HYBRID MEETING WILL BE HELD BOTH IN-PERSON AND VIRTUALLY

To Join the Zoom Webinar Meeting, click on this

link: https://us02web.zoom.us/j/81166803936?pwd=LzIza29BUDBvRXRuVDRoa3Y3RDNSUT09

or copy and paste the link into your browser. If your computer does not have audio, you will also need to join the meeting via phone. To Participate Telephonically you can call the number below and enter the webinar ID number and password when prompted:

(669) 900-9128

Webinar ID: 811 6680 3936 Password: 445039

PUBLIC COMMENTS: If you are unable to participate via telephone or webinar, you may also submit your comments by e-mailing them to montereysea@my1water.org with one of the following subject lines "PUBLIC COMMENT ITEM #" (insert the item number relevant to your comment) or "PUBLIC COMMENT 0 NON-AGENDA ITEM". Comments must be received by 12:00 p.m. on Tuesday, October 24, 2023. All submitted comments will be provided to the Committee and may be read into the record and will be compiled as part of the record.

Officers:	Chairperson: Vice-Chairperson:	Leon Gomez, Ron Fucci, Cit	City of Sand City y of Del Rey Oaks	
Participating Entities:CityCity of MontereyCityCity of SeasideCou		City of Carmel-by-the-Sea City of Pacific Grove County of Monterey		City of Del Rey Oaks City of Sand City
Other Coordinating Entities: Carmel Unified School District Monterey Peninsula Unified School District			Pacific Grove Unified Pebble Beach Compa	School District
Ex-Officio Members: Association of Monterey Bay Governments		Monterey Bay Nationa	al Marine Sanctuary	

AGENDA ITEMS			Page #
1.	Call to Order / Roll Call		n/a
2.	Public Comments		n/a
3.	Approve Management Committee Meeting Minutes for 9/27/23	(Attach. 1)	3

# **INFORMATION AND DISCUSSION ITEMS**

4. Annual Report Debrief

n/a

# 5. Update on PE/PO Program

	a.	9/28/23 Construction BMP Training Debrief		
		i. Summary of Participants/Attendees	(Attach. 2)	6
		ii. Feedback from members		n/a
	b.	Update on TV Ads		n/a
	c.	First Flush Call for Volunteers		n/a
	d.	Stormwater Awareness Week Social Media Update		n/a
	e.	School Outreach Program (Dee the Whale) and School Bookings		n/a
	f.	Storm Drain Emblem Installation Updates		n/a
	g.	Seaside Fire Station Open House		n/a
6.	Up	date on Post-Construction Requirements		
	a.	PCR Quarterly Training Series Recommendations		n/a
	b.	County of San Luis Obispo's Stormwater Technical Guide Update		
		i. Guidebook and Appendices	(Attach. 3)	11
		ii. SWCP Application	(Attach. 4)	141
		iii. SWCP Template	(Attach. 5)	146
7.	Tra	ash Assessments		
	a.	Status of assessments		n/a
<u>ADMI</u>	NIS <sup>-</sup>	TRATIVE REPORTS		
8.	Ма	anagement Committee Member and Program Manager Reports		n/a
<u>SCHE</u>	DU	LE NEXT MEETING / ADJOURNMENT		
9.	Sc	hedule Next Meeting: The next MRSWMP Meeting date is tentatively		
	sc	heduled for Wednesday, November 29, 2023, at 9:30a.m.		n/a
10	). <b>M</b> e	eeting Adjournment		n/a

# 10. Meeting Adjournment

# Monterey Regional Stormwater Management Program

# **Management Committee**

# MEETING MINUTES For September 27, 2023

# AGENDA ITEMS

# 1. Call to Order / Roll-Call

Chairperson Gomez (City of Sand City) called the meeting to order at 9:32 a.m. and performed roll call.

# Management Committee (MC) Members:

City of Carmel – Mary Bilse City of Del Rey Oaks – Ron Fucci City of Monterey – Tricia Wotan City of Pacific Grove – George Fuerst City of Sand City – Leon Gomez City of Seaside –Patrick Grogan County of Monterey – Michael Trapani

# Other:

Lindsay Brown – Monterey Bay Sanctuary Foundation Jessica Juico – City of Carmel Maris Sidenstecker – PE/PO Coordinator Paul Sciuto – Monterey One Water Rachel Gaudoin – Monterey One Water

# **Other Virtual:**

Bridget Cooper – Monterey Bay Sanctuary

None

# 2. Public Comment

**MRSWMP Staff:** 

Bridget Cooper asked for Ms. Lindsay Brown to provide an update on First Flush and the dry run and training that was held recently.

Brown shared that for First Flush a dry run was held two weeks ago, and that training was held for four dedicated volunteers. This Thursday, virtual training will take place and are looking for more volunteers. Sidenstecker mentioned that an ad will be published in the Weekly to drive more volunteers.

# CONSENT AGENDA

# 3. Approve Management Committee Meeting Minutes for 7/19/23

<u>Action</u>: On a motion by Trapani (County of Monterey), seconded by Wotan (City of Monterey), Management Committee approved the Management Committee Meeting Minutes for 7/19/23

# **DISCUSSION ITEMS**

4. Update on CASQA Conference – Sept. 11-13

Juico provided an update on her attendance of the CASQA Conference and shared it was great exposure to learn what other organizations are doing. She mentioned that CASQA will have the lectures available and is happy to share those links when they become available.

# 5. Update on Annual Report Process

a. Timeline for Submittal of Annual Report

Chair Gomez provided members with an update on the annual report and referenced Attachment 2. Gaudoin provided an update on the SMART database and shared that she will be providing last year's information to ensure members can answer the questions which are similar from year-to-year. She explained that instead of the information being offered on a thumb drive a OneDrive link will be provided, and that the information has been separated out into year 9 spreadsheet as a reference with the updated year 10 documents she was able to pull together.

b. SMARTS & Legally Responsible Person (LRP) Updates Chair Gomez reminded members to register with SMARTS and to determine who the Legally Responsible Person is that will ultimately certify the report. He also reminded members that the report is due on Monday, October 16, 2023.

# 6. Update on PE/PO Activities

- a. Dog Doo Contest Social Media Campaign Sidenstecker provided an update regarding the MRSWMP Dog Doo Contest Social Media Campaign. She shared that it went really well and encouraged members to look at the dog eating contest.
- b. Social Media Strategy Calendar Sidenstecker reported that this week she is doing Stormwater Awareness week and that Gaudoin emailed out everything last week (Action Item – Members).
- **c.** Storm Drain Emblem Installation Sidenstecker asked if anyone needs an area done, to please let her know.
- d. Stormwater Awareness Week Activities
  - a. Construction BMP Training Sept. 28 Chair Gomez reminded the Committee that tomorrow is the Construction BMP training in Seaside at the Oldemeyer Center from noon to 1:00 PM with lunch being provided and that it is a requirement that 80% of the building inspectors for each entity take this training each year. Gaudoin reported that 32 attendees are scheduled to attend in person and 45 attendees online. Chair Gomez thanked Monterey One Water for their work coordinating this training.
  - **b.** Stormwater Awareness Week Proclamation

# ADMINISTRATIVE REPORTS

7. Management Committee Member and Program Manager Reports

a. <u>County of Monterey</u> – Trapani shared that the county completed its NFIP CRS recertification process and is waiting to hear back, and that they had a productive meeting with the Regional Board related to a new TMDL for the Gabilan Creek watershed for turbidity.

# PUBLIC COMMENTS ON CLOSED SESSION

None

# **RECESS TO CLOSED SESSION**

8. Public Employee Performance Evaluation (Gov. Code Section 54957(b)(1).) Title Program Manager

# ANNOUNCEMENTS FROM CLOSED SESSION

# 9. Announcements from Closed Session

Chair Gomez announced that the Management Committee for the Monterey Regional Stormwater Management Program received information and no reportable action was taken.

# SCHEDULE NEXT MEETING / ADJOURNMENT

# **10. Schedule Next Meeting**

The next Management Committee meeting is scheduled for Wednesday, October 25, 2023, at 9:30 am.

# 11. Meeting Adjournment

The meeting was adjourned at 10:08 am.

# Agenda Item #5.a.i: Attachment 2

# Construction BMP Implementation and Inspection

# HOW TO KEEP YOUR SITE OPERATIONAL RAIN OR SHINE Free Training and Lunch!

Thursday, September 28 NOON to 1 pm

OLDEMEYER CENTER 986 HILBY AVENUE, SEASIDE, CA 93955

Please register by 9/22/23\*

TO REGISTER TO ATTEND IN PERSON WITH LUNCH

CLICK HERE

TO REGISTER TO ATTEND VIRTUALLY:

**CLICK HERE** 

Please join us to review Construction Site Best Management Practices to ensure your job site remains operational and compliant with municipal pollution prevention requirements. This FREE training will provide an overview of Implementing and Inspecting Construction BMPs and how to protect water quality at your job site all year long. Lunch provided.

The training will be held in a hybrid format with in-person and virtual options to participate. We would be thrilled to see you in person.

# Who Should Attend

MUNICIPAL INSPECTORS · ENGINEERS SITE DESIGNERS · PROPERTY OWNERS CONTRACTORS • CONSTRUCTION SITE OPERATORS

For questions or suggestions, please contact the Monterey Regional Stormwater Management Program (MRSWMP) montereysea@my1water.org



# **Construction BMP Implementation and Inspection Training**

# **In-Person Registrants**



Name: First and Last	Agency/Firm	Title
Mary Bilse	City of Carmel	Environmental Programs Manager
VJermel Laurie	City of Carmel by the Sea	Building Official
→ Robert Culver	Carmel Public Works	Superintendent
Jaime Aquino	Carmel public work	PW employee
√Javier Hernandez	City of Carmel-by-the-Sea	Project Manager
Samantha Cho	CSG Consultants	Associate Engineer
John Kuehl	City of Pacific Grove and Sand City	Building Official
George Cortez	City of Pacific Grove	Building Inspector
Cleve Waters	City of Carmel by the sea	Facilities Maintenance Supervisor
Leo Hernandez	City of Carmel	Facilities Maintenance Specialist
Jessica Juico	City of Carmel by the Sea	Environmental Programs Technician
Lori Williamson	City of Monterey	Building Official
Bill Moritz	City of Monterey Building and Safety	Inspector
✓George Fuerst	City of Pacific Grove	Environmental Program Manager
Laura Fisher	City of Monterey	Building Technician
Matt Tahja	City of Seaside	Building/Construction Inspector
✓ Kevin Morgan	City of Monterey	Building Inspector
Gabriel Regalado	None	Building Inspector
Jeff Ray	City of Monterey	Senior Public Works Inspector
	Monterey County	Code compliance Inspector
Patrick Grogan	City of Seaside	Associate Engineer
Carolyn Burke	City of Seaside	Assistant Public Works Director
Billy D. Thomas	City of Seaside Public Works/Engineer	ir Junior Engineer
Duane Dauphinee	City of Carmel by the Sea	Building Inspector
Salvador Ambriz	City of Monterey	Public Works Inspector
Lucy Bernal	County of Monterey HCD	Code Enforcement inspector II
Duane Dauphinee	City of Carmel by the Sea	Building Inspector
Jesse Garibay	City of Carmel by the sea	Streets Supervisor
licate Jesse Garibay	- City of Carmel by the sea	Streets Supervisor
Joe Headley	Del Rey oak / Seaside	Building official
Ron Fucci	City of Del Rey Oaks	Public Works
Gilbert Tamayo	City of Carmel	Maintenance
John Hoogend	yk City Monterey	Hocgendykja co. monterey.

V Leon Gomez City Sand City

.45 /

total 27 Participants 3 Oldemeyer and 51 " on Zoom. Total: 78

# SIGN IN SHEET

# 9/28/23 Construction BMP Workshop

# PLEASE PRINT NEATLY

Name Date Phone/ Email Agency CITY OF DEL REY OAKS Ph: 831 - 713 - 0171 EM: - 9-28-23 ROW FUCC! Ph: 331-272-4909 EM: City of Sand City 19.28.23 LEON D. GOMEZ leon.ganezewearehorrisan Ph: 831.901-7127 Carnel Carnel Ph: -9/28/23 Clove ) ( Dipos EM: Chokisacianel caus Ph: 831 \* 877-0915 City of Canmel EM: juice obts.us 1/28/23 Jessica Juico Ph: 646-3987 City of Montacy 1/25/23 Kevin Margan EM: Kinorgan @inorthey.org Ph: 646 3642  $\langle \chi \rangle$ 11 9/28/23 Lori Williamson EM: Williamson @ monterey.00 9/28/23 Laura fisher 9/28 Gabriel Regulado Ph: 646 3891 EM: Ifisher @ Monterey. Ph: 831-247-5711 11 EM; gabriel regalado eme con Ph: 531-261 4098 EM: 19/28 Jour Heranly phernander Et. cannel la.US Ph: 831 760 0460 EM: gfue 12t @ city of pg org PACIFIC GROVE 9/28 GEORGEFUERAT EM: 277 8298 Ph: 9/28 George Corta Ph: EM: Ph: EM: Ph: EM:

11 this page

# SIGN IN SHEET

# 9/28/23 Construction BMP Workshop

#### PLEASE PRINT NEATLY

Phone/ Email Date Name Agency / Ph: 95 Gilbert EM: RW Carnel Jeffer Sea. ancy Ph: P. W Carmelorthuses 9/26 JAIME Aquino EM: AUPPH: Joanp Buiking. Rugh EM: Jolodoni Ph: Head 9/28 See EM: moritze monte 9/28 Bill Moritz Mry Bldg. Div P.G Sund City Ph: 9/28 EM: JKuchl @ GLEafine John Kuchi Com Ph: EM: Rayo Montary Org Gity of Montaray Ph: EM: Griggine Ci Scatide Seaside Patrick Grogen 9/28 Philograme . C.A. us LITY OF SEASIDE Ph: 831-899-6745 9/28 EM: BILLY D. THOMAR BTHOMASQCI, SEASIDE, CALUS P.W. Ph: 831 899 6736 (1 CITY OF SEASING EM: MATT TAHJA Mtakin QCI. Fragile Carug BVILDINK Ph: Samantha Cho 9/28 EM: Samantha. Cho Desgengr. com CSG Consultants Ph: EM: Ph: EM: Ph: EM:

11 this page

# SIGN IN SHEET

# 9/28/23 Construction BMP Workshop

# PLEASE PRINT NEATLY

-9/28 Leo Hanandez Ph: -9/28 Mana Bilse Ph: EM: N/A City of EM: 831 6202010 City of	F Curmel Carmel
- 9/28 Mana Bilse EM: 83/ 6202010 City of	Cormel
	- AAD.AAEI
9/28 FRANEL HUDIE Ph: 931 620 20155 DEM: HAUFIELOICERTINALICALIS CITY O	FCARMICL
-9/28 John Hoppenduk Ph: Hargendukje County of I	Monterey
19/28 Salvader Ampiz Ph: 559-835-5600 EM: ampir prontory or City of	Monterey
Ph: EM:	/ · · · · · · · · · ·
Ph: EM:	

5 this page

Agenda Page 10 of 170

1	How to comment on this document:	
2 3 4	This document is locked for editing and cannot be modified using traditional editing or track changes methods. Comments can be made on specific lines of this document using the 'New	
5	Comment' feature in the Review Tab.	
6	There are two (2) methods for adding a new comment:	
7 8	<ul> <li>Method 1: Click on the line of text where you would like to add a comment, then select 'New Comment' in the Review tab to add a comment.</li> <li>Mailings Review View Help BLUEBEAM Acrobat</li> </ul>	
	ka AZI- K⊐ New Comment kar Next	
	d	
	Previous	
9	Language Comments	
10		
11	<ul> <li>Method 2: Right-click on the line of text where you would like to add a</li> </ul>	_
	comment, and select 'New Comment' from the provided menus.         straid diversity of landscapes preters unque challenge soft construction projects and new development.         straid diversity of landscapes preters.         straid diversity of landscapreserve and diversity of landscapes preters.     <	
13	1	
14 •	When you have finished adding your comments:	
15	<ul> <li>Save the word document with your initials at the end of the file name.</li> </ul>	

- Return the file via email to <u>mattv@wallacegroup.us</u>
- o Comments are due by April 28, 2023
- 18

16

# 19 20 21 County of San Luis Obispo 22 Post-Construction Stormwater Guidebook 23 PRELIMINARY DRAFT

- 24
- 25

# <sup>26</sup> REL April 2023 RAFT



# STORMWATER PROGRAM

# 30 **TABLE OF CONTENTS**

31	1. 1	NTRODUCTION	1
32	Α.	BACKGROUND	1
33	В.	Purpose of this Guidebook	2
34	2.	PROJECT TRIGGERS	7
35	Α.	GEOGRAPHIC AREAS	7
36	в.	Previously vested projects	7
37	с.	PROJECT TRIGGERS AND EXEMPTIONS	8
38	D.	SITE DETERMINATION	10
39	Ε.	IMPERVIOUS SURFACES, SURFACE TYPES	10
40	F.	Performance Requirements Summarized	12
41	3. 9	SUBMITTAL PROCESS OVERVIEW	23
42	Α.	TIMELINE FOR SUBMITTALS AND REQUIRED DOCUMENTS	23
43	4. 9	SITE ASSESSMENT	26
44	Α.	OPPORTUNITIES AND CONSTRAINTS ANALYSIS	26
45	В.	SOIL CLASSIFICATION	27
46	c.	DEPTH TO GROUNDWATER	
47	D.	GEOTECHNICAL CONSTRAINTS	
48	Ε.	HAZARDOUS MATERIALS OR CONTAMINATION	31
49	F.	NATURAL AREAS AND EXISTING VEGETATION	32
50	G.	SPECIAL CONSIDERATIONS	
51	н.	Landscaping Requirements	
52	١.	UTILITY CONFLICTS	
53	J.	SITE DEFINITION AND RUN-ON CONTROL	
54	К.	MINIMIZING THE SIZE OF SCMS	
55	5. 9	STRUCTURAL CONTROL MEASURES	
56	Α.	DRAINAGE MANAGEMENT AREA DELINEATION	
57	в.	STRUCTURAL CONTROL MEASURE TYPES	41
58	C.	PRIORITIZATION OF LOW IMPACT DEVELOPMENT	43
59	D.	STRUCTURAL CONTROL MEASURE SELECTION	46
60	Ε.	BIORETENTION AND BIOFILTRATION	
61	F.	PROPRIETARY UNITS AND SPECIALIZED MATERIALS	52
62	G.	UNDERGROUND INFILTRATION SYSTEMS AND DRY WELLS	53
63	н.	Pervious Pavement Systems	55
64	١.	SEDIMENTATION OF INFILTRATION AND FILTRATION SYSTEMS	57
65	J.	HIGH POLLUTANT RISK SITES	58
66	6.	CALCULATIONS	60
67	Α.	TRIBUTARY DMA CALCULATIONS AND TABULATIONS	60

68	в.	IMPERVIOUS AND PERVIOUS SURFACES	61
69	с.	INFILTRATION AND PERCOLATION RATES	63
70	D.	SCM SIZING CALCULATIONS	64
71	Ε.	SANTA BARBARA TECHNICAL GUIDE CALCULATOR TOOL	66
72	F.	CREDITS FOR REDEVELOPMENT, PR#3	66
73	G.	UNDERGROUND INFILTRATION SYSTEMS	66
74	н.	COUNTY DRAINAGE AND FLOOD CONTROL CALCULATIONS	66
75	7. F	EQUIRED POST-CONSTRUCTION STORMWATER SUBMITTALS	68
76	Α.	STORMWATER CONTROL PLAN APPLICATION (SWCP APP)	
77	B.	STORMWATER CONTROL PLAN. COUNTY TEMPLATE	
78	с. С	DRAINAGE REPORT OR DRAINAGE ANALYSIS	71
79	с. D	OPERATION AND MAINTENANCE AGREEMENT	71
80	8. S	CM CONSTRUCTION AND INSPECTION	
01			74
01	А.		74
82	в.	INSPECTION PROCESS AND FREQUENCY	74 75
83	C.	MATERIALS SPECIFICATIONS AND FIELD SLIPS	
84	D.	DOCUMENTING FIELD CHANGES	
85	E.	ENGINEER'S CERTIFICATION	
86	9. C	OVERVIEW OF OPERATIONS AND MAINTENANCE AGREEMENTS	76
87	А.	ROLES AND RESPONSIBILITIES OPERATIONS & MAINTENANCE ON COMMON PROPERTY	76
88	в.	ROLES AND RESPONSIBILITIES FOR OPERATIONS & MAINTENANCE ON PRIVATE PROPERTY	77
89	с.	ROLES AND RESPONSIBILITIES FOR OPERATIONS & MAINTENANCE ON PUBLIC PROPERTY	77
90	D.	INSPECTIONS AND MAINTENANCE FOLLOWING CONSTRUCTION COMPLETION	78
91	Ε.	COMMON MAINTENANCE FINDINGS	78
92	F.	MECHANISM TO ASSURE CONTINUED OPERATIONS	79
93	G.	TERMINATION OF OPERATIONS AND MAINTENANCE AGREEMENTS	79
QЛ	10		91
95	10.		
96	Τλρις		1
97		2. POST-CONSTRUCTION STORWWATER GUIDEBOOK REVISION AND AMENDMENT LOG	i 6
98		3. I INREGULATED PROJECT CRITERIA	8
99	TABLE	4: SUMMARY OF POST-CONSTRUCTION PERFORMANCE REQUIREMENTS	
100	TABLE	5: Examples of PR#1 site design strategies	15
101	TABLE	6: RUNOFF REDUCTION STRATEGY VOLUME GUIDELINES.	
102	TABLE	7: PR#2 design criteria	16
103	TABLE	8: OPPORTUNITIES AND CONSTRAINTS SUMMARY TABLE.	26
104	TABLE	9: INFILTRATION TESTING METHODS AND APPROPRIATE FACTORS OF SAFETY	29
105	TABLE	10: SITE CONDITIONS SUPPORTING A TECHNICAL INFEASIBILITY FINDING.	33
106	TABLE	11: CORRECTION FACTORS FOR CALCULATING EQUIVALENT IMPERVIOUS SURFACE AREA.	34
107	TABLE	12: Drainage management area sizing guidelines.	40

108	TABLE 13: STORMWATER STRUCTURAL CONTROL MEASURES.	41
109	Table 14: Rainwater harvesting crediting and drawdown.	46
110	TABLE 15: MINIMUM LATERAL SETBACKS FOR SCMS.	47
111	Table 16: Bioswale design criteria	51
112	TABLE 17: GROUNDWATER SETBACKS FOR UNDERGROUND INFILTRATION SYSTEMS	54
113	TABLE 18: ADJUSTED RETENTION TRIBUTARY AREA EXAMPLE.	60
114	TABLE 19: APPROVED C FACTORS FOR CONSTRUCTED SURFACE TYPES	62
115	Table 20: Routing method criteria.	64
116	TABLE 21: COMPONENTS OF PRIVATE OPERATIONS AND MAINTENANCE AGREEMENT	71
117	TABLE 22: COMPONENTS OF CC&Rs FOR STORMWATER FEATURE OPERATION AND MAINTENANCE	73
118		
119	FIGURE 1: COMPARISON OF GREEN AND GRAY STORMWATER MANAGEMENT STRATEGIES	3
120	FIGURE 2: POLICIES DICTATING POST-CONSTRUCTION STORMWATER RUNOFF CONTROL STANDARDS	5
121	FIGURE 3: IMPERVIOUS SURFACE CATEGORIES FOR DETERMINING PROJECT PERFORMANCE REQUIREMENTS	11
122	FIGURE 4: APPLICABLE PERFORMANCE REQUIREMENTS DETERMINATION CHART	13
123	Figure 5: Runoff reduction measures, PR#1	15
124	FIGURE 6: EXAMPLE PROJECT #1, IMPERVIOUS AREA METRICS	20
125	FIGURE 7: EXAMPLE PROJECT #2, NET IMPERVIOUS AREA REDUCTION EXAMPLE	21
126	FIGURE 8: PRELIMINARY SWCP OBJECTIVES	23
127	FIGURE 9: REQUIRED SUBMITTALS WITH FINAL STORMWATER CONTROL PLANS	25
128	FIGURE 10: PROTECTION OF SENSITIVE BIOLOGICAL RESOURCES CAN BE INTEGRATED AS COMPLIANCE WITH PR#1	32
129	FIGURE 11: RECESSED VEGETATED MEDIAN WITH VALLEY DRAIN AND CURB CUT TO ACCEPT STORMWATER	36
130	FIGURE 12: UTILITY INFRASTRUCTURE IN A BIORETENTION FEATURE AND OBSTRUCTING A STORMWATER SWALE	37
131	FIGURE 13 DOWNSPOUT DIRECTED TO SITE LANDSCAPING.	38
132	FIGURE 14: LOW IMPACT DEVELOPMENT PRIORITIZATION FRAMEWORK.	43
133	FIGURE 15: BIORETENTION/BIOFILTRATION FEATURE COMMON CONSTRUCTION CHARACTERISTICS	49
134	FIGURE 16: BIORETENTION/BIOFILTRATION PLANTING ZONES.	50
135	FIGURE 17: RATIOS OF RUN-ON DRAINAGE TO PERVIOUS PAVEMENT SYSTEMS	56
136	FIGURE 18: TRANSITION FROM PERVIOUS INTERLOCKING PAVERS TO TRADITIONAL PAVERS IN ADA PATH OF TRAVE	EL57
137	FIGURE 19: SIMPLIFIED SIZING METHOD FOR BIORETENTION FACILITIES.	66
138	EQUATION 1: TOTAL NEW AND REPLACED IMPERVIOUS AREA	11
139	Equation 2: Net impervious area	12
140	Equation 3: Retention tributary area.	60
141	Equation 4: Impervious ratio (i) to Runoff coefficient 'C' equation	61
142	EQUATION 5: RETENTION VOLUME CALCULATION	61
143	EQUATION 6: MULTI-SURFACE RUNOFF COEFFICIENT CALCULATION	62
144	Equation 7: Porchet Method	63
145	EQUATION 8: BIORETENTION FACILITY SURFACE AREA CALCULATION.	65
146		

148
-----

APN	Assessor's Parcel Number
ADU	Accessory Dwelling Unit
ВМР	Best Management Practice
BSM	Biofiltration Soil Media
CCM Case	Condition Compliance Monitoring Permit Case
CCRs	Covenants, Conditions, and Restrictions
Central Coast Water Board	Central Coast Regional Water Quality Control Board
СОА	Conditions of Approval
CSD	Community Services District
DMA	Drainage Management Area
EISA	Equivalent Impervious Surface Area
EPA	Environmental Protection Agency
НОА	Homeowner's Association
HSG	Hydrologic Soils Group
JADU	Junior Accessory Dwelling Unit
LID	Low Impact Development
MS4	Municipal Separate Storm Sewer System, as defined in the Clean Water Act
MS4 Area	Areas regulated by the MS4 Phase II Permit.
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service (US Department of Agriculture)
0&M	Operations and Maintenance
PCRs	Regional Post-Construction Requirements, current version adopted by the Central Coast Water Board in July 2013.
PR	Performance Requirements, as detailed in the Regional Post-Construction Requirements.
SCM	Structural Control Measure
sf	Square feet
SFD	Single Family Dwelling
USA	Urban Sustainability Area

Term Definition	
Best Management Practice (BMP)	A program, technology, process, citing criteria, operational method, or engineered system which when implemented prevents, controls, removes, or reduces stormwater pollution. <i>Source: Sonoma County Stormwater LID Technical Design Manual, 2020</i>
Bioretention	A Stormwater Control Measure designed to retain stormwater runoff using vegetated depressions and soils engineered to collect, store, treat, and infiltrate runoff. Bioretention designs do not include underdrains. <i>Source: Central Coast Resolution R3-2013-0032, Post-Construction Requirements</i>
Biotreatment or Biofiltration	A Stormwater Control Measure designed to detain stormwater runoff, filter stormwater through soil media and plant roots, and release the treated stormwater runoff to the storm drain system. Biotreatment systems include an underdrain. <i>Source: Central Coast Resolution R3-2013-0032, Post-Construction Requirements</i>
Biofiltration Soil Media	Blended soil media intended to filter stormwater and support plant growth while minimizing the leaching of potential pollutants. Biofiltration Soil Media is also referred to as Engineered Soil Media and Bioretention Soil Media. <i>Source: County of San Diego County BMP Design Manual, 2020</i>
C-Factor	Representation of a surface's ability to produce runoff. Surfaces that produce higher quantities of runoff are represented by higher C-Factors (such as impervious surfaces.) <i>Source: Sonoma County Stormwater LID Technical Design Manual, 2020</i>
Conditions of Approval	Requirements a jurisdiction may adopt for a project in connection with a discretionary action (e.g., issuance of a use permit). COAs may include features to be incorporated into the final plans for the project and may also specify uses, activities, and operational measures that must be observed over the life of the project. <i>Source: County of San Diego County BMP Design Manual, 2020</i>
Detention	Temporarily holding or storing storm water runoff via a designed outlet (e.g., underdrain, orifice) to provide flow rate and duration control. <i>Source: County of San Diego County BMP Design Manual, 2020</i>
Direct Infiltration	Infiltration via methods or devices designed to bypass surface soils and transmit runoff directly to subsurface soils. Examples of direct infiltration include infiltration trenches, underground chambers, and dry wells. <i>Source: County of San Diego County BMP Design Manual, 2020. City of Gilroy, City of</i> <i>Morgan Hill, County of Santa Clara. Stormwater Management Guidance Manual for Low</i> <i>Impact Development &amp; Post-Construction Requirements. June 2015.</i>

Term	Definition	
Hydraulic Residence Time	The length of time between inflow and outflow that runoff remains in a SCM Source: County of San Diego County BMP Design Manual, 2020	
Impervious Surface	A hard, non-vegetated surface area that prevents or significantly limits the entry of water into the soil mantle, as would occur under natural condition prior to development. Common impervious surfaces include, but are n limited to, roof tops, walkways, patios, driveways, parking lots or storage areas, concrete or asphalt paving, oiled, or other surfaces which similar impede the natural infiltration of stormwater. Open, uncovered retention/detention facilities shall not be considered as impervious surface for purposes of determining whether the thresholds for application Performance Requirements are exceeded. However, for modelin purposes, open, uncovered facilities that retain/detain water (e.g., retention ponds, pools) shall be considered impervious surfaces. <i>Source: Central Coast Resolution R3-2013-0032, Post-Construction Requirements</i>	
Indirect Infiltration	Infiltration via facilities designed to hold runoff and allow it to percolate into surface soils. Runoff may reach groundwater indirectly or may be drained through subsurface pipes. Examples of indirect infiltration include bioretention, landscaped areas, and vegetated basins. <i>Source: County of San Diego County BMP Design Manual, 2020. City of Gilroy, City of Morgan</i> <i>Hill, County of Santa Clara. Stormwater Management Guidance Manual for Low Impact</i> <i>Development &amp; Post-Construction Requirements. June 2015.</i>	
Low Impact Development	A stormwater and land use management strategy that strives to mimic pre- disturbance hydrologic processes of infiltration, filtration, storage, evaporation, and transpiration by emphasizing conservation, use of on-site natural features, site planning, and distributed stormwater management practices that are integrated into a project design. <i>Source: Central Coast Resolution R3-2013-0032, Post-Construction Requirements</i>	
New Development	Land disturbing activities that include the construction or installation of buildings, roads, driveways and other impervious surfaces. Development projects with preexisting impervious surfaces are not considered New Development. <i>Source: Central Coast Resolution R3-2013-0032, Post-Construction Requirements</i>	
Pervious Surface	A surface that allows varying amounts of stormwater to infiltrate into the ground. Examples include pasture, native vegetation areas, landscape areas, and permeable pavements designed to infiltrate. Source: Central Coast Resolution R3-2013-0032, Post-Construction Requirements	
Pretreatment	Removal of gross solids, including organic debris and coarse sediment, from runoff to minimize clogging and increase the effectiveness of SCMs. Source: County of San Diego County BMP Design Manual, 2020	

Term	Definition	
Replaced Impervious Surface	The removal of existing impervious surfaces down to bare soil or base course, and replacement with new impervious surface. Replacement of impervious surfaces that are part of routine road maintenance activities are not considered replaced impervious surfaces. <i>Source: Central Coast Resolution R3-2013-0032, Post-Construction Requirements</i>	
Repaired Impervious Surface	Surfaces that are repaired by practices that include overlay, slurry sealing, fog sealing, crack sealing, pothole and square cut patching, or re-surfacing with in-kind material without expanding the footprint of the impervious area. Repairs maintain the original line, grade, hydraulic capacity and overall footprint of the existing surface without disturbance of the base course. <i>Source: Central Coast Resolution R3-2013-0032, Post-Construction Requirements</i>	
Redevelopment	<ul> <li>On a site that has already been developed, construction or installation of a building or other structure subject to the Permittee's planning and building authority including: 1) the creation or addition of impervious surfaces; 2) the expansion of a building footprint or addition or replacement of a structure; or 3) structural development including construction, installation, or expansion of a building or other structure. It does not include routine road maintenance, nor does it include emergency construction activities required to immediately protect public health and safety.</li> <li><i>Source: Central Coast Resolution R3-2013-0032, Post-Construction Requirements</i></li> <li>(also called "zero discharge" areas) Areas designed to retain some amount of rainfall (by ponding and infiltration and/or evapotranspiration) without preducing stormwater rupoff. Colf Detaining Areas, may include graded</li> </ul>	
	depressions with landscaping or pervious pavement. Source: Central Coast Resolution R3-2013-0032, Post-Construction Requirements	
Self-Treating Area	A portion of a Regulated Project in which infiltration, evapotranspiration and other natural processes remove pollutants from stormwater. The self-treating areas may include conserved natural open areas and areas planted with native, drought-tolerant, or LID appropriate vegetation. The self-treating area only treats the rain falling on itself and does not receive stormwater runoff from other areas. <i>Source: Central Coast Resolution R3-2013-0032, Post-Construction Requirements</i>	
Stormwater Structural Control Measure (SCM)	A manufactured facility, structural mechanism, or feature designed and constructed to mitigate the adverse impacts of stormwater runoff pollution (e.g. canopy, basin). Source: Sonoma County Stormwater LID Technical Design Manual, 2020	
Trash Amendment	An amendment to the State Water Resources Control Board's Water Quality Control Plan for Ocean Waters and the Water Quality Control Plan for Inland Surface Waters, Enclosed Bays, and Estuaries of California that establishes a trash discharge prohibition and includes a strategy to provide "full capture" of trash from stormwater MS4 permits. <i>Source: Sonoma County Stormwater LID Technical Design Manual, 2020</i>	

Term	Definition
	A categorization of the urbanized portions of MS4 Area based on common
Watershed	key watershed processes and receiving water type (creek, marine nearshore
Management Zone	waters, lake, etc.). The Central Coast Region is categorized into 10 WMZs,
	Source: Central Coast Resolution R3-2013-0032, Post-Construction Requirements

151

152

# PRELIM DRAFT

- 153 This guidebook was prepared for the County of San Luis Obispo with the support of Wallace Group
- 154 consultants. The County gratefully acknowledges the public agencies whose stormwater
- 155 management and low impact development guidance documents provided valuable insight and
- 156 *information for this guidebook, including:*
- 157 City of Gilroy, City of Morgan Hill, County of Santa Clara. 2015. "Stormwater Management
- 158 Guidance Manual for Low Impact Development & Post-Construction Requirements."
- 159 City of Salinas. 2021. "Stormwater Development Standards for New and Redevelopment160 Projects."
- 161 City of San Diego, 2018. "The City of San Diego Storm Water Standards."
- 162 County of Sonoma. 2017. "Storm Water Low Impact Development Technical Design Manual,
- 163 Revised December 2020."
- 164 County of Santa Barbara, Project Clean Water. 2017. "Stormwater Technical Guide for Low
- 165 Impact Development, 2<sup>nd</sup> Edition."
- 166 County of Orange. 2017. "South Orange County Technical Guidance Document for the
- 167 Preparation of Conceptual/Preliminary and/or Project Water Quality Management Plans."
- 168 California Department of Transportation, Division of Environmental Analysis. 2012.
- 169 Biofiltration Swale Design Guidance.
- 170 Contra Costa Clean Water Program, 2022. Stormwater C.3 Guidebook, 8<sup>th</sup> Edition.
- 171 County of San Diego. 2020. "County of San Diego BMP Design Manual." 2<sup>nd</sup> update to
- 172 February 2016 Manual.
- 173 Santa Clara Valley Urban Pollution Prevention Program (SCVURPPP), 2016. Guidance for
- 174 Implementing Stormwater Requirements for New Development and Redevelopment
- 175 Projects (C.3 Stormwater Handbook)
- 176 Riverside County LID BMP Handbook, Riverside County Flood Control and Water
- 177 Conservation District, 2011.
- 178 State of Washington, Department of Ecology. Emerging Stormwater Treatment
- 179 Technologies (Technology Assessment Protocol- Ecology TAPE) Guidance Documents. 2018.
- 180 Central Coast Low Impact Development Initiative (LIDI), 2013. "Bioretention Engineering
- 181 Standards: Details and Technical Specifications."
- 182
- 183

184 San Luis Obispo County is located on the Central Coast of California and comprises nearly

185 1,300 square miles of area with over 100 miles of coastline. The Mediterranean climate and

186 broad diversity of landscapes presents unique challenges for construction projects and new

187 development. Protecting the county's waterways and natural resources is fundamental to

188 preserving the economic vitality and quality of life enjoyed by residents and visitors.

- 189 Accordingly, incorporation of post-construction runoff standards to new and redevelopment
- 190 projects is essential to protecting vital water resources as the county grows.

# 191 **1. Introduction**

192 The California Regional Water Quality Control Board for the Central Coast Region (Central

193 Coast Water Board) adopted the Post-Construction Stormwater Management Requirements

194 (PCRs) for Development Projects in the Central Coast [Resolution R3-2013-0032] in July 2013.

195 The County of San Luis Obispo (County) is responsible for applying the PCRs to development

196 projects across many of the County's unincorporated census-designated places. New or

- 197 redevelopment projects located within all areas covered by the California Phase II Municipal
- 198 Separate Storm Sewer System NPDES permit (MS4 Area) are subject to the PCRs.

199 The PCRs are intended to protect surface waters, groundwater supplies and the beneficial

200 uses of the County's waterways including creeks, lakes, rivers and coastal waters. The PCRs

are designed to preserve water quality such that beneficial uses including recreation, fish habitat, shellfish production, agricultural use and domestic uses can be maintained.

# 203 **a. Background**

Several versions of Low Impact Development (LID) policies and requirements have been instituted in the County over the preceding two (2) decades, as depicted in Table 1: Summary of Post-Construction Stormwater Policies applied in San Luis Obispo County. The current regional framework, adopted in 2013 and instituted in 2014, is more detailed and robust than previous policies.

209 Table 1: Summary of Post-Construction Stormwater Policies applied in San Luis Obispo County.

Date	Requirements	Applicable Area
Before May 10, 2010	Limited PCR Requirements	
May 10, 2010 through March 3, 2011	MS4 Attachment 4 Post Construction Requirements	2003 MS4 Boundaries
March 3, 2011 through March 6, 2014	Interim Low Impact Development Guidelines	2003 MS4 Boundaries
July 1, 2013	California Construction General Permit for Stormwater Discharges, Section XIII. Post-Construction Standards	Statewide
March 6, 2014	Central Coast Water Board Resolution R3-2013-0032 – Phase II Small MS4 Permit.	2013 MS4 Boundaries

- 210 The PCRs mandate the use of LID to minimize, retain, and treat post-construction stormwater
- 211 runoff. In addition to LID design features, development projects may also require integration
- 212 of stormwater structural control measures (SCMs) to improve stormwater retention or
- 213 manage peak flows and achieve compliance with specific performance requirements.
- 214 Beyond the design and construction phases of a project, the PCRs also mandate the
- 215 establishment of an ongoing operations and maintenance framework for certain completed
- 216 regulated projects.

# 217 Implementation and Regulatory Reporting

- The Central Coast Water Board has delegated responsibility for applying the PCRs to the County through the County's Phase II Municipal Stormwater Permit. The County is responsible for ensuring that new and redevelopment projects comply with the PCRs and submits annual reports to the Central Coast Water Board summarizing compliance activities. Project documents for construction permits approved by the County are subject to audit by the Central Coast Water Board. The County is subject to State enforcement actions or penalties if compliance with applicable performance standards on approved projects is not
- 225 clearly documented and achieved.

# 226 b. Purpose of this Guidebook

- The purpose of this guidebook is to provide technical guidance and strategies for effectively complying with the PCRs in the County. The guide addresses stormwater management strategies for use in the planning, design, construction, and maintenance phases of a project and is intended to serve as a resource for developers, contractors, engineers, architects, and planners.
- 232 The information in this guidebook is intended to support compliance with the PCRs and does
- not supersede the PCRs or requirements adopted by other municipalities or regulatory
   agencies. Additional requirements imposed by Governing Agencies such as Cal Green, CEQA,
- 235 401/404 permitting, or flood control standards still apply as appropriate.
- 236 Since stormwater management considerations are highly site-specific, only broad 237 considerations and guidance are provided in this guidebook. The appendices provide 238 references to additional maps, resources, calculators, and checklists to support applicants.
- 239 <u>What is stormwater Low Impact Development (LID)?</u>
- 240 Undeveloped natural landscapes allow a significant proportion of rainfall to infiltrate into the
- soil which is essential for all watershed functions and replenishing groundwater supplies.
- 242 Development of natural landscape areas with impervious (nonporous) surfaces like roads,
- 243 parking lots, and roofs, dramatically diminishes the opportunity for landscapes to infiltrate
- rainwater and stormwater runoff and maintain natural watershed functions.
- Low Impact Development (LID) aims to replicate the pre-development site hydrology and watershed processes through utilization of site design strategies and optimization of landscaped areas. When implemented effectively, LID design practices can provide

treatment and filtration of stormwater runoff and increase runoff infiltration onsite. Small-scale LID features are intended to be permanent site assets.

LID prioritizes incorporating 'green' infrastructure into new and redevelopment projects over more traditional types of 'gray' infrastructure. While gray infrastructure has historically collected and conveyed stormwater offsite as efficiently as practical, green infrastructure focuses on retaining and infiltrating stormwater onsite to replicate the site's predevelopment hydrology. Figure 1: Comparison of green and gray stormwater management strategiesdemonstrates different stormwater management strategies and their relative ranking as green or gray infrastructure.

# 257 Figure 1: Comparison of green and gray stormwater management strategies

Conventional Underground Temporary Infiltration **Bioretention** Stormwater Undeveloped Drainage **Flood Storage** basins Chambers ponds or natural areas or rain gardens wetlands Conveyance Subgrade Surface features Surface features Vegetated Features that Protected or features with provide habitat features for with minimal features in intact areas or with limited minimal to no storage or infiltration or vegetation. urban settings. and resemble vegetation. storage or infiltration. natural areas. vegetation. infiltration.

- 259 The PCRs prioritize implementation of green stormwater management strategies over
- 260 traditional gray strategies. The County is mandated by the Central Coast Water Board to limit
- the use of gray stormwater management strategies where green strategies are feasible and
- 262 achievable.
- 263 *How this manual relates to other requirements*
- Several State and local policies dictate the volume of stormwater that must be treated and detained or retained onsite in San Luis Obispo County (i.e., PCRs, Flood Control Requirements, project conditions of approval). Depending on the requirements or policy, different stormwater management strategies and retention volume criteria may be required for the site design.
- 269 At the outset of the development project design process, the requirements of each policy
- 270 indicated in Figure 2 should be carefully evaluated for their applicability to the proposed
- 271 project. Multiple standards and submittals may be required based upon project scope and
- 272 location. A pre-application meeting, conducted through the Department of Planning and

Building that includes other department stakeholders is strongly encouraged for large,phased, or multi-use projects that must comply with multiple standards.

This guidebook specifically addresses strategies to comply with the Regional Post-Construction Stormwater Requirements. Depending on site design and applicable requirements, compliance with the Regional Post-Construction Requirements may partially satisfy local drainage and flood control requirements, and fully satisfy the post-construction standards of the State Construction Stormwater General Permit. However, in most cases additional retention or detention will be required to satisfy local drainage and flood control requirements.

282

# PRELIM DRAFT

# 283 Figure 2: Policies dictating post-construction stormwater runoff control standards



# 285 *Guidebook revisions and amendments*

- 286 LID is an evolving and adaptive concept, and best practices and design guidance are subject
- to revision as technologies are developed and refined. Revisions and amendments to this
- 288 guide will be evaluated on a biennial basis. Updates and revisions will be noted in Table 2,
- the Guidebook Revision and Amendment Log.
- 290 Table 2: Post-Construction Stormwater Guidebook revision and amendment log



# 292 **2. Project Triggers**

The location and scope of a project will determine whether the PCRs must be applied to the project, and which Performance Requirements (PR) must be met. Project specifications such as the amount of impervious area created/replaced, the total area of soil disturbance, and applicable Watershed Management Zone (WMZ) must be determined early in the planning stages to begin evaluation of PCR applicability.

# 298 a. Geographic Areas

299 The County of San Luis Obispo applies the PCRs to all areas covered by the County's Phase II 300 Municipal Separate Storm Sewer Permit (MS4 Areas). This includes many of the County's unincorporated communities, census designated places (CDPs), and urban reserve areas 301 302 located near the outskirts of incorporated cities. The precise boundaries of the County's MS4 303 Area are subject to change periodically due to annexations into the incorporated cities. 304 Development projects located within any of the County's incorporated cities are also subject 305 to the PCRs. Development review, permitting, and PCR compliance are administered by the 306 cities, not the County, within incorporated city limits.

Additionally, certain requirements of the PCRs vary depending upon the WMZ a project is located in. The applicable WMZ should be determined early in the project planning stages. WMZ boundaries were determined by the Central Coast Water Board based on key watershed processes and receiving water types, and the County does not have authority to modify or approve exceptions to the designated WMZs.

The County's Department of Planning and Building hosts an online GIS web mapping application, which is the preferred method for determining if a project is in an MS4 Area and the applicable WMZ. Instructions for utilizing this tool are provided in Appendix A.

# 315 **b. Previously vested projects**

316 In rare circumstances, a project may have received approval and vesting prior to the effective 317 date of the PCR policies outlined in Table 1. To qualify as a previously vested project, the 318 project's vesting tentative subdivision map must have been deemed complete prior to March 319 6th, 2014, the date the PCRs became effective, and must show drainage, flood control and 320 stormwater conveyance infrastructure that comply with the prior policies. Additionally, the 321 project Conditions of Approval (via Notice of Final Action) must not indicate that compliance 322 with LID or Post-Construction stormwater standards were required at the time of approval. 323 A Notice of Final Action letter should reflect this project information. Copies of these 324 documents must be provided as part of the construction permit application. A change to a 325 previously approved and vested project may require additional Conditions of Approval and 326 require compliance with the PCRs.

- 327 Projects that were vested prior to the effective date of the PCRs are not exempted from
- 328 compliance with the State Construction General Permit for Stormwater which also contains
- 329 post-construction stormwater mitigation requirements. There are no provisions in the State
- 330 Construction General Permit for Stormwater that offer a similar vesting exemption.

# 331 c. Project triggers and exemptions

The PCRs categorize construction activities and development projects in the MS4 Area as either "Unregulated" or "Regulated" based on specific project characteristics. Determining the project's regulatory status is a fundamental step of the construction permit application process. Additionally, there are several strategies available to regulated projects that are unable to achieve full compliance with the PCRs.

# 337 <u>Unregulated projects</u>

While determination of PCR compliance is typically based on new construction project impervious area, a limited scope of projects are designated 'unregulated' by the Central Coast Water Board. Applicants should closely review the unregulated project criteria in Table 3. Construction permit applications for unregulated projects are required to include the County's Post-Construction Stormwater Waiver Request Form and justification that ensures compliance with unregulated project conditions. This form documents project information and allows the County to verify and confirm that the project is unregulated per the PCRs.

# 345 Table 3: Unregulated project criteria.

# **Unregulated Project Criteria**

Unregulated project criteria are established by Central Coast Regional Water Quality Control Board Resolution R3-2013-0032, Attachment 1.

# Road and Parking Lot maintenance

- 1) Road surface repair including slurry sealing, fog sealing, and pothole and square cut patching
- 2) Overlaying existing asphalt or concrete pavement with asphalt or concrete without expanding the area of coverage
- 3) Shoulder grading
- 4) Cleaning, repairing, maintaining, reshaping, or re-grading drainage systems
- 5) Crack sealing
- 6) Resurfacing with in-kind material without expanding the road or parking lot
- 7) Practices to maintain original line and grade, hydraulic capacity, and overall footprint of the road or parking lot
- 8) Repair or reconstruction of the road because of slope failures, natural disasters, acts of God or other man-made disaster

Sidewalk and bicycle path lane projects, where no other impervious surfaces are created or replaced, built to direct stormwater runoff to adjacent vegetated areas

Trails and pathways, where no other impervious surfaces are replaced or created, and built to direct stormwater runoff to adjacent vegetated areas

Underground utility projects that replace the ground surface with in-kind material or materials with similar runoff characteristics

Curb and gutter improvement or replacement projects that are not part of any additional creation or replacement of impervious surface area (e.g., sidewalks, roadway)

Second-story additions that do not increase the building footprint

Raised (not built directly on the ground) decks, stairs, or walkways designed with spaces to allow for water drainage

Photovoltaic systems installed on/over existing roof or other impervious surfaces, and panels located over pervious surfaces with well-maintained grass or vegetated groundcover, or panel arrays with a buffer strip at the most down gradient row of panels

Temporary structures (in place for less than six (6) months)

Electrical and utility vaults, sewer and water lift stations, backflows and other utility devices

Above-ground fuel storage tanks and fuel farms with spill containment system

346

347 It is important to note that a project can be waivable only if it consists of listed items. A

348 development project may include a combination of several elements, both regulated and

349 unregulated. If the scope of work includes more than the listed criteria of the waivable items

indicated, then the project is not waivable, and cannot be considered unregulated.

- 351 Accessory Dwelling Units and Accessory Structures
- The California Housing Opportunity and More Efficiency (HOME) Act, known as SB 9, may 352 353 allow construction of multiple residential units on parcels zoned for single-family dwelling 354 units. SB9 requires that permit applications for an accessory dwelling unit (ADU) or junior 355 accessory dwelling unit (JADU) shall be considered and approved ministerially without 356 discretionary review or hearing. Construction of an ADU or JADU does not modify the zoning 357 of the site to multi-family residential, and the stormwater and construction standards for 358 multi-family residential construction do not apply. The County will apply the PCRs to projects 359 constructing ADUs and JADUS as they are written for detached single-family homes.

Additionally, parcels zoned for single-family residential use are authorized to construct residential accessory structures (barns, sheds, detached garages, etc.) consistent with County land use and building codes. Construction of these structures is dependent upon single-family residential zoning, and the PCR triggers and requirements identified for single-

364 family home projects will be applied.

# 365 <u>Technical Infeasibility</u>

The PCRs provide a mechanism for the County to approve claims of technical infeasibility for onsite compliance with select performance requirements. County approval of technical infeasibility does not waive the requirement for applicants to provide alternative or off-site compliance within the same watershed as the regulated project. Applicants will be required to meet all of the PCR criteria associated with technical infeasibility. 371 The County will require submittal of an opportunities and constraints map (per the PCRs) to

demonstrate the criteria are met for a technical infeasibility finding. Additional detail about

- the criteria for technical infeasibility is provided in Chapter 4. Applicants are encouraged to
- thoroughly review the specific criteria associated with technical infeasibility determinations
   in Perclution P3-2013-00022
- in Resolution R3-2013-00032.

# 376 <u>Urban Sustainability Areas & Regional Watershed Plans</u>

The PCRs afford limited alternative compliance options for projects located within approved Urban Sustainability Areas (USAs) or areas subject to Regional Watershed Plans. The County has not developed plans for USAs or regional watershed plans that would allow applicants to exercise these alternatives. Due to the vast, variable, and discontinuous coverage of the County's MS4 Permit Areas, the County does not plan to pursue a Regional Watershed Plan or USA designations for the purpose of facilitating alternative compliance with the PCRs.

# 383 d. Site Determination

384 In the context of PCR compliance, the "project site" includes all areas of development, 385 including both onsite improvements and public improvements within the public right of way. 386 Onsite improvements include all structural and nonstructural development planned within the boundaries of privately owned property. Public improvements associated with the 387 388 project that may be constructed in the public right-of-way may include new roads, road 389 widening, utility installation, or other improvements associated with the project. The 390 development may require installation of SCMs on private property, in the public right-of-way, 391 or on properties held in common ownership. Public improvements that are required as a 392 condition of the project, but not contiguous to the rest of the project site, must demonstrate 393 PCR compliance and may be considered a separate project.

# 394 e. Impervious surfaces, surface types

Redevelopment and new construction projects typically incorporate several types of hardened surfaces. Such alteration of a landscape from natural to hardened inherently changes the ratio of stormwater that is either infiltrated or transformed into stormwater runoff from the ratio associated with predevelopment conditions. The magnitude of impacts associated with post-project stormwater runoff generally increase as the project's impervious surface area increases. This section further outlines types of surfaces, and which surface modifications are regulated by the PCRs.

# 402 *Impervious surfaces, calculations*

403 Impervious surfaces include any hard, non-vegetated surface areas that prevent or 404 significantly limit the entry of water into the soil mantle, as would have occurred under 405 natural conditions prior to development. Common impervious surfaces include roof tops, 406 walkways, patios, driveways, parking lots or storage areas, and concrete or asphalt paving.

407 Many projects require repair or replacement of existing impervious surfaces as a component 408 of development. Generally, construction activities that affect impervious surfaces but do not 409 involve removal and/or replacement of the base course or result in a change in grade, are 410 considered repairs. These repaired areas are not included in the regulated impervious 411 surface area calculations. Construction activity that removes an impervious surface and

- 412 underlying base course (down to native soils) is considered impervious surface replacement
- 413 and is regulated by the PCRs.

414 Precise calculation of new, replaced, repaired, and removed impervious surface areas is essential to determine which Performance Requirements are applicable to the project. New 415 416 and replaced impervious surface areas are the most important factors in making this 417 determination. To determine replaced impervious surface area, a drawing of the existing, 418 pre-project impervious areas should be placed as an overlay on the proposed site plan. 419 Figure 3 lists each impervious surface type pertinent to determining the applicable 420 Performance Requirements. The total area of each of these surface modifications should be 421 determined before beginning impervious area calculations. This information is required to 422 complete permit applications as detailed further in Chapter 3.

423

#### 424 Figure 3: Impervious surface categories for determining project performance requirements.



426

427 Applicants should begin by calculating the Total New and Replaced Impervious Area. In new construction projects on vacant properties, there are typically no replaced impervious areas.

- 428
- 429

430 Equation 1: Total new and replaced impervious area



432 In some limited cases, a reduction in total imperviousness from the pre-project to post-433 project site condition may reduce the net impervious area. The reduced impervious area 434 credit is only applicable where there is a net pre-project to post-project reduction in 435 impervious area.

436

# 437 Equation 2: Net impervious area



- 438
- 439 Example project calculations are included in Figures 6 and 7 at the end of this chapter.

# 440 *Engineered pervious surfaces*

441 Inclusion of engineered pervious surfaces in new development plans is common throughout

442 San Luis Obispo County. Examples of engineered pervious surfaces include turf block, 443 artificial turf, unit pavers on sand, crushed aggregate, pervious asphalt, porous/pervious

443 artificial turf, unit pavers on sand, crushed aggregate, pervious asphalt, porous/pervious 444 concrete, or compacted gravel. Incorporation of engineered pervious and natural pervious

444 concrete, or compacted gravel. Incorporation of engineered pervious and natural pervious 445 surfaces into new and redevelopment projects can reduce the performance requirements

446 applied to the project. Chapter 6 includes additional information on how to incorporate

447 engineered pervious surfaces into project calculations.

# 448 f. Performance Requirements Summarized

The PCRs utilize a group of Performance Requirements for new and redevelopment projects that invoke stormwater management strategies that preserve key watershed processes. This section briefly summarizes each Performance Requirement and its related implementation requirements, including the types of projects subject to the Performance Requirements.

453

454 Figure 4 presents a flow chart for determining which Performance Requirements apply to

455 regulated projects. The performance requirements and applicable regulated projects are

- 456 also summarized in Table 4 and detailed more thoroughly in the following sections.
- 457





Type of Project	Requirements	
<b>Tier 1:</b> Projects, including single-family homes that are not part of a larger plan of development, that create or replace 2,500 sf or more of impervious surface.	Implement Performance Requirement #1 LID Measures: Limit disturbance of natural drainage features. Limit clearing, grading, and soil compaction. Minimize impervious surfaces. Incorporate at least one (1) runoff reduction measure.	
<b>Tier 2</b> : Projects, other than single-family homes, that create or replace 5,000 sf or more net impervious surface.*	<b>Performance Requirement 1, plus:</b> Treat runoff with an approved and appropriately sized LID treatment system prior to discharge on or from the site.	
<b>Tier 3</b> Projects, other than single-family homes, that create or replace 15,000 sf or more of impervious surface. Single-family homes that create or replace 15,000 sf or more net impervious surface *	<b>Performance Requirements 1 &amp; 2, plus</b> : Prevent offsite discharge from events up to the 95th percentile rainfall event using Stormwater Control Measures.	
<b>Tier 4</b> Projects that create or replace 22,500 sf of impervious surface.	<b>Performance Requirements 1, 2, &amp; 3, plus:</b> Control peak flows to not exceed pre-project flows for the 2-year through 10-year events.	

### 460 Table 4: Summary of post-construction performance requirements

\* Net impervious surface equals new plus replaced impervious area, minus the total pre-project-to-post project reduction in impervious area (if any).

461

# 462 *Performance Requirement #1 (PR#1): Site Design and Runoff Reduction*

This requirement applies to projects that create and/or replace > 2,500 square feet of impervious surface and focuses on the LID design concept of mimicking predevelopment hydrology. Projects must incorporate site design and runoff reduction measures where feasible. Site design measures are the best opportunity to implement management strategies that maintain the soil and vegetation regime, which in turn support other strategies for flow control and water quality treatment.

While detailed calculations and plans are not required for demonstrating compliance, applicants must indicate that the specific measures will be incorporated into the project site design where feasible. The location of site design elements that support PR#1 compliance should be clearly labeled on grading or utility plan sheets and detailed in the SWCP (for applicable projects.) Some examples of PR#1 site design strategies are provided in Table 5.

# 475 Table 5: Examples of PR#1 site design strategies

Strategy:	Implementation:
Limit disturbance of creeks and natural drainage features.	<ul> <li>Indicate on the plans where the project will avoid wetlands and waterways. This may include agency mandated buffers or development setbacks.</li> <li>Incorporate design elements that avoid routing runoff to direct waterway outfalls. Indicate that an alternative to direct outfall was selected.</li> <li>Indicate where flatwork, abutments, or foundations are deliberately set back from creek banks or natural drainage features.</li> </ul>
Minimize compaction of highly permeable soils.	<ul> <li>Indicate areas on the plans that will be protected from grading, clearing, and/or over excavation. This may include landscaped or unpaved areas.</li> </ul>
Limit clearing and grading of native vegetation.	<ul> <li>Indicate on site plans where existing native trees will be protected in place.</li> <li>Indicate any locations where existing native plants will be protected. This may include protection by mandatory setbacks (i.e. near sensitive features, sensitive plants, wetlands, or waterways.)</li> </ul>
Minimize impervious surfaces and concentrate improvements on least- sensitive portions of the site.	<ul> <li>Identify locations that will not be developed due to sensitive resources or open space requirements.</li> <li>Indicate where redevelopment will occur in the footprint of existing impervious surfaces.</li> </ul>

- 477 Additionally, applicants must incorporate at least <u>one (1)</u> runoff reduction measure into the
- 478 site design. Approved runoff reduction measures are summarized in Figure 5. The County's
- 479 guidelines for the volume of runoff addressed by these runoff reduction measures is
- 480 indicated in Table 6.
- 481 Figure 5: Runoff reduction measures, PR#1


#### 483 Table 6: Runoff reduction strategy volume guidelines.

Runoff Reduction Strategy	Guidelines for Runoff Volume
Direct roof runoff into cisterns or rain barrels for reuse.	Minimum 100-gallon volume for collection.
Direct roof runoff to vegetated areas away from foundations and footings.	Minimum 10% of roof area directed to vegetated areas.
Direct runoff from sidewalks, walkways and/or patios onto vegetated areas.	Minimum 10% of flatwork area drainage directed to vegetated areas.
Direct runoff from driveways and/or parking lots onto vegetated areas.	Minimum 10% of flatwork area drainage directed to vegetated areas.
Construct flatwork with engineered pervious/permeable surfaces.	Minimum 10% of flatwork area constructed with permeable surfaces.

484

485 *Performance Requirement #2 (PR#2): Water Quality Treatment* 

The Water Quality Treatment Performance Requirement (PR#2) applies to projects that create and/or replace > 5,000 square feet of Net Impervious Area, and to single-family residences that create and/or replace > 15,000 square feet of Net Impervious Area. A SWCP is required for all regulated projects subject to PR#2.

490 Regulated projects subject to PR#2 must treat a defined minimum volume or flow rate of 491 runoff using onsite measures. This performance requirement addresses post-construction 492 pollutant loading through treatment measures that emphasize LID (harvesting and re-use, 493 infiltration, and evapotranspiration) and biofiltration over non-retention based or flow-494 based treatment approaches. Allowable onsite measures are listed in the order of 495 preference (highest to lowest):

- 496 1. Low Impact Development
- 497 2. Biofiltration Treatment Systems
- 498 3. Non-Retention Based Treatment Systems

499 Biofiltration treatment is prioritized over non-retention based treatment systems due to the 500 potential for the biofiltration system to provide infiltration/retention and more closely 501 replicate watershed processes (evapotranspiration, chemical and biological 502 transformations) than flow-through (non-retention) measures. Table 7 summarizes the water quality treatment design criteria associated with PR#2. 503

504 Table 7: PR#2 design criteria

Water Quality Treatment Strategy	Design Criteria	
<b>LID Treatment System:</b> Harvesting and use, at-grade infiltration, evapotranspiration, bioretention (without an underdrain).	Retain stormwater runoff from the 85 <sup>th</sup> percentile 24- hour storm event. Runoff volume based on local rainfall data.	
<b>Biofiltration Treatment System:</b> Bioretention features with a raised underdrain or similar facilities with an equivalent effectiveness to meet the specified design criteria.	<ul> <li>Design rain event of 0.2 in/hr intensity or 2x 85<sup>th</sup> percentile hourly rainfall intensity.</li> <li>Additional design criteria: <ul> <li>Maximum surface loading rate 5 in/hr.</li> <li>Surface reservoir depth of 6"-12".</li> <li>Minimum planting medium depth 24".</li> <li>Proper plant selection to sustain 50% vegetated cover/survivorship.</li> <li>Subsurface gravel layer minimum depth 12".</li> <li>Underdrain placement at top of gravel layer.</li> <li>No compaction of soils beneath structure.</li> <li>Liners only authorized for sidewalls where required.</li> </ul> </li> </ul>	
Non-Retention Based Treatment	Volumetric hydraulic design to 85 <sup>th</sup> percentile 24-hour	
Systems:	storm event.	
Lined bioretention, flow-through	Flow hydraulic design basis of 0.2 in/hr intensity.	
planters, high rate tree well filters or	<b>or</b> 2x 85 <sup>th</sup> percentile hourly rainfall intensity.	
media filters.		

505

#### 506 *Performance Requirement #3 (PR#3): Runoff Retention*

507 The Onsite Runoff Retention Performance Requirement (PR#3) applies to projects that 508 create and/or replace > 15,000 square feet of Total Impervious Area, and to single-family 509 residences that create and/or replace > 15,000 square feet of Net Impervious Area. A SWCP 510 is required for all regulated projects subject to PR#3.

511 Regulated projects subject to PR#3 must meet PR#1 and PR#2 requirements and additionally 512 retain runoff from a designated design storm volume. The required retention volumes and 513 method depend on the Watershed Management Zone (WMZ) in which the project is located, 514 with some WMZs not requiring runoff retention. The PCRs Resolution R3-2013-0032 should 515 be consulted to determine which runoff retention requirements apply in the project's WMZ. 516 A decentralized stormwater management approach is fundamental to demonstrating 517 compliance with PR#3.

- Regulated projects must clearly identify which LID development standards are utilized tomeet PR#3 requirements. The development standards include the following:
- Site Assessment Measures identify opportunities and constraints to implement LID,
- Site Design Measures optimize site design measures and strategies from PR#1 and augment with additional measures,

- Delineation of discrete Drainage Management Areas (DMAs), and
- Use of undisturbed natural landscaped areas as self-treating or self-retaining areas.

Resources for identifying and appropriately demonstrating site opportunities and constraints are provided in Appendix B. Once site design measures, self-treating areas and self-retaining areas have been maximized to the extent feasible, structural Stormwater Control Measures (SCM) may be incorporated to retain runoff.

- 529 SCMs can be sized using one of three methodologies:
- 530 1. Continuous simulation hydrologic modeling, calibrated to local conditions;
- 531 2. The simple method (single event-based); or
- 532 3. The routing method (single event-based).

533 The simple method sizes the SCM with a volume equal to the runoff volume produced by the 534 design storm. The routing method uses iterative calculations routing the design storm 535 hydrograph through the facility to account for infiltration that occurs simultaneously with 536 inflow, which results in a smaller facility. Sizing guidance for the simple method and the 537 routing method are provided in Chapter 6. Santa Barbara County developed a "Stormwater 538 Control Measures Sizing Calculator" Excel Workbook that uses the routing method. The 539 outputs from the calculator are authorized for submittals in San Luis Obispo County. 540 Downloads and user instructions are available on the Santa Barbara County website. A 541 hyperlink is included in Appendix A.

- 542 The PCRs include allowances for technical infeasibility adjustments and off-site mitigation for
- 543 sites that are significantly constrained in their ability to comply with PR#3. Additional
- 544 information is included in Chapter 4.
- 545 *Performance Requirement #4 (PR#4): Peak Management*

546 Regulated projects that create and/or replace >22,500 square feet of impervious surface

- 547 (collectively over the entire project site) are subject to PR#4). Projects subject to PR#4 must 548 also meet PR#1, PR#2 and PR#3 requirements. A SWCP is required for all regulated projects
- 549 subject to PR#4.

Regulated projects subject to PR#4 must ensure that post-development peak flows, discharged from the site, do not exceed pre-project peak flows for the 2- through 10-year storm events. The pre-project condition refers to the runoff conditions that exist onsite immediately before the development project begins. A site hydrology report must effectively demonstrate that post-development stormwater peak flows from the site do not exceed preproject peak flows. Additional discharge constraints may also apply to the project such as those mandated by the San Luis Obispo County Public Improvement Standards.

557 Additional information on the required calculations and model outputs for submittal is 558 provided in Chapter 6.

#### 559 *Performance Requirement #5 (PR#5) Special Circumstances*

- 560 This Performance Requirement may modify applicability of the PCRs for specific conditions,
- such as highly altered channels and intermediate flow control facilities. The County may
- 562 consider and designate individual projects as subject to PR#5 based on site and receiving
- 563 water conditions. The applicability of PR#5 is significantly limited in San Luis Obispo County
- 564 due to the scarcity of highly altered channels and intermediate flow control facilities.
- 565 Applicants who believe that their project meets the criteria for PR#5 are strongly encouraged
- to thoroughly review the conditions of PR#5 and request a pre-application meeting with the
- 567 County prior to initial plan submittal. Additional processing time and review fees may apply.

568

# PRELIM DRAFT

#### 569 *Example Project #1:*

- 570 The following example demonstrates how to correctly determine Total New and Replaced
- 571 and Net Impervious Area. Figure 6 demonstrates new, replaced, and removed impervious
- 572 surface types and how to properly calculate the net impervious area.
- 573

#### 574 Figure 6: Example project #1, impervious area metrics



#### 577 Calculating New and Replaced Impervious Area:

- 578 New Impervious + Replaced Impervious = Total New and Replaced Impervious Area
- 579 3,340 sf + 3,140 sf = 6,480 sf
- 580

#### 581 Impervious Area Credit (not applicable):

- 582 Pre-project net impervious: 30,780 sf
- 583 Post-project net impervious: 34,900 sf
- 584
- 585 The overall increase in site impervious area (+4,120 sf) does not allow credit for reduced
- impervious area. The impervious area for determining the PCR compliance is 6,480 sf. This
- 587 project is subject to PR#1 and PR#2.
- 588

#### 589 *Example Project #2:*

- 590 Figure 7, demonstrates impervious surface calculations and how the reduced impervious
- 591 area credit is applied.

#### 592 Figure 7: Example project #2, net impervious area reduction example



594

#### 595 **Calculating New and Replaced Impervious Area:**

- 596 New Impervious + Replaced Impervious = Total New and Replaced Impervious Area
- 597 3,830 sf + 0 sf = 3,830 sf
- 598

#### 599 Impervious Area Credit:

- 600 Pre project impervious area: 30,780 sf
- 601 Post project impervious area: 27,180 sf
- 602 (Pre Project Impervious Area ) (Post Project Impervious Area) = Reduced Impervious Area
- 603 Credit
- 604 (30,780 sf) (27,180 sf) = 3,600 sf
- 605

- The overall decrease in site impervious area (-3,600 sf) allows for credit for reduced
- 607 impervious area.
- 608 (New + Replaced Impervious) (Reduced Impervious Area Credit) = Net Impervious Area
- 609 (3,830 sf) (3,600 sf) = 230 sf
- 610
- The Impervious Area for determining PCR compliance is 3,830 sf. The Net Impervious Area
- 612 for determining PR#2compliance is 230 sf. This project is subject to PR#1 due to the total
- 613 new and replaced impervious surface exceeding 2,500sf.

# PRELIM DRAFT

# **3. Submittal Process Overview**

The County has integrated post-construction stormwater management into the development review process to comply with regional, state, and federal regulatory requirements. This chapter outlines the County's development review process and gives instructions for how to prepare permit applications for new development and redevelopment projects.

# 620 a. Timeline for Submittals and Required Documents

621 New and redevelopment projects may be required to submit Stormwater Control Plans 622 (SWCP) and Stormwater Control Plan Applications (SWCP Apps) both prior to land use 623 permit and/or tentative subdivision approval and again prior to issuance of construction 624 permits. These documents convey critical project specific information to the County, verify 625 construction feasibility, and are to be certified by an appropriately licensed individual. SWCPs 626 and SWCP Apps submitted during land use permit or tentative subdivision review and 627 approval are considered preliminary documents to demonstrate PCR feasibility and site 628 features and are referenced for verifying conformance during construction permitting. 629 SWCPs and SWCP Apps submitted with construction permit applications are considered final documentation and should be fully detailed and complete. 630

631 <u>Preliminary Stormwater Control Plans, Land Use and/or Tentative Subdivision Approval</u>

632 The purpose of preliminary SWCP Apps and SWCPs is to ensure that the proposed site design 633 will be able to integrate necessary LID measures and structures to reduce post-construction 634 stormwater impacts and meet all of the applicable requirements of the PCRs. At the land use 635 permit and/or tentative subdivision approval stage, applicants must provide sufficiently 636 detailed documents that demonstrate the project's ability to fully comply with the objectives 637 in Figure 8. This includes delineation of DMAs for the entire project, estimated runoff 638 volumes generated in each DMA, and estimated square footage, treatment volume, and 639 retention volume addressed by each SCM.

#### 640 *Figure 8: Preliminary SWCP objectives*



642 For subdivisions, the County strongly encourages applicants to prepare preliminary SWCPs 643 that address the 'full build-out' runoff volume resulting from all lots as well as all public 644 improvements. SWCPs that address only the runoff volume associated with public 645 improvements associated with a subdivision will necessitate that the County impose the full 646 extent of the tract's PCR requirements on each parcel in the subdivision as they apply for 647 individual construction permits. The preliminary SWCP should also indicate whether the 648 project will enter into a new individual owner stormwater operations and maintenance 649 agreement or incorporate operations and maintenance provisions into CC&Rs or an existing 650 agreement.

- 651 County staff will review the preliminary SWCP and SWCP App and request additional 652 information or clarification through an information hold if necessary. Applicants are 653 encouraged to provide detailed calculations and specifications wherever possible in the 654 preliminary SWCP. Project conditions of approval typically require submittal of a final SWCP 655 and SWCP App at the time of application for construction permits, and completion and 656 execution of an operations and maintenance agreement for stormwater infrastructure.
- 657 While the square footages, feature layouts, and surface types may fluctuate between the 658 preliminary and final SWCP, the final SWCP should not deviate substantially from the 659 preliminary SWCP unless significant site constraints are revealed by subsequent technical 660 investigations. Detailed information about the contents of these submittals is provided in 661 Chapter 7.

#### 662 <u>Final Stormwater Control Plans, Construction Permit Application</u>

Final SWCPs and SWCP Apps are required submittals with applications for grading and construction permits. These documents are not considered conceptual and should only be submitted to the County as fully completed, stamped, reports and plans. Submittal of incomplete documents extends and delays the plan review process.

- 667 In addition to the site plans, SWCP, and SWCP App, applicants should submit a complete soils 668 and geotechnical report, results of any infiltration and/or percolation testing performed at 669 the site, and a separate site drainage report. Information in these reports is cross-checked 670 by the County to ensure feasibility and compliance of the proposed design. Applicants should 671 also submit a draft Operations & Maintenance Agreement (O&M Agreement). Detailed 672 procedures for compiling a draft O&M Agreement for post-construction stormwater features is provided in Chapter 9. Applicants are encouraged to reference the list of required plans 673 674 and documents in Figure 9 when preparing their submittals.
- 675

#### 676 *Figure 9: Required submittals with final stormwater control plans*

SWCP Application Form	Completed SWCP Application with all project metrics, summary information and signature(s).
Stormwater Control Plan (SWCP)	SWCP is detailed and fully complete, with accounting for all surface types, drainage management areas and stormwater structural control measures.
Operations & Maintenance Documents	Draft operations and maintenance agreement document(s) complete for review, or copy of CC&Rs is provided.
Soils & Geotechnical Reports	Soils and geotechnical reports, and results of all onsite testing verify that proposed stormwater management approach is feasible for the site.
Drainage Report	Report detailing compliance with County and FEMA flood control and drainage requirements (as applicable).

677

678 Project information included in the SWCP and SWCP App must be consistent with other 679 application materials including plans and reports. Detailed information about the 680 requirements for these submittals is provided in Chapter 7.

#### 681 <u>Additional Construction Permit Submittal Requirements</u>

Projects with an area of disturbance greater than 1.0 acre are also required to submit a 682 683 construction Stormwater Pollution Prevention Plan (SWPPP). The SWPPP should note that 684 the project is designed to comply with the PCRs. The final version of the SWPPP should 685 include appendices or attachments that incorporate copies of the SWCP, SWCP App, and an 686 unofficial copy of the O&M Agreement. Beginning in September 2023, documentation of 687 post-construction stormwater management measures is required as part of the permit 688 registration documents for the Construction General Permit. Inclusion of the final post-689 construction stormwater documents as appendices can expedite Central Coast Water Board 690 review of the projects Notice of Termination (NOT).

# 691 **4. Site Assessment**

692 Effective stormwater management requires early and ongoing coordination among project 693 owners, architects, landscape architects, geotechnical engineers, and civil engineers. Careful 694 consideration of the initial site layout can significantly reduce the volume of stormwater that 695 will need to be treated and infiltrated through structural control measures (SCMs). The site 696 assessment phase occurs prior to developing the final project concept and site design and is 697 intended to identify site-specific stormwater "opportunities" and "constraints" that can be 698 utilized as a basis for designing a well-balanced project.

699

700 The site assessment process prioritizes two (2) important strategies:

- For new development projects, the goal is to "mimic the pre-development stormwater runoff characteristics of the undeveloped site" through early implementation of strategically placed low impact design features and Structural Control Measures (SCMs).
- For redevelopment projects, the goal is "to reduce and/or prevent further impacts to downstream and impaired waterways" through the implementation of strategically placed LID and SCMs.
- 708

709

# a. Opportunities and Constraints Analysis

Early assessment allows the design team to identify and preserve areas of the project site
 that favor PCR compliance (opportunities), while prioritizing development to portions of the

712 project site that do not (constraints). Minimizing disturbance and maximizing opportunities

begins during the design phase by fitting the development into the terrain, as opposed to changing the terrain to fit the development

changing the terrain to fit the development.

Thoughtful site design can also reduce or eliminate the need for more expensive, complex stormwater treatment controls that are 'force-fit' into a project's site plan late in the design process. An abbreviated list of opportunities and constraints is provided in Table 8. A comprehensive opportunities and constraints checklist with additional guidance is included in Appendix B. The County will require submittal of a detailed Opportunities and Constraints analysis as part of the justification for installation of underground SCMs or a Technical Infeasibility finding.

# 722 **Table 8: Opportunities and constraints summary table.**

# **Opportunities and Constraints**

The following site characteristics should be considered as part of the project opportunities and constraints analysis.

# **Existing Vegetation**

• Existing, high-quality vegetation and trees are identified. Site disturbance at these locations during construction can be prevented by protective fencing.

#### Survey and Site Topography:

• Integrate existing drainage patterns into the site design where possible. Prioritize existing, natural low-spots and sumps for infiltration and drainage features. Prioritize existing high spots for placement of structures or hardscapes, allowing runoff to naturally drain to low lying areas for treatment.

#### **Soil Analysis:**

• Identify the locations of different hydrologic soil groups on site. Verify with soil borings and investigation report. Consider LID and SCM placement where soils support infiltration (soil groups A and B). Consider hardscape placement where soils discourage infiltration (soil groups C and D).

#### Geotechnical Analysis:

- Utilize information from soil borings and any geotechnical analysis to determine locations that are most suitable for infiltration (based on subsurface materials encountered) and locations with erosion hazards and landslide hazards that should be avoided.
- Determine the groundwater table elevation (including seasonally high and historically high) to ensure appropriate setbacks can be maintained.

#### Setbacks:

• Establish setbacks and buffer zones surrounding restricted and/or sensitive areas. Identify areas where SCMs cannot be constructed due to setback requirements. Examples include existing and proposed building foundations, municipal water wells, private water wells, septic systems, flood zones, easements, etc. (*See Table 15 for additional setback information.*)

#### **Hydrologic Features:**

• Identify onsite and offsite waterways and drainage infrastructure including locations where stormwater run-on may impact the site.

#### Pollutants of Concern:

• Identify areas where future or existing site operations could generate potential pollutants and locations where contaminated soil or historic pollution sources may be present.

#### **Construction Footprint:**

• Identify locations where existing vegetation or highly permeable soils can be protected from construction activity such stripping, over-excavation, compaction or stockpiling during construction.

#### 723

#### 724 **b. Soil Classification**

Soil types are highly variable across San Luis Obispo County with a wide range of characteristics and infiltration capabilities. Applicants are encouraged to undertake site specific soils investigations early in the planning and design process to confirm data and maps available from various public agencies. Site-specific soils and infiltration assessments provide key information on SCM siting and feasibility.

#### 730 <u>Hydrologic Soils Groups</u>

- The soils at the project location must be classified into their hydrologic soil groups (A, B, C,
- or D) by a licensed Geotechnical Engineer, Geologist, or Civil Engineer. The hydrologic soil groups must be included in any SWCP.
- 734 The preliminary SWCP may solely rely on USDA soils data if a site-specific soil evaluation has
- not been completed, except where underground infiltration features are proposed. A site-
- 736 specific soil investigation report is required as supporting documentation for the final SWCP.

#### 737 <u>Percolation Testing</u>

- The 'percolation rate' obtained from a percolation test is not equivalent to the 'infiltration rate' obtained from targeted infiltration testing methods such as single or double ring infiltrometer tests. While the percolation rate is related to the infiltration rate, percolation rates are greater than infiltration rates. Percolation testing measures both the downward progression and the lateral progression of water into the soil (i.e., the bottom surface area and the sidewalls), while an infiltration rate refers to the rate of water progressing downward
- into the soil (i.e., only the bottom surface).
- Raw percolation test results are not acceptable for sizing PR#3 or PR#4 SCMs, as the design
- 746 is likely to assume infiltration rates unlikely to be achieved in situ over the extended post-
- 747 construction period. Percolation rates can only be utilized in design if obtained via well-
- 748 documented testing. The measured raw percolation rate must be converted to an acceptable
- 749 estimate of the infiltration rate via the Porchet Method. Additional information about
- 750 calculating these conversions is detailed in Chapter 6.

#### 751 Infiltration Rates and Soil Testing

- 752 Infiltration tests must be conducted in the field where full infiltration and direct infiltration
- 753 SCMs are proposed to ensure that the measurements are representative of actual site
- conditions. It is recommended that these tests occur during the wet season to obtain more
- 755 accurate results for design infiltration rates in potentially saturated soil conditions.
- 756 It is ultimately at the discretion of the project geotechnical professional to select and apply
- testing methods that are most suitable to address design suitability concerns based on site-
- specific factors. There are inherent limits in the degree to which infiltration testing can assure
- as-built and long-term design functionality.
- The degree of minimum required soil infiltration testing varies by the size of the project, the site's soil types and conditions, anticipated SCMs, and the phase of project development.
- All projects that include SCMs must perform at least three (3) soil borings, with at least one (1) boring within the footprint of each proposed SCM.
- 764 Projects subject to PR#3 or PR#4 must perform at least three (3) infiltration tests, with at
- 765 least one (1) test within the footprint of each proposed SCM, except where only bioretention
   766 features are proposed.

- 767 If testing is not conducted during the planning phase (supporting the preliminary SWCP),
- 768 testing will be required for the construction documents design phase (final SWCP), as 769 outlined in Chapter 3.
- 770 Additional infiltration testing and soil characterization may be necessary prior to any 771 application for construction permits. The following scenarios may necessitate additional
- testing for the final SWCP to ensure design suitability: 772
- 773 Non-uniform soils across the project site.

776

777

- 774 Relocation of infiltration based SCMs to locations where testing has not been • 775 conducted.
  - Installation of SCMs at an elevation not previously characterized by soil borings or infiltration tests.
- 778 Testing was not performed in locations where significant earthwork, fill import, or 779 compaction could impact infiltration rates.
- 780 Proposed use of underground/subsurface infiltration SCMs. •
- 781 Design infiltration rates shall be established using methods that are appropriate for 782 the configuration of infiltration feature proposed and should incorporate an
- appropriate factor of safety. Table 9 specifies minimum factors of safety based upon 783 784
  - the feature type proposed and soils testing performed at the site.

785 Table 9: Infiltration testing methods and appropriate factors of safety.

SCM Туре	Test Method	Minimum Number of	Minimum Factor of Safety
		Tests	
Bioretention	Percolation	3 per site	FS = 1
	(converted via Porchet Method)	1 per SCM	
	Infiltration	3 per site	
	(Ring Infiltrometer)	1 per SCM	
	Hydrologic Soil Group	N/A	
	(standardized rates)	(borings only)	
Surface	Percolation	3 per site	FS = 2
Infiltration	(converted via Porchet Method)	1 per SCM	
	Infiltration	3 per site	
	(Ring Infiltrometer)	1 per SCM	
	Hydrologic Soil Group	N/A	
	(standardized rates)	(borings only)	
Underground	Percolation	3 per site	FS = 3*
Infiltration	(converted via Porchet Method,	1 per SCM	
	unless dry well)		
(infiltration trench,	Infiltration	3 per site	
dry well, chamber	(Ring Infiltrometer)	1 per SCM	
infiltration system,	Hydrologic Soil Group	HSG rates not	allowed to be used in
etc.)	(standardized rates)	design of underground SCMs	
* Where surface biofiltration is provided directly upstream of an underground infiltration SCM, a			
minimum factor of so	afety of 2 is permissible.		

- Testing must be conducted or overseen by a qualified, licensed professional.
- Testing should be conducted at the location of proposed infiltration SCMs.

Additional guidelines for soil investigations and testing

- The elevation of tests should correspond to the facility elevation, plus 3 feet below
   proposed bottom elevation of SCM to account for soil amendments or roughened
   zones under the infiltration feature.
- Soil boring logs should extend at least 5-10 feet below the proposed bottom
   elevation of the planned SCM.
- If a confining layer (soil with a greater percentage of fines) is observed within six (6)
   feet of the bottom of the infiltration facility during the subsurface investigation,
   additional testing should be conducted within that confining layer to better
   characterize constraints.

These guidelines may be reduced or increased at the discretion of the project professionaland reviewing jurisdiction depending on the complexity and variability of the site.

# 800 *Factors of Safety*

786

Performance of infiltration SCMs is limited by the decline of infiltration rates over time, and applying an appropriate factor of safety to infiltration testing results is required. Infiltration rates typically decline between maintenance cycles as the feature's surface becomes impaired with sediment in the infiltrative layer. The functional infiltration rate is often lower than the rate measured during design, necessitating that adequate conservatism is incorporated in the selection of design infiltration rates. Applicants should incorporate appropriate factors of safety specified in Table 9.

# 808 c. Depth to Groundwater

The depth to seasonal high groundwater level must be evaluated prior to siting and selection of SCMs. To ensure continued functionality, seasonal high groundwater cannot encroach within 10-feet from the bottom of proposed infiltration SCMs. Seasonally high groundwater may significantly limit the use of surface or underground infiltration based SCMs. Additional information about setbacks is provided in Chapter 5.

# 814 d. Geotechnical Constraints

The potential effects of infiltrated stormwater on soil properties and slope stability should be evaluated for potential impacts including but not limited to: slope seepage, landslide potential, and distance to load bearing structures such as building foundations, and retaining walls. These potential issues must be thoroughly reviewed by a licensed Geotechnical Engineer, Geologist, or Civil Engineer and their recommendations incorporated into the site design.

While geotechnical reports are commonly utilized to determine appropriate methods for foundation design, retaining walls and construction practices, they should also evaluate site suitability for different stormwater management strategies. Available geologic or

- 824 geotechnical reports on local geology should identify relevant features such as depth to 825 bedrock, rock type, lithology, faults, and confining soil types. These geologic investigations 826 should also identify shallow water tables and groundwater or soil contamination issues that 827 could be critical to the stormwater design strategy.
- 828 Infiltration of stormwater can exacerbate geotechnical issues under certain conditions 829 unless appropriate precautions are taken. If infiltration SCMs are planned, the site's 830 geotechnical investigation should evaluate the area of the proposed infiltration feature to 831 identify geotechnical issues and geological hazards that may result from infiltration and
- 832 identify potential mitigation measures.
- 833 Geotechnical recommendations for stormwater SCMs and infiltration features should 834 evaluate and discuss the following factors:
- Presence of collapsible soil
- Presence of expansive soil (shrink/swell potential)
- Slope setbacks, and slope stability,
- Liquefaction potential
- Groundwater mounding potential, as appropriate.

Designers must adhere to site specific recommendations made by a licensed geotechnical engineer or civil engineer based on soil boring data, drainage patterns, and other pertinent site characteristics. Implementing the geotechnical engineer's requirements is essential to prevent damage from increased subsurface water pressure to surrounding properties, public infrastructure, and slopes.

#### 845 e. Hazardous Materials or Contamination

Sites located in areas with known groundwater pollution or soil contamination may need to avoid infiltration SCMs, as they could contribute to the movement or dispersion of contamination. The potential existence of soil and groundwater contamination should be evaluated early in the site assessment so that the infiltration and drainage design can be modified where necessary.

The California State Water Resources Control Board (SWRCB) maintains a database of registered contaminated sites through their Geotracker® Program, refer to Appendix A for the website link. Registered contaminated sites can be identified in the project vicinity when the site address is typed into search.

The site design should also consider the use and handling of hazardous materials and potential pollutants at the site once operational. Ongoing activities at sites such as gas stations, auto service stations, and recycling centers can generate high pollutant loads. In these cases, pretreatment devices, such as oil and grease separators may be necessary to remove site specific pollutants before stormwater is directed to infiltration features. This "treatment train" approach ensures that SCMs continue to provide their intended benefits and function properly. Site drainage patterns should avoid concentrating drainage near areas where hazardous materials will be stored or handled. Similarly, flows should be routed in a manner that avoids areas where potential pollutants would likely be used during operations. Infrastructure should be designed in a manner that segregates post-construction stormwater from exposure to areas where industrial activities will take place.

Additional site control standards can be found in County of San Luis Obispo Title 19, linkedin Appendix A.

869

# f. Natural Areas and Existing Vegetation

870

883

871 The initial site assessment should 872 identify any sensitive or protected 873 habitats or natural resources present on 874 the site. Site designs that protect and avoid disturbing sensitive features such 875 876 as creeks, heritage or protected trees, 877 and wetlands should note this strategy 878 as a means of complying with PR#1.

879 Avoiding disturbance of these types of
880 sensitive features can also reduce the
881 need to obtain additional agency
882 permits.



*Figure 10:* Protection of sensitive biological resources can be integrated as compliance with PR#1.

884 g. Special Considerations

In extenuating circumstances, applicants may apply for a finding of technical infeasibility to comply with PR#3. A finding of technical infeasibility does not waive any portion of the compliance requirements for PR#1 or PR#2 at the site.

888 <u>Technical Infeasibility- Alternative Compliance</u>

889 The PCRs allow two (2) options for alternative compliance with PR#3 retention requirements:

- the 10% Equivalent Impervious Area Adjustment (10% EISA adjustment), and off-site compliance.
- 892 Both options require a demonstration that full on-site compliance is technically infeasible. A
- finding of Technical Infeasibility will not apply to PR#1 or PR#2 requirements, which must
- still be achieved on-site. To propose a finding of technical infeasibility, the SWCP must include
- a complete and thorough implementation of opportunities for implementing LID on-site. The
- 896 SWCP must also include a detailed opportunities and constraints analysis and site map, as 897 detailed in Appendix B.
- 898 The conditions which merit a finding of technical infeasibility are detailed in the PCRs and 899 summarized in Table 10. Applicants must submit a site-specific hydrologic and/or drainage

- 900 design analysis conducted and endorsed by a registered professional engineer, geologist,
- architect, and/or landscape architect, demonstrating that compliance with PerformanceRequirement #3 is technically infeasible.

903 Sites with one or more documented constraints listed in Table 10 may be approved by the 904 County to utilize the 10% EISA adjustment or an offsite compliance location. It is strongly

904 County to utilize the 10% EISA adjustment or an offsite compliance location. It is strongly 905 recommended that applicants contact County staff to discuss technical infeasibility prior to

- 906 submitting permit application documents.
- 907 **Table 10:** Site conditions supporting a technical infeasibility finding.

#### **Constraining Site Conditions**

The following site characteristics contribute to technical infeasibility.

Depth to seasonal high groundwater limits infiltration and/or prevents construction of subgrade stormwater control measures;

Sites where soil types significantly limit infiltration;

Sites where pollutant mobilization in the soil or groundwater is a documented concern;

Depth to an impervious layer such as bedrock limits infiltration;

Sites where pollutant mobilization in the soil or groundwater is a documented concern;

Space constraints (e.g., infill projects, some redevelopment projects, high density development);

Geotechnical hazards;

Stormwater Control Measures could only be located within 100 feet of a groundwater well used for drinking water;

Incompatibility with surrounding drainage system (e.g., project drains to an existing stormwater collection system whose elevation or location precludes connection to a properly functioning treatment or flow control facility).

- 908 <u>10% Equivalent Impervious Surface Area Adjustment (EISA)</u>
- 909 Full compliance with PR#3 criteria can be waived if stormwater control features occupy an
- area of the site equivalent to no less than 10% of the project's 'Equivalent Impervious Surface
- 911 Area' or EISA.
- 912 To demonstrate compliance with the 10% EISA adjustment applicants must clearly 913 demonstrate the following data in the SWCP:
- 914 1. Divide the site into Drainage Management Areas (DMAs).
- 915 2. Tabulate the total fully impervious square footage in each DMA.
- 916 3. Tabulate the pervious square footage in each DMA.
- 917 4. Multiply the square footage of pervious surfaces in each DMA by the correction918 factors shown in Table 11.

- 5. Total the contributions of the pervious and semi-pervious surfaces in all DMAs. Thisis the EISA for the site.
- 921 To calculate the required SCM area for the 10% adjustment factor:
- Calculate the square footage of bioretention or other retention based SCM facilities
   required for the site using the simple method or calculator.
- 924 2. Divide the required SCM area by the EISA to determine the 10% adjustment area.
- 925
- 926 **Table 11:** Correction factors for calculating Equivalent Impervious Surface Area.

Pervious Surface	Correction Factor
Disturbed soils / managed turf	A: 0.15
(dependent on original Hydrologic Soil	B: 0.20
	C: 0.22
Group)	D: 0.25
Pervious Concrete	0.60
Cobbles	0.60
Pervious Asphalt	0.55
Natural Stone (without grout)	0.25
Turf Block	0.15
Brick (without grout)	0.13
Unit Pavers on Sand	0.10
Crushed aggregate	0.10
Grass	0.10

#### 927 Off-site Mitigation

Nearly all proposed development should be able to attain onsite compliance through the
use of LID or the 10% EISA adjustment. Applicants seeking to construct offsite mitigation
must submit a description of the project(s) that will provide off-site mitigation. The proposed
off-site project(s) may be existing facilities and/or prospective project(s) that are as effective
in maintaining watershed processes as implementation of the applicable Post-Construction
Stormwater Requirements on-site. The description in the SWCP shall include:

- The location of the proposed off-site project(s) must be within the same watershed
   as the Regulated Project. Alternative Compliance project sites located outside the
   watershed may be approved by the Central Coast Water Board Executive Officer
- 937 2. A schedule for completion of offsite mitigation project(s), where the off-site938 mitigation project(s) has not been constructed.

- 939 3. A preliminary design for the off-site mitigation project.
- 940

941 The County will require applicants proposing Off-site Mitigation to construct the off-site 942 project concurrent with the development project requiring PCR compliance. Permits for the 943 triggering project will not be granted Final status until the off-site project is fully constructed.

#### 944 <u>On-site offset</u>

LID measures and SCMs must be sized to address all post-construction flows and/or volume
they receive onsite. If this is not possible, applicants may propose oversizing another SCM
within a different project tributary area or DMA to offset the shortfall. This practice is referred
to as an "on-site offset."

The feature identified for upsizing should receive runoff from a similar surface type or site use as the area that cannot be treated. Justification for the use of an on-site offset must be

951 provided to the County, and approval is at the discretion of County staff. The County will not 952 permit the use of an on-site offset for more than 10% of the total post-construction runoff

953 volume

954 The SWCP should include an explanation and figure demonstrating why the proposed design

would not be able to accommodate all required flows and/or volume within each DMA. Most
 commonly, this would be due to the inability to physically route the water to the SCM location

957 or significant space constraints due to setbacks. All reasonable means to address post-958 construction flows should be evaluated before requesting the use of an on-site offset.

959 h. Landscaping Requirements

Applicants should prioritize the use of County ordinance required landscaping as an
 opportunity to incorporate LID into the site design. Landscaping features required for
 screening or shading can be utilized for collecting and retaining stormwater onsite.

#### 963 <u>Maximizing landscape use and efficiency</u>

The PCRs require prioritization of landscape-based LID features for all regulated projects and utilizing required site landscaping can be highly advantageous in reducing the scale of structural control measures. Additionally, vegetation is an important element of LID stormwater features. Plants provide a physical structure that increases infiltration into the soil and promotes a soil community of microorganisms that remove pollutants. Maintaining healthy vegetation is key to the functional benefit of stormwater treatment features.

970 County codes (Title 22 and Title 23) encourage the planting of native species, trees, and 971 drought tolerant species. Generally, the County requires landscaping in the following site 972 locations:

- Setbacks
- Parking areas

- Unused areas of a site
- Special use sites

Landscape areas typically include a combination of plant types and natural decorativematerials to achieve the intended or required purpose of the landscape (e.g., screening, etc.)

#### 976 *Irrigation considerations*

- 977 Consistent with the Model Water Efficient Landscaping Ordinance (MWELO) an irrigation plan
- consistent with County codes is required during the application process and is submitted aspart of the landscape plan. Title 22 and Title 23 specify the requirements for irrigation
- 980 methods, equipment, and scheduling.
- 981 During drought emergencies, vegetation installed as part of a SCM may be considered 982 functional landscaping and waived from watering prohibitions associated with non-983 functional turf or landscaping. All functional vegetation installed as part of SCMs should be 984 significantly mature at 24 months following planting to minimize the need for continued 985 irrigation. Where available, the use of municipally provided Recycled Water for landscape 986 irrigation (including vegetated SCM plant establishment) is authorized and encouraged.

#### 987 Parking Lot Landscaping Requirements

- County codes require that all parking lots of three (3) or more spaces contain sufficient trees
  so that within 10 years, 60% of the surface area of the lot is shaded. This requirement is in
  addition to any required perimeter landscaping required for screening.
- 991 Applicants are encouraged to utilize 992 landscaped areas within parking lots as 993 self-retaining areas or treatment SCMs 994 to infiltrate stormwater generated by the 995 adjacent impervious surfaces of the 996 parking lot. Optimizing this method of 997 indirect infiltration reduces the irrigation 998 demand of the site and supports 999 compliance with multiple performance 1000 requirements.



*Figure 11:* Recessed vegetated median with valley drain and curb cut to accept stormwater.

1001

# 1002i. Utility Conflicts

1003 Utility lines and connections are common and necessary components of infrastructure 1004 within the right-of-way, and typically extend into private property. Designers should evaluate 1005 utility locations and determine where setbacks and sleeving requirements may impact 1006 opportunities for perimeter LID features or SCMs. In some scenarios utility providers may 1007 authorize placement in LID features with the use of insulating wrap, impervious water stops, 1008 or utility trench dams.

Applicants should coordinate with local utility providers to determine setback or encasement
 requirements for existing or future utilities. Applicants should also consult with any
 applicable building or plumbing codes that may provide any minimum setback requirements
 between existing or future utilities and SCMs.

- 1013 Placing above-grade utility infrastructure within LID features and SCMs should be avoided to
- 1014 prevent disruption of infiltration, flow routing, and maintenance access.

#### 1015



Figure 12: Utility infrastructure in a bioretention feature and obstructing a stormwater swale.

# 1016 j. Site Definition and Run-on Control

1017 Stormwater run-on is the drainage generated from upstream tributary areas (developed or 1018 undeveloped) that flows into the project site. County ordinance does not authorize modifying or significantly altering the path of existing drainage for the purpose of protecting new 1019 development. The historical drainage path is to be maintained exiting the site to avoid 1020 damaging downstream properties and/or facilities, and this will need to be accounted for in 1021 the planning and construction phases. Drainage entering the site needs to be carefully 1022 1023 evaluated and incorporated into project design. Stormwater SCMs must be adequately sized to accommodate the runoff that they receive, whether it be site generated runoff, or 1024 1025 upstream run-on.

1026 Redevelopment projects should carefully evaluate existing runoff and run-on conditions. 1027 Projects that expand the footprint of development on an existing site may be required to 1028 address and accommodate the runoff generated by existing site infrastructure if it cannot 1029 be isolated from the new development, which is also applicable to road widening 1030 improvements.

# 1031 k. Minimizing the Size of SCMs

Runoff reduction measures can be integrated into the site design to reduce the amount treatment and retention required. Design measures such as directing roof downspouts to landscaping or routing parking lot drainage into landscaped areas, can dramatically reduce the amount of stormwater that needs to be managed by SCMs. These types of site design features meet all the criteria of LID; they are small scale, vegetated, and infiltration based.



Runoff reduction measures are generally not dependent on site constraints and should be considered for use with all projects. These measures also include rainwater harvesting, green roofs, buffer strips, and flow through planters.

Figure 13 Downspout directed to site landscaping.

1050

# 1051 1052 RELIM DRAFT

# 1053 **5. Structural Control Measures**

Once the site has been assessed and opportunities and constraints identified, designers can begin delineating drainage management areas (DMAs) and determining which SCMs may be appropriate for the site. The SCMs described in this chapter will contribute to managing and reducing stormwater runoff volume, rate, and/or pollutants from the site, and should be used to augment LID measures to meet the performance requirements.

#### 1059 a. Drainage Management Area Delineation

Projects that meet the criteria for PR#2 or greater must delineate the site into Drainage Management Areas (DMAs) to document the decentralized stormwater management design approach. DMAs are portions of the developed project site that will drain to a common location. The entirety of the site must be tabulated into DMAs, with each DMA ideally containing only one type of surface (i.e. vegetation, impervious, or semi-pervious surface.) Each DMA must be clearly identified and labeled in an exhibit, with corresponding characteristics summarized in tabular format. DMAs should not overlap.

#### 1067 <u>Types of DMAs</u>

1068 DMAs are typically delineated by grade breaks and surface cover types and drain to a 1069 common location of the site. There are four (4) accepted categories of DMAs:

• Self-retaining areas

- Self-treating areas
- Areas draining to self-retaining areas
- Areas draining to LID features or SCMs

#### 1070

Self-retaining areas provide passive stormwater treatment and retention and can be highly
advantageous in meeting multiple performance requirements. Self-retaining areas include
depressed vegetated areas with either landscaping or native vegetation or pervious
pavements.

1075 It is acceptable to direct runoff from another DMA with impervious cover to a self-retaining 1076 area. However, the maximum allowable ratio for this design strategy is 2 parts impervious 1077 area to 1 part pervious area. Runoff from the impervious area draining to the self-retaining 1078 area must be dispersed across the pervious self-retaining area. To utilize this strategy, the 1079 self-retaining area must be sized to hold a volume equal to both areas times a depth of 1-1080 inch. This chapter includes additional guidance on run-on ratios for pervious pavements in 1081 section 5.h.

Self-treating areas are landscaped or undisturbed areas of the site that do not generate or
receive stormwater runoff from other areas. Generally, self-treating areas are flat,
depressed, or gently sloped, ensuring that stormwater will infiltrate into the soil. To qualify
as a self-treating DMA each of the following characteristics must be present:

The area is vegetated with native and/or non-invasive drought tolerant species that
 do not require permanent irrigation or regular application of fertilizers.

- If located in an area where soils have been disturbed, soils have been amended and aerated to promote infiltration characteristics equivalent to undisturbed native topsoil.
- Any incidental impervious areas are less than 5 percent of the self-treating area.
- The self-treating area is hydraulically separate from DMAs that contain permanent
   SCMs.

DMAs draining to constructed SCMs are typically characterized by a significant proportion of impervious surface. The impervious area within these DMAs is used to determine the necessary volume and footprint of the SCM. For each DMA draining to a SCM, determine the square footage, type of surface, and corresponding runoff factor. This information is used for sizing runoff retention and/or water quality treatment SCMs. Additional information on these calculations and resources to complete them are provided in Chapter 6. It is allowable for more than one (1) DMA to drain to an SCM. However, drainage from a single DMA should

1101 not be split among multiple SCMs.

#### 1102 <u>DMA Sizing Guidelines</u>

1103 The objective of the decentralized approach of the PCRs is to manage the stormwater from

each DMA with LID design features or a SCM. While a variety of factors will influence the size

1105 of each DMA, the guidelines in Table 12 should be incorporated into the delineation process.

1106 Table 12: Drainage management area sizing guidelines.

#### Decentralized Drainage Management Area Guidelines

The following guidelines are recommended for ensuring an appropriately decentralized stormwater management approach.

Single-family Residential Project DMAs (including parcels and access roads/driveways):

- Minimum of three (3) DMAs for sites less than one (1) acre in total area.
- Each DMA less than five (5) acres in total area.
- Each DMA less than one (1) acre total impervious area.
- Each DMA less than ten (10) individual residential lots.
- Each DMA should avoid comingling of runoff from multiple land uses where feasible.
- DMAs with access roads should include ¼ mile or less of roadway.
- DMAs should be no less than 250 square feet or 2% of the project site.

#### Commercial, Industrial, Multi-family residential projects (including public improvements):

- DMAs should be land-use specific (i.e. parking, rooftop, access roads, equipment/processing areas.)
- Each DMA less than three (3) acres total area.
- Each DMA less than one (1) acre total impervious area.
- DMAs should be no less than 250 square feet or 2% of the project site.
- Each DMA should avoid comingling of runoff from multiple land uses where feasible.

#### Roadway projects (*public improvements only*):

• DMA for local roadways ¼ mile or less.

- DMA for collector roadways 1/8 mile or less
  - DMA for arterial roadways 1/8 mile or less.
- 1107

# 1108 *Delineating DMAs across Public and Private Property*

Projects that include both public and private improvements may find it necessary to delineate DMAs that span both areas. For instance, a project may be required to construct curb, gutter, and sidewalk improvements within the public Right-of-Way or existing roadway stormwater may flow onto the project site at the area of conform of the new frontage

- 1113 improvements and existing roadway. If the areas cannot be isolated with an asphalt berm or
- 1114 other method, then this would be a shared DMA between the roadway and the project site.
- 1115 Alternatively, distinct DMAs for public and private improvements may be delineated, with
- 1116 one DMA draining into another to reflect site drainage patterns.
- 1117 The same would be true of a project located in a rural area not subject to curb, gutter, and
- 1118 sidewalk requirements.

# 1119 b. Structural Control Measure Types

- 1120 The County recognizes a defined suite of stormwater structural control measures that
- 1121 support compliance with the PCRs. These SCMS are categorized, defined, and named by 1122 common characteristics and function. The intent of categorizing specific types of SCMs is to
- 1123 promote consistent nomenclature across the County and project documentation.

# 1124 <u>Recognized SCM Types and Descriptions</u>

- 1125 The County recognizes and accepts only these standardized types of SCMs summarized and
- 1126 described in Table 13.
- 1127 Table 13: Stormwater structural control measures.

SCM Туре	Description	Key Characteristics	Infiltration Strategy
Biofiltration/ Bioretention	Vegetated feature that filters stormwater through a specialized soil media and includes aggregate subsurface layer to enhance storage or infiltration. Biofiltration includes an underdrain for discharges where infiltration rates are poor. Allows for inundation of vegetated areas during storm runoff.	<ul> <li>At-grade, no slope.</li> <li>Vegetated (50%+)</li> </ul>	Indirect infiltration via aggregate subsurface layer and native soil bed.
Bioswale	Vegetated feature with up to 5% slope that conveys stormwater and provides moderate filtration by vegetation. May or may not include specialized soil media. Design includes gently sloped flow paths and dense vegetation to promote	<ul><li>Vegetated to minimum 50%</li><li>No retention volume credit.</li></ul>	No infiltration credit. Credit applied for treatment.

SCM Туре	Description	Key Characteristics	Infiltration Strategy
	stormwater surface filtration and velocity reduction by vegetation (settling).		
Filtration Device	A flow-through structure or product designed to capture and retain sediment, leaf litter, trash, and coarse particles. Typically accepts runoff from road or a single land use paved area.	<ul> <li>Below-grade.</li> <li>Non-vegetated.</li> <li>No retention volume credit.</li> </ul>	No infiltration.
Infiltration Feature (includes underground infiltration chambers)	Structure designed to retain and infiltrate stormwater. Existing soils and grades may be modified to sustain maximum infiltration rates.	<ul> <li>At or below- grade.</li> <li>Non-vegetated.</li> <li>Retention volume credit applies.</li> </ul>	Direct infiltration.
Pervious Pavement	Durable materials that create a pervious surface that allows stormwater to infiltrate into the underlying soil. May include an underlying reservoir to increase retention capacity and infiltration rates. Constructed to minimize the volume of stormwater generated.	<ul> <li>At-grade</li> <li>Non-vegetated.</li> <li>Retention volume credit may apply if structural section includes retention capacity.</li> </ul>	Indirect infiltration.
Infiltration (Retention) Basin	A feature designed to store and infiltrate significant volumes of stormwater into unsaturated zone. Infiltration rates may be augmented with a highly permeable substrate. Vegetation distribution is limited to grass or unvegetated.	<ul> <li>At grade.</li> <li>Minimally vegetated or non-vegetated.</li> <li>Retention volume credit applies.</li> </ul>	Direct infiltration.
Detention Basin	A flow through basin with discrete inlets and outlets to detain stormwater runoff for some minimum time to reduce peak flows. One or more outlets may exist at different elevations. Lowest outlet elevation sets retention pool capacity.	<ul> <li>At-grade.</li> <li>Retention volume credit applies for volume below lowest outlet.</li> </ul>	Limited infiltration.
Media Filter	A proprietary subsurface flow-through structure that uses a membrane or media to actively filter stormwater pollutants. Pollutant load reductions achieved but no stormwater volume reduction occurs.	<ul> <li>Primarily below- grade.</li> <li>Non-vegetated.</li> <li>No retention volume credit.</li> </ul>	No infiltration.

SCM Туре	Description	Key Characteristics	Infiltration Strategy
Treatment Vault	A subsurface flow-through structure that physically separates sediment, trash, leaf litter, debris or other particulates by separation or settling. Pollutant load reductions achieved but no stormwater volume reduction occurs.	<ul> <li>Below-grade.</li> <li>Non-vegetated.</li> <li>No retention volume credit</li> </ul>	No infiltration.

1128

# 1129 SCMs Types for siting in the County Right-of-Way

1130 A limited suite of the Stormwater SCMs listed in Table 13 is approved for construction in the

1131 County's Right-of-Way. The County's Public Improvement Standards allow for the use of a

1132 roadside infiltrator design that can be installed beneath sidewalks. Additionally, biofiltration,

1133 bioretention, or bioswale SCMs may be placed in the shoulder along the roadway. In cases

1134 where Right-of-Way generated stormwater is routed to private onsite SCMs, additional types

1135 of SCMs are permitted. Runoff from private property development (onsite) may not be

1136 directed to any SCM in the public Right-of-Way.

# 1137 c. Prioritization of Low Impact Development

1138 Small scale, landscaped-based LID infiltration features that treat stormwater as close to the source as possible are the highest-priority for the site design. LID design features should be 1139 1140 considered and incorporated for use with all projects. Identifying these features in both the 1141 SWCP and on project plans is critical for demonstrating compliance with PR#1. Engineered and proprietary structures such as underground infiltration chambers, hydrodynamic 1142 separators, and lined detention basins are not LID strategies. Compliance with the 1143 1144 prioritization framework illustrated in Figure 14 must be documented in the SWCP and 1145 proposed design especially where any mechanical, proprietary, or subsurface SCMs are 1146 proposed.

#### 1147 Figure 14: Low impact development prioritization framework.



Lowest priority: mechanical, proprietary, or sub-surface features for meeting water quality, retention, and peak management.

1148 Applicants must demonstrate that significant effort has been made to incorporate LID 1149 strategies into the design before proposing mechanical or subsurface features. Very few

- 1150 projects are constrained to the extent that they preclude management of a majority of post-
- 1151 construction runoff via LID measures.

1152 Underground infiltration chambers, hydrodynamic separators, vault systems, or treatment 1153 devices are not considered LID design elements and should be limited to the DMAs where 1154 all other LID design options are infeasible. If exceptional site constraints render management 1155 of post-construction runoff via LID measures infeasible, then designers should demonstrate 1156 that a minimum of 30% of the site's post-construction runoff volume has been managed 1157 through LID strategies or at-grade vegetated features before proposing compliance 1158 measures utilizing 'grey' or subsurface infrastructure.

- 1159 Documenting compliance with PR#1
- All regulated projects must demonstrate compliance with PR#1. Compliance with PR#1 must
- 1161 be clearly documented in the SWCP App and/or SWCP and reference a specific plan sheet
- and detail in the construction plans that demonstrates the location of the strategy selected.

- 1163 PR#1 strategies benefit the overall project design by reducing the volume of runoff that must
- 1164 be treated, retained, and managed in accordance with PR#2, PR#3 and PR#4. Achieving
- 1165 compliance with the quantitative targets of PR#3 and PR#4 does not supersede the need to
- 1166 demonstrate that PR#1 has been met. For example: directing runoff from an impervious
- 1167 DMA to an engineered SCM designed to meet PR#2 and PR#3 requirements is not an LID
- 1168 strategy and does not meet the PR#1 requirement.

#### 1169 <u>Self-treating areas, self-retaining areas</u>

Self-treating and self-retaining areas are considered LID features, as they are typically vegetated and additionally reduce the overall imperviousness of the site. Incorporation of self-treating and self-retaining DMAs into the project design is an effective means of demonstrating compliance with PR#1. The locations and dimensions of self-treating and self-

1174 retaining areas should be clearly noted on plans and documented in the SWCP.

#### 1175 <u>Rainwater harvesting and reuse systems</u>

1176 Rainwater harvesting systems are designed to collect and store runoff for later use and are

1177 considered a LID practice. These systems store a specific volume of water and must be

1178 designed with a safe bypass or overflow route for rain events that exceed the design

1179 capacity. Collection systems or cisterns with a storage capacity of at least 100 gallons meet

- 1180 the requirements of PR#1.
- 1181 Water quality treatment and water reuse limitations vary significantly based upon the 1182 surface from which the runoff is harvested. Per the California Building Code, runoff from 1183 above grade surfaces (rooftops, shade structures) is classified as non-potable water and
- 1184 requires only modest screening and filtration for irrigation reuse. Runoff from at-grade
- 1185 surfaces and flatwork (driveways, walkways, parking areas, etc.) is classified as graywater
- 1186 which requires significantly greater treatment and has more restricted reuse applications.
- Applicants proposing capture and reuse systems are advised to closely review California
  Plumbing Code Chapters 15 and 16 which detail requirements for siting, water quality
  treatment, connections, inspection, and testing of these systems.
- 1190 Consistent with the California Building Code, the County does not require separate 1191 permitting for rainwater harvesting systems collecting less than 360 gallons for outdoor 1192 irrigation reuse. Additionally, rainwater harvesting systems collecting up to 5,000 gallons 1193 may be constructed without individual permitting provided that tanks are constructed at-1194 grade, with no electrical connections, and meet a 2:1 height to width ratio.
- Larger capacity harvesting systems, subsurface systems, systems that collect graywater (as defined by the California Plumbing Code), and systems proposed as the method of complying with PR#2 or above, are subject to separate County permitting. Plans must indicate backflow prevention controls, a safe overland bypass/escape, and detailed irrigation schedule that includes the site's irrigation demand and the maximum drawdown period for stored rainwater in all weather conditions.

- 1201 Designers should reference the drawdown periods, credits, and sizing requirements in Table
- 1202 14 when designing a rainwater harvesting system requiring County permitting. In all cases,
- 1203 a debris excluder and 100-micron filter are required on rainwater or greywater collection
- 1204 systems.

Planned Drawdown / Reuse Period	Sizing Requirements to meet PCRs	Volume credit applied to County flood control standards
Under 48 Hours (Less than 2 days)	85 <sup>th</sup> percentile storm. Meets PR#1, PR#2, PR#3.	100% stored volume.
Up to 72 hours (Up to 3 days)	85 <sup>th</sup> percentile storm x 1.2 <i>Meets PR#1, PR#2, PR#3.</i>	100% stored volume.
Up to 7 days	85 <sup>th</sup> percentile storm x 1.2 <i>Meets PR#1, PR#2, PR#3</i> .	100% stored volume.
Up to 14 days	85 <sup>th</sup> percentile storm x 1.2 <i>Meets PR#1, PR#2, PR#3.</i>	0% stored volume.
Greater than 14 days	85 <sup>th</sup> percentile storm x 1.2 <i>Meets PR#1, PR#2, PR#3.</i>	0% stored volume.

#### 1205 Table 14: Rainwater harvesting crediting and drawdown.

#### 1206

1207 Permitted systems reusing stored water for irrigation in commercial or multi-family settings

1208 must also post permanent signage indicating that the source of irrigation water is un-treated

1209 rainwater. Single family residential systems are exempt from this signage requirement,

1210 unless utilizing spray irrigation in a publicly accessible area.

1211 The project's operations and maintenance plan must include all required maintenance

1212 activities per the schedule in Chapter 16 of the California Plumbing Code, in addition to any

1213 site-specific maintenance or inspection activities.

# 1214 d. Structural Control Measure Selection

1215 This section provides information for common SCMs including a description, advantages,

1216 limitations; key design features, and sizing design tips. Each DMA should be evaluated to

determine the most appropriate SCM with careful consideration of information from theinitial site assessment.

#### 1219 <u>SCM Purpose: Flood Control Requirements and the PCRs</u>

- 1220 SCMs designed for compliance with the PCRs may not be suitable for addressing the
- 1221 retention or detention volume requirements set by the County's drainage and flood control
- 1222 standards. In some locations these flood control standards require retaining or detaining a
- 1223 significantly greater volume of stormwater.
- 1224 Modifying bioretention or biofiltration SCMs to accommodate a deeper surface ponding area
- 1225 to increase basin volume can be detrimental to the functionality of these features. While
- 1226 bioretention plantings are typically able to withstand 72 hours of inundation, repeated or
- 1227 prolonged inundation of a bioretention facility can damage plants and create vector control

issues. The ponding depth for biofiltration and bioretention features should not exceed 6-inches.

- 1230 If a site's SCMs do not contain adequate volumes to meet additional drainage or flood control 1231 standards, it is recommended that SCMs be designed with overflows and conveyance to 1232 additional downstream facilities. The downstream facilities (typically a basin) can be sized for 1233 the supplemental volume needed to achieve compliance with other standards. With this 1234 approach, decentralized, LID-compliant SCMs can be utilized to the maximum extent feasible 1235 while providing greater flexibility for the design engineer in managing volumes beyond the
- 1236 PCR requirements.
- 1237 For example, consider a project that must meet PR#1-3 and County flood control 1238 requirements on a space-constrained site. The design engineer has identified that County 1239 flood control volumes for retention or detention will exceed the volumetric retention requirement of PR#3. Bioretention facilities with adequate surface area to meet flood control 1240 1241 requirements as well as LID ponding depth exceed available surface area. The design 1242 engineer opts not to pursue the extensive amount of subsurface exploration and excavation 1243 likely necessary to provide a subsurface retention facility that meets all standards for PR#3 1244 and County flood control volumes. Instead, taking advantage of the reduced volumetric 1245 safety factors offered for bioretention facilities, the design engineer distributes a limited 1246 number of bioretention basins throughout the site to meet PR#2 and PR#3. These overflow to an onsite drain that outlets in a modest surface detention basin designed to County flood 1247 1248 control standards (accounting for storage provided by the bioretention basins). This design 1249 concept is explicitly encouraged by the County.

#### 1250 <u>Setbacks</u>

SCMs that utilize direct or indirect infiltration must be sited in a manner that minimizes impacts to existing and planned infrastructure. In some cases, infrastructure on neighboring properties may limit the siting of large SCMs. Thorough site assessment is necessary to ensure that the setbacks noted in Table 15 can be achieved. The setbacks suggested in Table 15 are suggested minimum values, and additional setbacks may be deemed necessary by the design and/or geotechnical engineer based upon site risk factors and geotechnical hazards.

SCM Туре	Setback	Minimum Distance
Infiltration	Property line	10 feet
feature,	Water well	150 feet
<i>infiltration basin.</i> (Including dry wells, underground infiltration chambers and roadside infiltrators.)	Structural foundation (buildings or walls)	10 feet <sup>(a)</sup>
	Basements	100 feet upslope, 20 feet downslope
	Onsite wastewater treatment systems (all components)	150 feet
	Underground storage tanks	100 feet

#### 1258 Table 15: Minimum lateral setbacks for SCMs.

SCM Туре	Setback	Minimum Distance	
	Road easements	10 feet from edge of easement width <sup>(c)</sup>	
	Descending slopes or bluffs	100 feet <sup>(a)</sup>	
	Reservoirs, ponds, lakes	100 feet	
	Seasonally high groundwater <sup>(b)</sup>	10 feet	
	Streams, creeks, or springs	200 feet	
Biofiltration,	Property line	10 feet	
bioswale,	Water well	100 feet	
pervious	Structural foundation	5 feet <sup>(a)</sup>	
pavement,	Basements	100 feet upslope,	
bioretention.		20 feet downslope <sup>(a)</sup>	
	Onsite wastewater treatment	100 feet	
	systems (all components)		
	Underground storage tanks	50 feet	
	Road easements	10 feet from edge of easement width <sup>(c)</sup>	
	Descending slopes or bluffs	50 feet <sup>(a)</sup>	
	Reservoirs, ponds, lakes	50 feet	
	Seasonally high groundwater	10 feet	
	Streams, creeks, or springs	50 feet	
	Streams, creeks, or springs	50 feet	

(a) Setback may be modified with site specific certification from geotechnical or structural engineer. (b) Seasonally high groundwater is the highest elevation of the water table during the wettest season of the year with above average precipitation. The depth should be determined using historical records over the most recent 5-year period.

(c) Setback applies only to features managing runoff from private improvements.

1259

# 1260 <u>SCMs for constrained sites</u>

A variety of site constraints may impact the overall drainage layout and design. It is important
 to note that even at sites that meet the criteria for technical infeasibility, 10% of the EISA will
 need to be dedicated to stormwater treatment and retention. Strategies for achieving PCR
 compliance on constrained sites or demonstrating compliance with the 10% EISA criteria may
 include:

- Utilizing all areas of required landscaping as self-retaining DMAs.
- Incorporating pervious pavement systems for uncovered parking areas, driveways, or
   alleys.
- Installing rainwater harvesting systems for onsite irrigation reuse.
- Installing rooftop gardens or vertical gardens that serve as self-treating DMAs.

1271 Sites that are constrained by geologic limitations or soil contamination should contact 1272 County staff early in the design process and consider securing an offsite location for 1273 alternative compliance. The criteria for demonstrating technical infeasibility are further 1274 detailed in Chapter 4.

#### 1275 e. Bioretention and Biofiltration

1276 Vegetated bioretention and biofiltration features are the highest priority features for 1277 managing post-construction runoff. Bioretention and biofiltration treatment systems 1278 remove pollutants using natural systems utilizing enhanced soil media and vegetation and 1279 provide water quality benefits via several important mechanisms:

1280 Biologically active soil media provides media filtration. 1281 Vegetation provides filtration via straining, interception, settling of particles resulting from shallow flows, 1282 1283 • Sorption processes capture pollutants via absorption, ion-exchange, surface 1284 complexation, etc. 1285 • Soil microbes support biologically-mediated transformations. 1286 Bioretention and biofiltration features can typically be fit into parking medians, perimeter 1287 screening landscape areas, and other landscaping features without significantly affecting the 1288 uses or layout of the site. Further, bioretention facilities contribute towards site landscaping 1289 requirements, attenuate peak flows, and effectively remove common pollutants of concern.

1290 Bioretention and biofiltration features may be of any shape, but should incorporate the 1291 following characteristics as demonstrated by Figure 15:

- Surface reservoir equal to the biofiltration treatment system surface area times a
  depth of 6 inches.
- Specialized bioretention soil media depth of at least 24 inches.
- Subsurface drainage/storage (gravel) layer with an area equal to the biofiltration
   treatment system surface area and having a minimum depth of 12 inches.
- All layers constructed as flat, level surfaces.
- No compaction of soils beneath the biofiltration facility.
- Proper plant selection for both inundation zones that sustains 50% vegetated cover
   once established (typically within 12-24 months).
- Wood mulch or gravel surface cover as appropriate.
- Stabilized inlets where concentrated inflows enter the feature.
- Overflow outlets or underdrains as necessary.
- No liners or other barriers interfering with infiltration, except for situations where
   lateral infiltration is not technically feasible.
- 1306 *Figure 15: Bioretention/biofiltration feature common construction characteristics.*



1307

The planting media installed in biofiltration and bioretention features must be highly 1308 1309 permeable (sustaining a minimum infiltration rate of 5 inches per hour) with a high 1310 concentration of organic matter to function effectively. This mixture is typically comprised of 1311 60-70% sand and 30-40% compost. All planting media components should be free of stones, 1312 stumps, roots or other detritus greater than 34" in size. Once installed, the planting media 1313 should be covered with nonfloatable mulch which will help suppress weeds and maintain 1314 infiltrative capacity. Aged mulch, also called compost mulch, has less tendency to float than 1315 bark mulch and should be prioritized where available.

There are two planting zones associated with bioretention and biofiltration features, based 1316 upon the potential frequency of inundation. The planting zones are indicated in Figure 16 1317 1318 and referenced in the plant palette recommendations in Appendix D. Plant species should 1319 be selected and planted based upon the planting zone. A minimum 50% vegetated plant 1320 cover of the bioretention or biofiltration feature should be achieved at plant maturity. Plant 1321 maturity is anticipated to occur between 12-24 months following planting. Applicants are 1322 encouraged to review the simplified plant palette recommendations in Appendix D of this 1323 guidebook.

1324 Figure 16: Bioretention/Biofiltration planting zones.



#### 1325

1326 Installation of structures into bioretention and biofiltration features that interfere with light

1327 penetration to LID vegetation, inhibit inspection and maintenance, or disturb subgrade

1328 aggregate material or bioretention soil are not permitted. This includes but is not limited to:

1329 raised decks, docks, or walkways, solar panels, monument signs, etc.

#### 1330 <u>Bioswales</u>

Bioswales differ from biofiltration and bioretention features in that they do not specifically require the installation of BSM or subsurface drainage/storage (gravel) layer. Bioswales are intended to meet the requirements of PR#2 only and are not designed to achieve stormwater retention by infiltration in support of PR#3. Accordingly, bioswales may be designed with a gentle longitudinal slope and may be utilized as a stormwater conveyance structure in addition to meeting water quality treatment objectives. The planting zones referenced in Figure 16 and the palettes provided in Appendix D may be applied to bioswales. Table 16

1338 provides the County's bioswale design criteria.

#### 1339 Table 16: Bioswale design criteria

Design Element	Minimum Value	Maximum Value
Bottom width	1 foot as trapezoid	Up to 10 feet as trapezoid.
Side slopes	No minimum.	4:1
Longitudinal slope	0.25%	1% -2% preferred, 5%
		maximum.
Length of flow path	10 feet.	None.
Velocity	0.10 ft/sec	1.0 ft/sec for PR#2 flow
Vegetation coverage	30 % cover	65% cover
Hydraulic Residence Time	5 minutes	None.
#### 1340 f. Proprietary units and specialized materials

1341 A wide array of proprietary devices and materials are available for augmenting post-1342 construction stormwater management. Proprietary devices are commercial products that 1343 typically provide stormwater treatment in space-limited applications, often using patented 1344 innovative technologies. Proprietary stormwater management devices include specialized 1345 biotreatment soil mixtures, hydrodynamic separation, catch basin insert technologies, or 1346 cartridge filters.

The County does not maintain a list of "approved" proprietary units or materials. Generally,
any proprietary device or materials proposed for compliance with the PCRs must meet the
following minimum standards:

- Devices and materials must not adversely affect the level of flood protection
   provided by the drainage system.
- 1352 2. Proprietary units must treat for the following pollutants of concern: sediment,

1353 petroleum hydrocarbons, nutrients, metals, and bacteria.

- 1354 3. Proprietary units or materials may not contain antimicrobial products or coatings.
- 13554. Devices must be vector-resistant, with a ponding duration less than 72 hours after1356the end of a storm.
- 1357 5. Devices may not adversely impact water quality by resuspending trash, sediments,
  1358 or bacteria (through regrowth), or by leaching heavy metals or semi-volatile organic
  1359 compounds during subsequent storms.
- 1360 6. Subgrade equipment or devices with access shafts must:

1361

1362 1363

1364 1365

- a. Meet or exceed American Public Works Association (APWA) standards,
  - Be reasonably accessible by a qualified maintenance worker with appropriate provisions for confined space entry.
    - c. Have ladder rungs, and safety guard rails.
    - d. Can withstand lateral soil pressures.
- 13667. Devices with plastic or fiberglass interior parts with the potential to break or shatter1367 in the path of direct flow are not permitted.
- 13688. Pipes, conduits and vaults shall not be more than 20 feet below finished grade, and1369must be continuously accessible by a vacuum truck hose for clean-out.
- 1370 9. Must be designed with the ability to block off inflow and tail water backflow to
- isolate the device for safe maintenance and repair of the unit.

Performance shall be demonstrated with certification by an established stormwater technology assessment program. The dated approval letter and product specifications of all submitted materials, except for proprietary information, must be provided with the SWCP. The County reserves the right to disallow use of a proprietary device or material if the submitted information is incomplete, or if the system cannot reasonably demonstrate continuous, sufficient water quality treatment.

#### 1378 *Filter units*

- Filter unit SCMs filter stormwater and convey it either offsite or into an infiltration system.These SCMs do not meet the objectives of LID because they do not incorporate at-grade
- 1381 features that provide infiltration or evapotranspiration. Filter units may be part of a
- 1382 treatment train in sequence with other SCMs to meet multiple performance requirements.
- 1383 Filter units should only be used in cases where biofiltration or bioretention is severely
- 1384 constrained by site conditions. Examples of pertinent site constraints that would preclude
- 1385 infiltration include soil contamination, shallow groundwater, and slope instability.

#### 1386 Proprietary device sizing

1387 Most proprietary devices and materials are designed as flow-based treatment structures and 1388 mut be sized to capture and treat the water quality design flow rate if proposed as a stand-1389 alone SCM. Proprietary biotreatment devices may include both volume-based and flow-1390 based SCMs. Volume-based devices must be sized to capture and treat the water quality 1391 design volume if used as a stand-alone SCM.

#### 1392 g. Underground Infiltration Systems and Dry Wells

Dry wells and other subsurface stormwater infiltration practices that serve facilities other 1393 1394 than single-family homes are considered Class V wells, subject to US Environmental 1395 Protection Agency (US EPA) regulations. Typically, Class V wells are shallow dry wells used to distribute a variety of fluids directly below the ground surface. By definition, a well is "any 1396 bored, drilled, driven shaft, or dug hole that is deeper than its widest surface dimension, or 1397 an improved sinkhole, or a subsurface fluid distribution system" and an "injection well" is a 1398 1399 "well" into which "fluids" are being injected (40 CFR §144.3). Subsurface fluid distribution or 1400 infiltration systems (i.e. Stormtech, Contech, Cultech) are included in the Class V Well designation. Class V wells may be authorized to operate if they are registered with the US 1401 EPA, and only inject uncontaminated stormwater. 1402

- Applicants that submit plans to the County that include underground infiltration systems or dry wells will be notified of the need to register systems with the US EPA prior to issuance of construction permits. All Class V wells in California must be registered with US EPA's Region 9 Office. Registration of Class V Wells is completed by filling out an online form prior to commencement of use. See Appendix C for additional information.
- Designers should demonstrate that a minimum of 30% of the site's post-construction runoff
  volume has been managed through at-grade LID strategies before proposing compliance
  measures utilizing 'grey' infrastructure such as underground infiltration chambers.

#### 1411 <u>Soil Report Data</u>

- 1412 A soils report will be required to demonstrate soil infiltration rates in the location and at the
- 1413 elevation of the proposed underground infiltration system and the minimum distance to
- seasonally high groundwater. See Chapter 4 for additional information about required soil
- 1415 and infiltration testing and factors of safety.

The soils report must include a statement indicating that the site soils at the proposed location and elevation are suitable for an underground infiltration system and will not present a hazard to the site, adjoining properties, or public right-of-way. All minimum California Building Code Setbacks apply, in addition to any manufacturer recommended setbacks.

#### 1421 <u>Pretreatment Requirements</u>

Per the County's Public Improvement Standards, underground infiltration system and dry
well designs must incorporate a stormwater pretreatment device or feature to protect
groundwater, remove solids, and ensure that particulate debris can be isolated from inflows.
Pretreatment devices must be installed such that a 'treatment train' is created, and runoff
passes through the treatment device prior to infiltration.

- 1427 The County requires that pretreatment devices meet the following conditions:
- Pretreatment or basic treatment proprietary devices certified by the Technology
   Assessment Protocol Ecology (TAPE) Program supported by the Washington State
   Department of Ecology. Devices certified in the Pretreatment or General Use Level
   Designation (GULD) for basic treatment or pretreatment technologies are acceptable.
   See the link referenced in Appendix A and Appendix C. Alternatively, applicants may
   provide results of field-scale testing indicating an equivalent level of performance.
- The pretreatment requirements for PR#2 volume are met entirely upstream of the
   infiltration system through at-grade LID features such as bioretention or biofiltration
   features, and a settling vault or sump is installed at the infiltration system inlet.
- 1437

Applicants may be required to provide additional studies to indicate that adequate pretreatment is achieved to protect groundwater quality. The County has no obligation to accept the use of any proposed proprietary SCM and will provide applicants a written explanation describing the rationale for any rejection of a proposed device.

- 1442 Groundwater Setbacks
- 1443 The minimum vertical groundwater setback for underground infiltration systems is 10 feet
- 1444 from the elevation of seasonally high groundwater. Soil types with high infiltration rates
- 1445 require additional setback distance to ensure adequate soil contact time in the vadose zone.
- 1446 Groundwater setbacks based on tested infiltration rates are provided in Table 17.

#### 1447 Table 17: Groundwater setbacks for underground infiltration systems

Infiltration Rate	Minimum setback to seasonally high groundwater
<1 minute per inch	50 feet
1-4 minutes per inch	20 feet
>5 minutes per inch	10 feet

#### 1449 Inspection Port Requirements

1450 Underground infiltration systems must include appropriately sized inspection ports, 1451 designed to manufacturer's specifications. Systems with multiple rows of chambers must

1452 install an inspection port in every other row of chambers. Ports must be marked 'STORM'

1453 and remain unobstructed.

#### 1454 Class V Well Restrictions

1465

1455 San Luis Obispo County relies heavily on local groundwater supplies to meet municipal and 1456 agricultural water demand throughout the County. While Class V wells provide a mechanism

1457 to augment infiltration to groundwater tables, protection of water quality is a paramount 1458 concern.

- 1459 Class V wells will not be authorized for construction on high-risk project sites where the site 1460 use presents an elevated risk of releasing contaminants (spills), or on properties susceptible 1461 to receiving contaminants from adjacent land uses. This includes, but is not limited to:
- 1461 to receiving contaminants from adjacent land uses. This includes, but is not limited to:
- 1462 a. Vehicle repair facilities or fueling stations,
- b. Facilities that store, transfer or generate hazardous materials,
- 1464 c. Autopart recycling facilities,
  - d. Sites with a history of spills or illegal dumping.
- 1466 e. Industrial facilities as defined by California's General Permit for Stormwater
   1467 Discharges Associated with Industrial Activities (Order No. 2014-0057-DWQ).

The County reserves the right to reject site designs that include underground infiltration systems in the above listed settings and others deemed high risk by the County's Environmental Health Department. Alternatively, the County may permit underground infiltration systems where robust pre-treatment and spill containment measures will be instituted, or where there will be minimal exposure of industrial materials to stormwater.

#### 1473 h. Pervious Pavement Systems

Pervious pavement systems are constructed in a variety of formats including interlocking pavers, pervious asphalt or concrete, turf block systems, granular pavements, and geogrid systems. Pervious pavement systems are most efficient where native site soils are permeable but can be used on sites with clay soils if installed with a deep and well-drained base course. In most cases, pervious pavement systems are not recommended for installation on fill soils. Ideal conditions for most systems are flat areas with light traffic and low vehicle speeds.

To achieve compliance with Performance Requirement #1, pervious pavement systems must comprise 10% or more of the total square footage of outdoor bike lanes, driveways, uncovered parking lots, sidewalks, walkways or patios. Drainage directed to permeable pavement must be free of sediment or chemical pollutants. Runoff from vegetated or nonvegetated permeable areas is not recommended due to potential clogging of the pervious pavement.

- 1487 To avoid potentially harmful seepage, pervious pavement systems should not be 1488 hydraulically connected to building foundations unless an impermeable liner is placed 1489 against the foundation. The recommended minimum setback from building foundations is 1490 10 feet for systems without a liner.
- 1491 Vehicle weight loading should be evaluated for the areas where pervious pavement systems
- 1492 are specified. Applicants should verify that pervious pavement systems are rated for HS-20
- 1493 vehicle traffic for locations where waste-hauling trucks, freight delivery trucks, or emergency
- 1494 vehicles may regularly access the site.

#### 1495 <u>Run-on Ratios</u>

- 1496 Pervious pavement systems meet the requirements of PR#1 and may be used as self-
- 1497 retaining areas if designed appropriately. The specifications of the selected system will
- 1498 dictate the amount of run-on that can be infiltrated through the pervious pavement area. 1499 Any contributing drainage areas must be fully stabilized to prevent soil erosion and
- 1499 Any contributing drainage areas must be fully stabilized to prevent soil erosion and
- 1500 sedimentation of the pavement system. Different run-on ratios to pervious pavement
- 1501 systems are demonstrated in Figure 17.
- Systems with a 0:1 or 1:1 run on ratio are compliant with PR#1 and PR#2. Systems with a 2:1
  run on ratio are considered self-retaining areas and must adhere to the design requirements
  for self-retaining DMAs.
- 1505 Designs that exceed the 2:1 run-on ratio must provide additional calculations and details
- 1506 indicating that the system can sufficiently manage the proposed run-on volume. Installations
- 1507 that exceed a 2:1 run-on ratio may not provide adequate water quality treatment to meet
- 1508 the requirements of PR#2. Additional water quality treatment is necessary for systems
- 1509 exceeding the 2:1 run-on ratio that intend to satisfy PR#2 requirements.
- 1510 *Figure 17:* Ratios of run-on drainage to pervious pavement systems.



- Drainage direction
- 1512

#### 1513 <u>Compliance with Americans with Disabilities Act (ADA) Regulations</u>



Pervious pavement systems are not recommended in areas designated for ADA parking or an ADA path of travel. Many pervious paver systems require widened joints between pavers, and do not meet the criteria of a firm, stable, non-slip surface. Additionally, gaps in ground surfaces greater than ½ inch horizontally and ¼ inch vertically do not meet ADA criteria. Therefore, even if paver spacing is constructed within this threshold, spacing may vary over time if movement/settlement or damage occurs.

In parking areas where interlocking pervious paver systems will be installed, the County recommends transitioning to standard pavers, asphalt, or concrete in ADA parking stalls and the ADA path of travel as demonstrated in Figure 18. Depending upon the type of system and the fillers installed, some systems may

1530 achieve ADA compliance.

1531 Figure 18: Transition from pervious interlocking pavers to traditional pavers in ADA path of travel.

1532 **i. Sedimentation of Infiltration and Filtration Systems** 

Sediment deposition to infiltration and filtration SCMs poses a significant risk to sustained
functionality. Sediment accumulation can reduce the permeability of infiltration surfaces and
reduce the usable design life of SCMs. Designers should consider several site characteristics
to optimize the functionality and usable life of infiltration and filtration features.

- Identifying and Isolating High-Risk DMAs: Drainage from steep, eroding, or sparsely vegetated areas can generate runoff with significant sediment loads.
   Similarly travel lanes or parking areas, and areas with high intensity industrial or commercial uses can generate runoff with significant concentrations of gross solids.
   Drainage from these areas should be isolated, diverted, and/or treated with due consideration of the potential particle loading.
- Pretreatment: A range of approaches can be used to remove sediment and particulates prior to flows reaching filtration and infiltration SCMs. The more commonly used approaches include settling chambers, grassy turf and pretreatment devices.
- Factor of Safety: A factor of safety incorporates more resiliency into the system design and helps maintain the expected level of service as infiltration rates diminish.
   Utilizing a prudent factor of safety will support the long-term resiliency of the system under variable site conditions.

#### 1551 j. High Pollutant Risk Sites

1552 Commercial and industrial facilities including gas stations, manufacturing and production 1553 facilities, and automotive repair facilities, have greater potential to generate stormwater 1554 pollution. Pollutant source controls are an important element of site design for these 1555 facilities and should be outlined in the SWCP and O&M Plan.

1556

#### 1557 <u>Source Control Measures</u>

Source control refers to any schedules of activities, prohibitions of practices, maintenance procedures, managerial practices or operational practices that prevent stormwater pollution by reducing the potential for contamination at the source of pollution. While some source control measures can be broadly applied to development, others are site and pollutant specific. Source control measures should be documented in both the SWCP and Operations and Maintenance Agreement

#### 1564

1565 There are three (3) primary types of source controls:

- Structural source controls are physical measures employed to prevent stormwater
   from contacting work and storage areas to prevent stormwater from picking up
   pollutants. Examples include berms, containment systems, and permanent shelters.
- Operational source controls are non-structural practices such as employee training,
   record keeping, good housekeeping, preventative maintenance, spill prevention and
   cleanup.
- Procedural source controls include implementing process changes such as substituting a less hazardous material for a highly hazardous material in an industrial process.

The SWCP must identify potential pollutants that may be generated once the facility is operational, and incorporate appropriate source control measures. Source control measures that are required by the project's conditions of approval or per State licensing requirements should also be included. A checklist of potential Source Control BMPs is included in the SWCP Template.

Some facilities may also utilize pretreatment devices, such as oil grease separators or vegetated swales, to remove site specific pollutants before stormwater reaches SCMs. This "treatment train" approach removes elevated pollutant loads and ensures that SCMs will continue to function effectively.

#### 1584 *Industrial stormwater management*

The Statewide General Permit for Stormwater Discharges Associated with Industrial
Activities, Order 2014-0057-DWQ (Industrial General Permit) implements federally required
stormwater regulations across California for stormwater associated with industrial activities.
The Industrial General Permit regulates discharges associated with several federally defined
categories of industrial activities (based on Standard Industrial Classification Code), many of

which occur at privately operated facilities in San Luis Obispo County. Applicants should consider whether the developed site will be required to enroll in the Industrial General Permit and evaluate options to limit the exposure of industrial activities to stormwater and infiltrate or reuse stormwater onsite. Compliance with the PCRs does not supersede the requirement to enroll in, and comply with, the ongoing requirements of the Industrial General Permit.

1596

# PRELIM DRAFT

### 1597 6. Calculations

1598 This chapter provides and describes commonly used and County accepted calculations for 1599 analyzing post-construction runoff volumes. These equations and calculations are tailored 1600 to support demonstrating compliance with the PCRs.

#### 1601 a. Tributary DMA Calculations and Tabulations

1602 Several calculations are required for determining retention tributary areas, and the 1603 corresponding required retention volume. Each of these calculations should be clearly 1604 discernable in submitted SWCPs.

#### 1605 <u>Retention Tributary Area</u>

The first step in sizing SCMs is to determine the overall site Retention Tributary Area. This Retention Tributary area is the entire project area except for undisturbed areas, planted areas with native, drought-tolerant or LID appropriate vegetation that do not receive runoff from other areas, and impervious surface areas that discharge to infiltrating areas that will not produce runoff or create nuisance ponding. DMAs are smaller areas that cumulatively make up the Retention Tributary Area for the entire site. Table 12 provides guidelines for appropriately sizing DMAs.

1613 Once DMAs are delineated and categorized, the retention tributary area can be calculated

1614 for each individual Drainage Management Area to facilitate the design of SCMs. Utilize

1615 Equation 3 to complete this calculation.

#### 1616 Equation 3: Retention tributary area.



#### 1617

1618 The retention tributary area of a regulated project subject to PR#3 may be adjusted in

1619 scenarios with replaced impervious surfaces. Projects outside of approved Urban 1620 Sustainability Areas may multiply the amount of replaced impervious surface by 0.5 when

1621 calculating the Retention Tributary Area. Per chapter 2, there are currently no USAs in the 1622 unincorporated County of San Luis Obispo. A calculation of retention tributary area is

- 1622 unincorporated county of san Luis Obispo. A calculation of retention tributary area
- 1623 demonstrated in Table 18:

#### 1624 Table 18: Adjusted retention tributary area example.

Example Adjusted Retention Tributary Area Example:		
Surfaces in DMA	Area	
New Impervious Surface	8,000 sf	
Replaced Impervious Surface	2,500 sf	
Total DMA surface Area:	10,500 sf	

#### **Adjusted Retention Tributary Area:** (2,500 x 0.5) + 8,000 = 9,250sf

1625

#### 1626 <u>Runoff Retention Volume and Runoff Factors</u>

- Projects subject to PR#3 must determine the required runoff retention volume. This volume can be calculated using either flow-based or volume-based sizing requirements. Depending on the WMZ, projects will be required to retain runoff from either the 85<sup>th</sup> or 95<sup>th</sup> percentile rainfall
- 1630 event.
- 1631 The runoff coefficient 'C' is calculated for the DMA using Equation 4.
- 1632 Equation 4: Impervious ratio (i) to Runoff coefficient 'C' equation.



1634 Where *i* = the fraction of the DMA that is impervious

- 1635 Once the runoff coefficient C has been determined, the required retention volume can be
- 1636 calculated using Equation 5. If multiple DMAs drain to a single SCM, the area-weighted composite
- 1637 runoff coefficient C should be used in Equation 5.
- 1638 *Equation 5: Retention volume calculation.*



#### 1639

- 1640 The volume of runoff that must be captured in each SCM can be determined using either the
- 1641 Simple Method, Routing Method, or Rational Method.

#### 1642 **b. Impervious and Pervious Surfaces**

A variety of pervious surfaces are commonly specified for elements of new and redevelopment projects across the County. These surfaces can be beneficial in stormwater management but have limitations that require design consideration. Impervious surfaces have high runoff factors as nearly all rainfall is converted into runoff. Pervious surfaces have varying runoff factors as they can infiltrate a modest volume of stormwater before generating runoff.

#### 1649 <u>Runoff Coefficient Calculation</u>

- Runoff factors (C) represent the ratio of stormwater runoff over rainfall that is anticipated
  for a particular surface type. Impervious surfaces are assigned high runoff factors (0.89) as
  nearly all rainfall is converted into stormwater runoff. Pervious and semi-pervious surfaces
- 1653 typically have lower runoff factors as a higher ratio of the rainfall is retained in surface
- 1654 features.

- 1655 DMAs comprised of more than one surface type should calculate an area-weighted runoff
- 1656 factor per Equation 6 where C represents the runoff coefficient and A represents the area of
- 1657 each surface.

#### 1658 Equation 6: Multi-surface runoff coefficient calculation



1659

#### 1660 <u>Runoff Coefficient C values</u>

1661 Table 19 provides approved Runoff Coefficient 'C' values for impervious and pervious

1662 surfaces commonly utilized in new and redevelopment projects.

#### 1663 **Table 19: Approved C factors for constructed surface types**

	Surface Category	Surface Type	Post-Construction Runoff Coefficient (C)
		Roofs, concrete, asphalt, grouted pavers.	0.89
ious		Grouted rock	0.89
perv	Impervious Surfaces	Decomposed granite with binder	0.89
<u>-</u>		Dense graded aggregate or dense- graded road base (e.g. Class II, red rock)	0.89
		Compacted soil, HSG A or B (e.g. unpaved roads/parking)	0.15
		Compacted soil, HSG C or D (e.g. unpaved roads/parking)	0.30
	Natural-Pervious	Decomposed granite without binder	0.30
vious	Landscape rock (e.g., cobbles, river rock, pea gravel, etc.)	0.10	
Per	Engineered Pervious	Permeable or porous pavers	0.00
	Surfaces (designed with sufficient	Pervious concrete or asphalt	0.00
	depth to retain the design storm)	Open graded aggregate or open graded road base pathway, roadway, or parking (e.g., Class I and Class II permeable, No. 57	0.00

Surface Category	Surface Type	Post-Construction Runoff Coefficient (C)
Other Pervious Surfaces	Bricks or solid pavers over sand base	0.50
	Artificial turf over subgrade	Use "C" value for subgrade

Notes:

Suggested C values only apply where surfaces are underlain by natural site soils with minimal or no compaction. Surface installations underlain by concrete or impermeable liners are considered impervious. Surface installations underlain by heavily compacted soils should use the C value for compacted soil.

1664

#### c. Infiltration and Percolation Rates 1665

#### 1666 **Design Infiltration Rates**

For all SCMs except bioretention, a factor of safety must be applied to the infiltration rate to 1667 account for the risk of the facilities reduced infiltration rate over time. The resulting reduced 1668 1669 rate is the design infiltration rate to be used in all calculations.

1670 Chapter 4 includes minimum factors of safety for infiltration rates based upon the type of 1671 SCM proposed.

#### 1672 Percolation Rate Conversion

1673 Although percolation rates and infiltration rates may be similar, they are not equivalent. As

- 1674 described in Chapter 4, the direct measurements yielded by percolation testing tend to
- overestimate the infiltration rate. A percolation rate may be converted to an acceptable 1675
- estimate of the infiltration rate by applying a correction factor using the Porchet Method, 1676
- 1677 Equation 7.
- 1678 **Equation 7: Porchet Method**

- $I_{t} = \frac{\Delta H(60r)}{\Delta t(r+2Havg)}$ 1679
- 1680 Where
- 1681  $\Delta H = H_0 - H_f$
- $H_o = D_T D_o$ ;  $D_T$  (total depth of test hole);  $D_o$  (initial depth to water) 1682
- 1683  $H_f = D_T - D_f$ ;  $D_f$  (final depth to water)
- 1684 r (test hole radius)

1685 ∆t (time interval)

1686 
$$H_{avg} = \frac{Ho + Hf}{2}$$

1687

#### 1688 d. SCM Sizing Calculations

A volumetric SCM must be designed such that a single 95<sup>th</sup> or 85<sup>th</sup> percentile 24-hour rainfall event will not overflow the SCM. Calculations for projects not subject to PR#4 may utilize either the simple method or the routing method. Projects subject to PR#4 must use the routing method to address flow rates.

#### 1693 <u>Simple Method and Routing Method</u>

1694 The simple method is single event volume-based calculation and provides values using the 1695 retention volume equation for either the 85<sup>th</sup> or 95<sup>th</sup> percentile 24-hour rainfall depth. The 1696 simple method accounts for the total volume produced by the design storm.

#### 1697 <u>Routing Method</u>

1698 The routing method is a flow-based calculation that accounts for infiltration that occurs 1699 simultaneously with inflow during a storm event and results in a smaller SCM footprint. To 1700 determine the runoff retention volume using the routing method, additional site 1701 characteristics will need to be inputted into a hydrologic modeling program. HydroCAD<sup>®</sup> is a

- 1702 commonly used program for calculating volumes via the routing method. Routing analyses
- 1703 must adhere to the criteria included in Table 20.
- 1704 The SCM retention volume must be based on both the rate of flow from tributary areas into
- the SCM, and the rate of flow out of the SCM through infiltration into the underlying soil
- 1706 during the rain event. If the retention volume cannot fully infiltrate within 48-hours, a
- 1707 multiplier of 1.20 shall be applied to the SCM Capture Volume calculated through the routing
- 1708 method.

1709 For modeling purposes, open, uncovered facilities that retain/detain stormwater with no 1710 infiltration (retention ponds, swimming pools, etc.) must be considered impervious surfaces.

#### 1711 Table 20: Routing method criteria.

Parameter	Criteria
Hydrograph Analysis Method	National Resources Conservation Service (NRCS) or Santa Barbara Urban Hydrograph (SBUH).
Pond Routing Method	Storage-indication, unless otherwise justified to be more correct based on site and storage conditions.
Infiltration Rate	Underlying soil saturated infiltration rate, as indicated by on-site testing. (See requirements Chapter 4)
Rainfall Distribution	National Resources Conservation Service Type 1* or based on local rainfall data.
Time of Concentration	Identified per County drainage and flood control standards.

Time	Increment
------	-----------

0.10 hour, unless otherwise justified to be more correct based on rainfall distribution.

\*The National Resources Conservation Service developed standard 24-hour rainfall distributions for hydrograph analyses. These rainfall distributions were intended to represent intensities associated with shorter duration storms, ranging from durations of 30 minutes to 12 hours. The National Resources Conservation Service Type storm applies to the California West Coast, including the Central Coast Region. The Type rainfall distribution was derived using National Oceanic Atmospheric Administration Atlas 2 rainfall statistics for the 1-year through 100-year storm.

1712

#### 1713 The 4% Rule for Bioretention or Biofiltration Sizing

Bioretention and biofiltration facilities should generally be sized to provide a minimum 1714 surface area equal to 4% of the tributary impervious area. There is a simplified method 1715 1716 specifically for sizing bioretention facilities meeting the design loading rate (infiltration rate) of 5 inches per hour to detain and treat runoff produced by a rainfall intensity of 0.2 inches 1717 1718 per hour. If it is assumed that 100% of rainfall ends up as inflow to the bioretention facility, 1719 then the ratio of bioretention surface area to tributary impervious area (or sizing factor) 1720 needs to be 0.04 (0.2 in/hr ÷ 5 in/hr) or 4%. This simplified sizing method is demonstrated in 1721 Equation 8. This sizing method can be used to demonstrate compliance with PR#2. 1722 Additional volume based calculations are required for PR #3. Designs that seek to decrease 1723 the minimum surface area below 4% will be required to provide media and materials 1724 specifications to the County for review and authorization.

#### 1725 Equation 8: Bioretention facility surface area calculation.



1727

1728 Figure 19 graphically demonstrates the inputs associated with this simplified sizing method.



1730

#### 1731 e. Santa Barbara Technical Guide Calculator Tool

1732 The Central Coast Stormwater Control Measure Sizing Calculator, available on the Project 1733 Clean Water website, facilitates routing method calculations. The calculator MS Excel file 1734 should be submitted with your Stormwater Control Plan.

#### 1735 f. Credits for Redevelopment, PR#3

1736 Credit for redevelopment can be achieved by evaluating the Retention Tributary Area and 1737 applying an adjustment factor, whereby the total amount of replaced impervious surface 1738 area can be multiplied by 0.5. See Table 18 for an example calculation. Evaluation of the 1739 redevelopment criteria is encouraged for all previously-developed sites with existing 1740 impervious surfaces.

1741 g. Underground Infiltration Systems

Underground infiltration systems may be used for either retention or detention of site
stormwater runoff, where their application is suitable for project conditions. Applicants
should reference the criteria for siting underground infiltration system detailed in Chapter 5
and the requirements in Appendix C.

#### 1746 h. County Drainage and Flood Control Calculations

A project may be subject to additional County drainage and flood control requirements, such
as those stipulated in Section 5 – Drainage & Flood Control of the County of San Luis Obispo
Public Improvement Standards. A separate Drainage Report is required to address

- applicable flood control and/or drainage standards. The County generally recommends that
- 1751 the analytic methodology be consistent between the project SWCP and Drainage Report;
- 1752 however, specific requirements of the Public Improvement Standards may vary from those
- 1753 detailed here.

# PRELIM DRAFT

## 1754 7. Required Post-Construction Stormwater Submittals

1755 The County requires that all regulated projects submit a complete Stormwater Control Plan 1756 Application (SWCP App) and that projects meeting the criteria for PR#2 and above submit a 1757 full SWCP utilizing the County provided format. Projects that submit a Stormwater Waiver 1758 Request form do not need to submit a SWCP App or SWCP.

1759 Depending on the scope and complexity of the project, the County may also request or 1760 require supporting documentation to evaluate the environmental characteristics of affected 1761 areas, the potential impacts of the proposed development on water resources, and the 1762 effectiveness and acceptability of measures proposed for managing stormwater runoff. 1763 Requirements for specific elements of the SWCP are further detailed in this chapter.

#### 1764 a. Stormwater Control Plan Application (SWCP App)

1765 All regulated projects must complete a SWCP App as part of the construction permit 1766 application.

Small scale projects that only trigger compliance with PR#1 must complete the SWCP App but are not required to submit a full SWCP. The plan sheet and detail that demonstrate compliance with selected PR#1 measures must be listed in the SWCP App. The SWCP App provides a summary of key project details and information. Numeric values on the SWCP App are required to match those in the project plans and SWCP (when required).

1772 b. Stormwater Control Plan, County Template

1773 The SWCP shall be prepared by or under the direction of a qualified professional. The plans 1774 must be stamped, signed, and include a certifying statement indicating that all stormwater 1775 SCMs have been designed to meet the County's stormwater requirements and comply with 1776 the PCRs.

- 1777 To decrease review time, the County of San Luis Obispo SWCP template should be used and 1778 followed. The County strongly discourages significant modification, recombination, or 1779 deletion of the provided tables in the template. The County may decline to initiate review of 1780 SWCPs submitted in formats from jurisdictions outside the Central Coast region. The SWCP 1781 template allows for inclusion of additional tables or information as attachments.
- 1782 Documents that combine County-required drainage reports with the SWCP will not be 1783 accepted and will delay the start of project review.

#### 1784 <u>Project Site Data</u>

The SWCP template must be completed with all pertinent project site data. The fields included in this tables are the minimum required information, and applicants may add additional details or narrative information as necessitated by the characteristics of the project. 1789 Data provided in the SWCP must match information provided on plan sheets, supporting 1790 reports, and permit application materials. Inconsistencies in project data will require 1791 correction before permit review and approval can proceed.

#### 1792 <u>Narrative Portion</u>

1793 The SWCP should be completed with narrative information about the project site and 1794 proposed development. In completing the project location and description section 1795 applicants should include information pertaining to:

- Project site location description
- Vicinity map
- Parcel boundary modifications (lot splits, lot line adjustments, tract or parcel maps)
- Existing and intended uses
- 1800 County zoning
- 1801 Setbacks and open space requirements
- 1802 Project phasing (if applicable)
- Number of residential units or square footage of commercial space.
- 1804 Parking space requirements
- Neighborhood character, including neighboring developments.

This section of the SWCP should also include information about existing site features and conditions. This can include information about notable geographic, topographic and hydrologic features, existing vegetation, or land use. This narrative portion should highlight any of the notable opportunities or constraints associated with existing site features that affect the proposed project design. Applicants are encouraged to carefully review Chapter 4 for detailed information about completing an opportunities and constraints analysis ahead of finalizing the site layout.

#### 1813 <u>Required Exhibits and Details</u>

1814 Several exhibits are required to complete a SWCP in addition to the tables and narrative 1815 portions of the SWCP template. Attachment 1 of the SWCP template requires attachment of 1816 the following exhibits for all projects requiring a SWCP:

- Pre-existing impervious area exhibit
- 1818 Post-project impervious area exhibit (with DMAs and SCMs)
- 1819 Net impervious area exhibit (only if applicable)
- 1820 If a project is required to meet PR#4, the following additional exhibits must be provided:
- 1821 Pre-existing modeled conditions exhibit
- 1822 Post-project modeled conditions exhibit

# These modeling exhibits must show all key information utilized in modeling the hydraulicperformance of the SCM system (elevations, basin areas, etc.)

#### 1825 <u>Required Project Plans</u>

- 1826 SCMs should be clearly shown on project plans with identifying information as follows:
- Number/identification to match number/ID in the SWCP
- Manufacturer and model number
- Grading information (invert in/out, flow line, bottom of basin, top of basin, finish grade/surface, slopes, etc.)
- Inlet and outlet structure(s)
- Volume and/or surface area
- 1833 Detail(s)
- 1834 The design engineer may consider formatting the project plan sheet such that the plan sheet1835 may be used as an exhibit in the SWCP.

#### 1836 *Calculations & Tables*

1837 The information tables must be filled out completely and not modified from the template, 1838 unless otherwise approved by County. Deviations from the calculation methods and 1839 formulas detailed in Chapter 6 is strongly discouraged.

#### 1840 <u>Statement of Compliance</u>

- 1841 The PCRs require that the licensed professional preparing the SWCP include a statement of
- 1842 compliance that each applicable performance requirement has been met. The following
- 1843 statement is included in the template and must remain as part of the SWCP:
- 1844 "The design of stormwater treatment and retention facilities and stormwater pollution
- 1845 control measures in this plan are in accordance with the Central Coast Region PCRs
- 1846 (Resolution R3-2013-0032) and consistent with the current edition of the County of San Luis
- 1847 Obispo Post-Construction Stormwater Guidebook."
- 1848 Opportunities and Constraints Analysis Checklist
- 1849 The PCRs require an Opportunities and Constraints analysis for projects that trigger PR#3 or
- 1850 PR#4. Additionally, the County requires the Opportunities and Constraints checklist and site
- 1851 map as submittals for projects claiming Technical Infeasibility. The County's opportunities
- and constraints checklist is included as Appendix B to this guidebook. The opportunities and
- 1853 constraints checklist and corresponding site map must be included as an attachment to the
- 1854 SWCP for regulated projects PR#3 and above.
- 1855 <u>Structural Control Measures (SCM)</u>
- 1856 Designed SCMs must be clearly identified in SWCP text, calculations, figures, and summary1857 tables. Identification includes:
- 1858 SCM number/identification
- 1859 SCM type

1861

- Sizing calculations
  - Required and provided water quality flow rate or volume

#### 1862 c. Drainage Report or Drainage Analysis

1863 A formal drainage report is required for projects required to meet flood control
1864 requirements, which is separate from the SWCP document. Calculations to meet PR#4 shall
1865 be contained within the SWCP to demonstrate the control of peak flows are not exceeding
1866 pre-project flows for the 2-year through 10-year storm events.

#### 1867 d. Operation and Maintenance Agreement

1868 An Operation and Maintenance (O&M) Agreement is required for all projects that utilize 1869 SCMs to satisfy PR#2, PR#3, and/or PR#4. A maintenance program is essential to ensure that 1870 the stormwater facilities continue to function as designed to maintain water quality and 1871 prevent possible flooding and property damage.

A stormwater Condition Compliance Monitoring (CCM) case is the County's method of tracking long term compliance with post-construction stormwater management requirements. CCM cases are assigned to projects triggering compliance with PR#2 and above and are used to verify that structural controls for managing stormwater runoff are maintained and operational. The Department of Planning and Building will create a CCM case permit and will provide applicants a permanent CCM permit number to reference on the 0&M Agreement and permit documents.

- A detailed description of the stormwater management system and the operation and maintenance requirements must be recorded with the County of San Luis Obispo Clerk Recorder prior to final of building permits. The recorded O&M Agreement binds current and future owners of the site to maintaining the stormwater drainage system to the design conditions in perpetuity.
- 1884 The County of San Luis Obispo utilizes two types of Stormwater Operation and Maintenance 1885 Agreements for privately owned and operated Post-Construction Stormwater Management 1886 Systems. A summary of each type of Agreement and its typical application is further detailed 1887 in this section.
- 1888 *Operation and Maintenance Agreements for privately owned development*

Projects that construct SCMs on private property in a privately owned development, typically execute single-owner Operations and Maintenance Agreements. The Agreement is made between the County to the system owner and recorded with the County Clerk Recorder. An

agreement consists of each of the forms and components listed in Table 21.

#### 1893 Table 21: Components of Private Operations and Maintenance Agreement

Agreement Component	Description:	Applicable Form or Template
Private Stormwater Agreement	Text that documents the purpose of the agreement, terms, and responsibilities of the County and owner.	County form SWP-3001

Owner notarized signature sheet	Notarized signature page acknowledging agreement by the property owner.	County provided form included in SWP-3001. This page may be substituted with notary provided form as necessary.
County notarized signature sheet	Notarized signature page acknowledging agreement by the County.	This form is provided and signed by County staff.
Legal property description	Full legal property description for all parcels affected by the Agreement.	Property descriptions may be retrieved from the Clerks' office and must be provided by applicants as <b>Exhibit A</b> of the Agreement.
Site Plan	Black and white site map indicating the location and assigned tracking number for each stormwater system component.	This exhibit must be provided by the applicant as <b>Exhibit B</b> of the Agreement.
SCM Descriptions	Detailed description for each element of the constructed system including location, size, capacity, etc.	County form SWP-1007, to be included as part of <b>Exhibit B.</b>
System Owner, Agent, Designer Information	Contact information for the original system owner, system designer and project agent (if applicable.)	County form SWP-1003.
Stormwater System Plans and Manuals Sheets	Information about long-term operations and maintenance requirements and anticipated expenses. A separate form is required for each different feature type.	County form SWP-1008.

1894

1895 The text of the Private Stormwater Agreement requires owners to maintain the stormwater 1896 drainage system to the design conditions in perpetuity and formally ties the system to the 1897 physical property. Responsibility for operations and maintenance automatically transfers to 1898 future owners, heirs, or assigns. Following signature and notarization by both parties, the 1899 Agreement is recorded at the Clerk Recorders Office by County staff. Maintenance plans and

1900 manuals are retained by the County and attached to the tracking CCM case file.

# 1901 <u>Operation and Maintenance Agreements for privately owned property held in common</u> 1902 ownership

- Projects that construct SCMs on private property in a common owner development typically utilize Codes, Covenants and Restrictions (CC&Rs) for documenting long-term stormwater system operations and maintenance requirements. CC&Rs are typical of larger subdivisions, tracts, commercial developments, or multi-family residential developments that will have multiple owners and common or shared areas. Language and information are added to the CC&Rs to require operation, maintenance, and inspection of private stormwater systems.
- 1909 This documentation includes forms consistent with those required for an Agreement.

1910 The CC&Rs language for stormwater systems is similar to language utilized for requiring 1911 maintenance and repair of private roads and drainage systems. The CC&Rs must expressly 1912 allow for access to private property where components of the system may be located (if not 1913 all held on public parcels.) Existing CC&Rs may be amended to include provisions for 1914 operation, maintenance, and inspection of stormwater systems.

- 1915 CC&R language to address stormwater systems typically consists of the following:
- 1916 **Table 22: Components of CC&Rs for stormwater feature operation and maintenance**

Agreement Component	Description:	Applicable Form or Template
CC&Rs Language	Information consistent with language and inclusions for the Private Stormwater Agreement	Language and provisions for maintenance sourced from County form SWP-3001
Site Plan	Black and white site map indicating the location and assigned tracking number for each stormwater system component.	This figure must be provided by the applicant as <b>an exhibit</b> .
SCM Descriptions	Detailed description for each element of the constructed system including location, size, capacity, etc.	County form SWP-1007, to be included as an Exhibit.
Stormwater System Plans and Manuals Sheets	Information about long-term operations and maintenance requirements and anticipated expenses. A separate form should be provided for each different feature type.	County form SWP-1008.

#### 1917

Planning and Building staff can review to verify completeness with respect to Stormwater
Operation and Maintenance requirements, however, CC&Rs are not countersigned,
notarized, or recorded by the County. The final recorded CC&R document number must be
provided to Planning & Building for record keeping purposes.

1922 <u>Agreements for SCMs in the public Right-of-Way</u>

Projects that construct SCMs on both public property and private property can utilize a modified Agreement format similar to that of Planning & Building for documenting O&M requirements. The Agreement should include all the components indicated in Table 22 plus an additional exhibit to incorporate a long-term encroachment permit. Long-term encroachment permits are issued by the Department of Public Works to allow maintenance of SCMs in the Right-of-Way. Similarly, the long-term encroachment permit may be referenced as an exhibit in CC&Rs.

## 1930 8. SCM Construction and Inspection

1931 Stormwater SCMs may be constructed at variable phases of project development. While 1932 subsurface features may be installed early in the construction process, landscaped surface 1933 features may not be constructed until much later. It is critical that the construction team 1934 consider the unique attributes of each feature type and provide appropriate protection to 1935 ensure proper functioning at the completion of construction.

County issued construction permits include several conditions requiring inspection at
different phases of SCM construction. SCM construction checklists are provided in Appendix
F. These checklists serve as a record of the site condition and materials used during
construction and can be provided to County inspectors to verify compliance and conformity
with approved plans.

#### 1941 **a. Construction and Inspection Checklists**

1942 The checklists included in Appendix F may be referenced on the project plans to ensure 1943 proper construction practices are followed and necessary milestone inspections are 1944 completed for each type of SCM.

- 1945 b. Inspection Process and Frequency
- 1946 The project's construction permits will include specific conditions for inspection of drainage 1947 features and SCMs throughout the construction process. Site staff should maintain records 1948 of all delivered materials, photographic records of the installation process where subsurface 1949 features are installed, and maintain records of third party contractor or Engineer of Record 1950 inspections. These records should be provided to County as part of project closure.

Below are typical required inspection milestones for different types of SCMs. Theseinspection milestones may vary based on specific project details.

- 1953 <u>Subsurface Stormwater Feature: (ex. Treatment Vault/Infiltration Chamber)</u>
- 1954 1. Excavation
- 1955 2. Geotextile fabric installation
- 1956 3. Gravel placement
- 1957 4. Structure placement
- 1958 5. Inlet, outlet and pretreatment device
- 1959 6. Backfilling
- 1960 7. Final surface construction and connection
- 1961 *Biofiltration or Bioretention Stormwater Feature:*
- 1962 1. Excavation
- 1963 2. Gravel placement
- 1964 3. Bioretention soil media installation
- 1965 4. Piping, underdrain structures
- 1966 5. Vegetation plantings, mulch installation
- 1967 6. Final restoration

- 1968 Pervious Pavers: (ex. Pervious or Permeable Pavers, Porous Concrete)
- 1969 1.Excavation
- 1970 2. Geotextile fabric placement
- 1971 3. Gravel placement
- 1972 4.Paver placement or porous concrete installation
- 1973 5. Joint gravel or sand
- 1974 6. Final
- 1975 <u>Detention Stormwater Feature (ex. Detention Basin)</u>
- 1976 1. Excavation
- 1977 2. Inlet and outlet construction
- 1978 3. Final (fully stabilized)
- 1979 Developers are responsible to coordinate milestone inspections of all subsurface features1980 and treatment measures prior to installing final cover.
- 1981 c. Materials Specifications and field slips

1982 Materials field slips should be retained to confirm conformity with the approved plans. 1983 Substitutions of specified materials must be approved by the design engineer or architect.

1984 d. Documenting field changes

Due to the intensely site-specific nature of SCMs and precise sizing requirements, the County
requires that any field changes that modify the dimensions or volume of any single SCM by
more than 10% require updated permit submittals.

Documentation of after-issuance changes is critical to ensuring that the project will maintain compliance with the PCRs. Completion and filing of a Change Order to Issued Permit (Form BLD-1003) is required to all changes to the issued construction permit. Additional documentation may be necessary including as-built grading plans, utility plans, or an amended SWCP. Non-conformity with the job copy of issued permits can significantly delay the final closeout of construction permits.

Any changes to SCMs located within public right-of-way may also require revision of Public
Improvement Plans and may require additional documentation for County Department of
Public Works.

#### 1997 e. Engineer's Certification

Final Certification is required by the Engineer of Record or Work who designed the stormwater infrastructure. This includes approval that all construction materials installed conform with design specifications, system was constructed in conformance of approved design, and final inspection was completed and approved. This is required as part of final closure of the permit.

### 2003 9. Overview of Operations and Maintenance Agreements

Lack of source control, site design, or SCM maintenance can be a be a cause of failure of 2004 2005 SCMs due to significant impacts from delivery of runoff and pollutants. Stormwater SCMs 2006 are by their nature subject to deposition of solids such as sediment, trash, and vegetative 2007 debris. Some structural SCMs are also subject to growth of vegetation, either by design (e.g. 2008 bioretention) or incidentally. Maintenance to remove pollutants and manage vegetation 2009 must be done periodically for the life of the property to ensure the capacity of the SCMs to 2010 treat, infiltrate, and retain stormwater. Structural components of some SCMs are also at risk 2011 of clogging from collected debris and overgrowth of vegetation or invasive plants. Clogged 2012 SCMs can result in lengthened draw down times and potentially result in flooding, or 2013 prolonged standing water that creates mosquito breeding habitat. Proper operation and 2014 maintenance is critical to ensure the long-term functionality of LID features and SCMs across 2015 the project site.

2016

This chapter provides an overview of the County's Operations& Maintenance agreements for
ensuring long-term operation and maintenance of SCMs on private property and long-term
encroachment permits for SCMs located in the County's Right-of-way.

2020 2021 a. Roles and Responsibilities Operations & Maintenance on Common Property

2022 Maintenance, inspection, and repair of all SCMs on common land (those held by Home 2023 Owners Associations or HOAs) are the responsibility of the HOA. This responsibility runs with 2024 the land and must be legally recorded, executed, and transferred upon sale of the property. 2025

The HOA is responsible for inspecting and/or ensuring the inspection by a qualified professional, of all SCMs at least once a year and at the frequency specified in the maintenance and inspection section of the SWCP. The funding of all inspection, maintenance, repairs, and reporting of SCMs on common land is the sole responsibility of the HOA.

2030

For projects with SCMs located within a common area or easement to be maintained by a HOA, language regarding the responsibility for inspection and maintenance must be included in the project's CC&R's. In addition, the CC&R's must include the location and brief description of all stormwater SCMs installed with the project, and any required maintenance. This language will be reviewed and approved by the Department of Planning & Building as part of the Final SWCP approval process.

2037

Annually, the HOA (or a representative) must complete a self-inspection and certification of the Stormwater Management System verifying continued functionality. County staff will notify HOA representative (via email or direct mailing) of the need to complete and submit inspection forms each year.

2042 Completion of the annual inspection forms is tracked by the CCM Permit case number issued2043 by the Department of Planning & Building. Self-inspection forms may be obtained from

Planning and Building's website and must be completed and submitted by June 15th of each 2044 2045 vear.

The County does not require that property owners hire a certified professional to conduct 2046 2047 the annual inspection. However, property owners and managers are authorized to hire a 2048 licensed or certified professional to conduct the inspection on their behalf. The funding of 2049 all inspection, maintenance, repair, or replacement of SCMs on private land is the sole responsibility of the property owner. 2050

- 2051
- 2052

#### b. Roles and Responsibilities for Operations & Maintenance on Private 2053 Property

2054 Maintenance and Inspection of all SCMs on private land are the responsibility of the property 2055 owner. Small stormwater systems owned and operated by a single owner are typically 2056 protected by an operations and maintenance Agreement recorded with the County Clerk-2057 Recorder. The Agreement runs with the land, and is transferred to successive owners, heirs, 2058 executors, administrators, assigns and successors in interest. Additionally, a copy of this 2059 Agreement should be included in any sales and/or lease agreements.

2060

2061 Annually, the current property owner (or representative) must complete a self-inspection 2062 and certification of the Stormwater Management System verifying continued functionality. 2063 County staff will notify property owners or managers (via email or direct mailing) of the need 2064 to complete and submit inspection forms each year.

Completion of the annual inspection forms is tracked by the CCM Permit case number issued 2065 2066 by the Planning & Building Department. Self-inspection forms may be obtained from 2067 Planning and Building's website and must be completed and submitted by June 15th of each 2068 year.

2069 The County does not require that property owners hire a certified professional to conduct 2070 the self-inspection. However, property owners and managers are authorized to hire a 2071 licensed or certified professional to conduct the inspection on their behalf. The funding of 2072 all inspection, maintenance, repair, or replacement of SCMs on private land is the sole 2073 responsibility of the property owner.

- 2074
- 2075 2076

#### c. Roles and Responsibilities for Operations & Maintenance on Public Property

- 2077 Project developers and owners are encouraged to site SCMs within the limits of their private 2078 property on the project site. However, in cases where proposed SCMs are required to treat/mitigate storm water runoff from public improvements, required as part of the project 2079 2080 or existing public right of way that drains into the project area, SCMs may need to be located 2081 in the public Right-of-Way.
- 2082 If SCMs are proposed in a public area the SCMs must meet narrower design guidelines than 2083 those specified in this Guidebook. Early consultation with County Public Works is strongly

advised for determining specific regulations related to SCMs in the Right-of-Way. Inspection
and maintenance will remain under the project or property owner's responsibility until the
project conditions are met.

2087

2088 Once construction is complete, a long-term encroachment permit will be issued for SCMs 2089 located in the County's Right-of-way to allow for private maintenance. This long-term 2090 encroachment permit allows a private entity to maintain SCMs located in the public right-of-2091 way using maintenance indemnification agreement. However, if any SCMs are formally 2092 transferred and accepted to public ownership, this long-term encroachment permit will be 2093 terminated. Once the SCMs are legally transferred and accepted, the maintenance, 2094 inspection, and replacement are the responsibility of the County.

2095

2096 d. Inspections and maintenance following construction completion

The plans and manuals included with the SWCP and Operation and Maintenance Agreement must specify the frequency of inspection and maintenance for each type of SCM installed at the project site. Site owners/operators are strongly encouraged to review the inspection and maintenance requirements of the proposed features with their design/engineering firm prior to authorization of construction.

2102 The County recommends that any interim or periodic inspections specified by the O&M agreement be completed and documented although only annual inspections must be 2103 2104 reported to the County. Records regarding inspections and maintenance should be retained 2105 for at least five years and made available upon request to the County. These records may include copies of completed inspection reports and maintenance checklists to document any 2106 2107 inspection and maintenance activities that were conducted over the preceding five years. Corrective actions, repairs, or replacements should also be documented and maintained 2108 2109 with SCM inspection and maintenance records for a minimum of five years.

2110 2111

#### e. Common maintenance findings

SCMs require regular maintenance to function effectively during storm events. CommonSCM maintenance activities include, but are not limited to:

- Clean pre-treatment devices and drain inlets (filters, screens, etc.) of soil, litter, and debris.
- Replace mulch, bioretention soil media, and surface cover material.
- Treat or replace dead or diseased vegetation.
- Remove sediment buildup in structures, basins, and underground chambers.
- Weeding, mowing, pruning, and replacing of vegetation.
- Cleanout or replace rip-rap rock at outlet discharge locations.
- Remove any incidental litter or debris.

2122

#### 2123 f. Mechanism to assure continued operations

While many SCMs have minimal ongoing maintenance needs, the County is required to assure that all infrastructure required by the PCRs is continuously functional. Destruction of SCMs for a modified site use or significantly degraded functionality may prompt intervention by County enforcement staff.

2128

2129 Destruction or prolonged failure to maintain SCMs that results in compromised functionality 2130 would constitute a public nuisance, which may be abated under the Uniform Public Nuisance 2131 Abatement Procedure. This enforcement mechanism would allow costs of maintenance to 2132 be billed to the owner, a lien placed on the property, and the tax collection process to be 2133 used.

2134

For projects whose land use approval included ongoing conditions for post-construction stormwater management, project-specific conditions typically include a requirement for the owner of the land to maintain that facility in accordance with the requirements specified in the maintenance plan. Failure to perform maintenance may then be addressed as a violation

- 2139 of the land use permit, under the ordinance governing that permit process.
- 2140

#### 2141 g. Termination of Operations and Maintenance Agreements

There are limited cases where the County may terminate an operations and maintenance agreement with a property owner. The termination process is initiated by the Department of Planning & Building under merited circumstances such as annexation or property destruction.

#### 2146 Annexation into an incorporated City

Properties that completed construction and enrolled in the County's operations and maintenance program while in County jurisdiction are terminated from the program upon annexation to an incorporated city. Once annexation is completed, property owners are relieved of completing annual inspections through the County's process, and will be directed to enroll in the incorporated City's operations and maintenance program.

The County will notify annexed properties of the intent to terminate their Operations and Maintenance Agreement and will file a Notice of Termination for the Agreement with the County Clerk Recorder. Digital case records associated with the property including prior year's inspection forms, maps, and SWCP will be provided to the annexing jurisdiction. No fees will be charged by the County for terminating agreements due to annexation.

#### 2157 <u>Destruction by catastrophic event</u>

2158 The County may elect to terminate an operations and maintenance agreement following a

- 2159 natural disaster, declared emergency, or catastrophic event that requires subsequent
- 2160 demolition of the enrolled property.
- County staff will evaluate the necessity of terminating operations and maintenanceagreements on a case-by-case basis in these circumstances.

#### 2163 <u>Removal of SCM and restoration to pre-construction conditions</u>

- 2164 The County may consider a request to terminate an operations and maintenance agreement
- 2165 if improvements associated project are removed and site is restored to pre-construction
- 2166 conditions (native pervious materials). This will require submittal of a County of San Luis
- 2167 Obispo Grading Permit Application for approval for these demolition activities.

2168 2169	<b>10. Bibliography and References</b> City of Gilroy, City of Morgan Hill, County of Santa Clara. 2015. "Stormwater Management
2170	Guidance Manual for Low Impact Development & Post-Construction Requirements."
2171	https://stgenpln.blob.core.windows.net/document/Stormwater_GuidanceManual_PostCons
2172	tructionRequirements.pdf
2173	
2174 2175	City of Salinas. 2021. "Stormwater Development Standards for New and Redevelopment Projects."
2176	https://cityofsalinas.org/sites/default/files/departments_files/public_works_files/water_solid
2177	waste energy/swds/complete swds final august 2021 md rev.pdf
2178	
2179	City of San Diego, 2018. "The City of San Diego Storm Water Standards."
2180	https://www.sandiego.gov/sites/default/files/storm water standards manual oct 2018.pdf
2181	
2182	County of Sonoma. 2017. "Storm Water Low Impact Development Technical Design Manual,
2183	Revised December 2020." <u>https://www.srcity.org/1255/Low-Impact-Development</u>
218/	
2104	
2185	County of Santa Barbara, Project Clean Water. 2017. "Stormwater Technical Guide for Low
2186	Impact Development, 2 <sup>nd</sup> Edition." <u>https://www.countyofsb.org/2324/New-Redevelopment</u>
2187	
2188	County of Orange, 2017, "South Orange County Technical Guidance Document for the
2189	Preparation of Conceptual/Preliminary and/or Project Water Ouality Management Plans."
2190	https://ocerws.ocpublicworks.com/service-areas/oc-environmental-resources/oc-
2191	watersheds/regional-stormwater-program/water-guality
2192	
2102	California Department of Transportation, Division of Environmental Analysis, 2012
∠133 2104	Riofiltration Swale Design Guidance, https://dot.ca.gov//media/dot
∠194 2105	modia/programs/design/decuments/dg.biofiltration_swale_002712_a11v.pdf
2175	<u>ווובטומידי סבי מוווא עבאבורי עטכעווובוונא עביטוטוונו מנוטוו-אשמוב-0527 וב-מו דץ. שעו</u>
2196	

2197 2198 2199	Contra Costa Clean Water Program, 2022. Stormwater C.3 Guidebook, 8 <sup>th</sup> Edition. https://www.cccleanwater.org/development-infrastructure/development/stormwater-c-3- guidebook
2200	
2201 2202 2203 2204 2205	County of San Diego. 2020. "County of San Diego BMP Design Manual." 2 <sup>nd</sup> update to February 2016 Manual. <u>https://www.sandiegocounty.gov/content/sdc/dpw/watersheds/DevelopmentandConstructi</u> <u>on/BMP_Design_Manual.html</u>
2206 2207 2208 2209	Santa Clara Valley Urban Pollution Prevention Program (SCVURPPP), 2016. Guidance for Implementing Stormwater Requirements for New Development and Redevelopment Projects (C.3 Stormwater Handbook) <u>https://scvurppp.org/swrp/gsi/</u>
2210 2211 2212	Riverside County LID BMP Handbook, Riverside County Flood Control and Water Conservation District, 2011. <u>https://rcwatershed.org/permittees/riverside-county-lid-bmp-handbook/#93-98-1-lid-bmp-design-handbook</u>
2213 2214 2215 2216 2217 2218	State of Washington, Department of Ecology. Emerging Stormwater Treatment Technologies (Technology Assessment Protocol- Ecology TAPE) Guidance Documents. 2018. <u>https://ecology.wa.gov/Regulations-Permits/Guidance-technical-assistance/Stormwater-permittee-guidance-resources/Emerging-stormwater-treatment-technologies</u>
2219 2220 2221 2222	Central Coast Low Impact Development Initiative (LIDI), 2013. "Bioretention Engineering Standards: Details and Technical Specifications." <u>https://www.centralcoastlidi.org/projects.php</u>
2223 2224 2225	California Building Standard Commission (CBSC). 2022. "California Buildings Standards Code." <u>http://www.bsc.ca.gov/Codes.aspx</u>
2226 2227	California State Water Resources Control Board. 2022. "National Pollutant Discharge Elimination System General Permit for Stormwater Discharges Associated with

- 2228 Construction and Land Disturbance Activities." Order WQ 2022-0057-DWQ
- 2229 <u>https://www.waterboards.ca.gov/water\_issues/programs/stormwater/construction/docs/20</u>
- 2230 <u>22-0057-dwq-with-attachments/cgp2022\_order.pdf</u>
- 2231
- 2232 California State Water Resources Control Board. 2014. "National Pollutant Discharge
- 2233 Elimination System General Permit for Storm Water Discharges Associated with Industrial 2234 Activities." Order 2014-0057-DWQ.
- 2235 <u>https://www.waterboards.ca.gov/water\_issues/programs/stormwater/docs/industrial/2014i</u>
- 2236 <u>ndgenpermit/order.pdf</u>
- 2237
- 2238 Central Coast Regional Water Quality Control Board. 2013. "Central Coast Post-Construction2239 Stormwater Requirements." Order No. R3-2013-0032.
- 2240 <u>https://www.waterboards.ca.gov/centralcoast/water\_issues/programs/stormwater/docs/lid</u>
- 2241 /lid\_hydromod\_charette\_index.html
- 2242
- 2243 California Department of Water Resources. "Model Water Efficient Landscape Ordinance."
- 2244 <u>https://water.ca.gov/Programs/Water-Use-And-Efficiency/Urban-Water-Use-</u>
- 2245 Efficiency/Model-Water-Efficient-Landscape-Ordinance
- 2246
- 2247 San Luis Obispo County Municipal Code. 2022. Title 19.11, Buildings and Construction.
- 2248 <u>https://library.municode.com/ca/san\_luis\_obispo\_county/codes/county\_code?nodeId=TIT19</u>
- 2249 <u>BUCO\_CH19.11STMA</u>
- 2250
- 2251 San Luis Obispo County Municipal Code. 2022. Title 8.68, Stormwater Pollution Prevention
- 2252 and Discharge Control.
- 2253 <u>https://library.municode.com/ca/san\_luis\_obispo\_county/codes/county\_code?nodeld=TIT8</u>
- 2254 <u>HESA\_CH8.68STPOPRDICO</u>

1	How to comment on this document:
h	This desument is baland for adjuing and connet be predicing using the dising all dising an
2	<ul> <li>Inis document is locked for editing and cannot be modified using traditional editing or</li> </ul>
3	track changes methods.
4	<ul> <li>Comments can be made on specific lines of this document using the 'New Comment'</li> </ul>
5	feature in the Review Tab.
6	• There are two (2) methods for adding a new comment:
7	<ul> <li>Method 1: Click on the line of text where you would like to add a comment then</li> </ul>
0	select 'New Comment' in the Deview teb to add a comment.
0	Mailings Review View Help BLUEBEAM Acrobat
	►★ T New Comment P Next
	Translate Language
	Direvious
0	Language Comments
9 10	
10	
11	<ul> <li>Method 2: Right-click on the line of text where you would like to add a comment,</li> </ul>
12	and select 'New Comment' from the provided menus. broad diversity of landscapes presents unique challenges for construction projects and new development. Protectine the county's waterways and natural resources is fundamental resources is fundam
	9 The California Regional Water Quality Control Board for the Central Coast Region (Central
	11 (PCRs) for Deve Search the menus 513-0032) in July 2013. 12 The County of Search the menus PCRs to development
	13 projects across X Cut nated places. New or nia Phase II Municipal
	IS Separate Storm D the PCRs. I6 The PCRs are Copy Seneficial uses of the
	17     County's waten     The PCRs are designed       18     to preserve wat     Paste Options:     , fish habitat, shellfish       19     production, are     Paste Options:     , fish habitat, shellfish
	20 a. Backg
	2 instituted in the 23 of Post_Constri A Font County The current
	24 regional frame e detailed and robust 25 than previous g are Paragraph
	26 Toble 1: Summai
	Date     Synonyms     Applicable Area       Before May 10,     With the second seco
	May 10, 2010 tr March 3, 2011
	March 3, 2011 t 5% Translate 2003 MS4 Boundaries March 6, 2014
	July 1, 2013 C Link > Statewide
	March 6, 204 New Comment 2013 MS4 Boundaries
13	1
14	When you have finished adding your comments:

15

16

17

- - Save the word document with your initials at the end of the file name.
    - Return the file via email to <u>mattv@wallacegroup.us</u>
      - o Comments are due by April 28, 2023

- 18 This Appendix contains instructions and hyperlinks to commonly used platforms and tools for
- 19 developing a SWCP. The summary table below indicates the location of information in this 20 appendix.
  - **Table Number** Table Title Notes Step by step instructions for Identifying MS4 Area digital mapping tools to A-1 Boundaries and Watershed identify MS4 boundaries and Management Zone WMZs in San Luis Obispo County. Descriptions and hyperlinks Web resources and reference to web resources commonly A-2 used in formulating hyperlinks Stormwater Control Plans.

21

- 22 Please email stormwater@co.slo.ca.us if any links are discovered to be non-functional. This resource
- was most recently updated in January 2023. 23
- 24
- 25

II)KAFI

26

27 **Table A-1:** Identifying MS4 Area Boundaries and Watershed Management Zones

Instructions for utilizing Land Use View online mapping tools	
Step 1: Navigate to the County of San Luis Obispo Planning & Building Department web page.	
https://www.slocounty.ca.gov/Departments/Planning-Building.aspx	
Step 2: Select the icon for "Interactive Map" shown on the main page to load the Land Use View application.	
	Map Search Engagement
	Appointments <u>Lodes &amp; Meetings &amp; Contact Us</u> <u>Ordinances</u> Hearings
Step 3: Select 'Layers' in the lower left menu bar.	Land Use View
	Home
	Welcome to Land Use View! The San Luis Obispo County Planning and Building
	Department is pleased to present this publicly- available, interactive mapping application. We are committed to providing transparent and easy access to property and land use geospatial information.
	Roll the mouse wheel to zoom in or out of an area on the map and click on a property. You can also search for an address or parcel number in the search box. There are some helpful links below including <u>basic</u> <u>instructions</u> . Click the Layers tab below or the "I Want To" button to see the layer list.
	The Planning and Building Department maintains many of the GIS layers shown here however, the parcel data and <u>Open Streetmap</u> basemap data are maintained and provided by third parties. Look <u>here</u> for how to obtain County GIS data.
	Helpful Links
Step 4: Expand the Layers group named "Planning"	Land Use View
	Department of Planning & Building Layers 🗮 🗙
	All Layers 🗸
	Filter Layers 😵 Filter
	SLO County Parcels
	+ 🗷 Planning
	+ C Environment
	+ Z Code Enforcement
	+ Z Lodging Businesses (Vacation Rentals,
	Hotels, etc.)
	+ 🗹 USGS Secs Twinshp Range



28 Table A-2: Web resources and reference hyperlinks
#### APPENDIX A- HYPERLINKS AND REFERENCE RESOURCES

Page Hosting Agency	Site Title	Description	Link:
Central Coast Regional Water Quality Control Board.	Central Coast Region Post- Construction Stormwater Requirements	Resources and documents related to Resolution R3-2013-0032.	<u>https://www.waterboards.c</u> <u>a.gov/centralcoast/water i</u> <u>ssues/programs/stormwat</u> <u>er</u>
County of San Luis Obispo, Public Works Department	Stormwater Requirements for New Construction	Resources page with instructions and forms for construction permit applications. Includes County PCR Waiver Request form, SWCP App, SWCP Template.	https://www.slocounty.ca.g ov/Departments/Public- Works/Services/Programs- Outreach/Stormwater- Requirements-for-New- Construction.aspx
County of San Luis Obispo, Planning & Building Department	Post- Construction Stormwater Management	Resources page with forms and instructions for County long-term operations and maintenance agreements. Includes O&M Agreement forms and templates.	https://www.slocounty.ca.g. ov/Departments/Planning- Building/Department- Services/Agriculture,- Water,-and- Energy/Stormwater/Post- Construction-Stormwater- Management.aspx
County of Santa Barbara, Public Works Department	New and Redevelopment	Stormwater control plan manual and design resources. Includes Stormwater Control Measures Sizing Calculator and instructions.	https://www.countyofsb.or g/2324/New- Redevelopment
Environmental Protection Agency, Southwest Region 9	Underground Injection Well Registration	Resources page with instructions and links for registering dry wells and underground stormwater chamber systems.	https://www.epa.gov/uic/f orms/underground- injection-well-registration- epas-pacific-southwest- region-9
State of Washington, Department of Ecology	Emerging Stormwater Treatment Technologies (TAPE)	Stormwater treatment technologies reviewed and certified by the Washington state Technology Assessment Protocol – Ecology (the TAPE program).	https://ecology.wa.gov/Re gulations- Permits/Guidance- technical- assistance/Stormwater- permittee-guidance- resources/Emerging- stormwater-treatment- technologies
Central Coast Low Impact Development Initiative (LIDI)	LID Design and Construction	Resources to guide LID design and construction for the central coast region.	https://www.centralcoastli di.org/projects.php

#### APPENDIX A- HYPERLINKS AND REFERENCE RESOURCES

Page Hosting Agency	Site Title	Description	Link:
State Water Resources Control Board	GeoTracker	Water Board's data management system for sites that impact or have the potential to impact ground water guality in California.	<u>https://geotracker.waterbo</u> ards.ca.gov/
County of San Luis Obispo, Planning & Building Department	Buildings and Construction Code, Title 19	Current County code Title 19 detailing requirements for buildings and construction. Chapter 19.11 details stormwater management requirements.	https://library.municode.co m/ca/san luis obispo cou nty/codes/county code?no deld=TIT19BUCO
County of San Luis Obispo, Public Works Department	Public Improvement Standards	Current County Public Improvement Standards, most recent version adopted in 2022.	https://www.slocounty.ca.g ov/Departments/Public- Works/Forms- Documents/Development- Services/Public- Improvements/Public- Improvement- Standards.aspx
Central Coast Regional Water Quality Control Board.	Central Coast Region Post- Construction Stormwater Requirements	Resources and documents related to Resolution R3- 2013-0032.	https://www.waterboards.c a.gov/centralcoast/water i ssues/programs/stormwat er
County of San Luis Obispo, Public Works Department	Stormwater Requirements for New Construction	Resources page with instructions and forms for construction permit applications. Includes County PCR Waiver Request, SWCP App, SWCP Template.	https://www.slocounty.ca.g. ov/Departments/Public- Works/Services/Programs- Outreach/Stormwater- Requirements-for-New- Construction.aspx

#### Appendix B- OPPORTUNITIES AND CONSTRAINTS ANALYSIS

#### 30 **Opportunities and Constraints Analysis**

The suitability or infeasibility of a design strategy (or combination of design strategies) at a project site depends on the unique opportunities and constraints of the site. The objective of this assessment is to identify and preserve areas of the project site that favor PCR compliance (opportunities), while prioritizing development to those portions of the project site that do not (constraints). Ideally, the assessment of opportunities and constraints occurs prior to developing project concepts and site design, and identifies site-specific stormwater "opportunities" and "constraints" that can be utilized as a basis for creating a well-balanced project.

The County requires submittal of an opportunities and constraints checklist and demonstration map (per the PCRs) for projects that trigger PR#3 and above, and to demonstrate the criteria are met for a technical infeasibility finding. Applicants must complete the following pages and submit the analysis as an attachment to the SWCP if requesting a technical infeasibility finding. A separate

- 42 opportunities and constraints site map reflecting the data in this appendix is also required.
- 43 Applicants are encouraged to thoroughly review the criteria associated with technical infeasibility
- 44 in Resolution R3-2013-00032 when determining the applicability to their project.
- 45

## PRELIM DRAFT

## 46 **1. Opportunities & Constraints Checklist**

#### 47 a. Existing Vegetation

#### 48 Preserve or minimize disturbance to existing natural vegetated features. Designs that integrate natural

49 features of the project site are better at mimicking pre-development runoff characteristics. Effective

50 management of both existing and proposed site vegetation can reduce a development's impact on

51 stormwater runoff quality and quantity.

□ Yes □ No □ N/A	Existing, high-quality vegetation has been identified and noted on the Opportunity and Constraints Map. Access to these areas will be restricted during construction.
□ Yes □ No □ N/A	Existing trees have been identified and noted on the Opportunity and Constraints Map. The location of tree protection fencing is identified to restrict site disturbance and protect these locations during construction.
🗆 Yes 🗌 No 🗌 N/A	Notes have been included on the corresponding site plans in areas where highly visible temporary fencing shall be placed around vegetation and tree areas that are to be preserved during construction.

#### b. Survey and Site Topography

- 53 Identify opportunities and constraints within site topography and natural drainage patterns that can
- 54 be incorporated into the design. Integrating existing drainage patterns into the site plan can maintain
- a site's predevelopment hydrologic function and will result in lower construction costs over sites that
- 56 modify site topography and develop new drainage patterns.

Yes No N/A	The site has been surveyed and a topographic base file has been created to identify topography and natural drainage patterns.
□ Yes □ No □ N/A	Existing low-spots and sumps within the topography have been identified on the Opportunity and Constraints Map. These areas will be preserved and utilized as BMP locations where technically feasible.
□ Yes □ No □ N/A	Existing high-spots within the topography have been identified on the Opportunity and Constraints Map. These areas be preserved for placement of structures or hardscapes where feasible, allowing runoff to drain to low lying areas for treatment.
□ Yes □ No □ N/A	Areas within 50 feet from the top of slopes that are greater than 20% and over 10 feet of vertical relief have been identified on the Opportunity and Constraints Map. Notes on the map indicate that SCMs are not authorized within these areas.

57

52

#### 58 c. Soil Analysis

59 Native undisturbed soils have a complex matrix created by the growth and decay of plant roots, 60 earthworms, and insect activity. Topsoil stripping and stockpiling destroys soil structure and diminishes

61 natural biological activity. Avoid and limit unnecessary site disturbances during construction. Plan LID

- 62 and SCM placement where soils support infiltration (Soil Groups A and B). To the extent feasible, plan
- 63 buildings and structures and hardscapes placement where soils discourage infiltration (Soil Group C
- 64 and D).

□ Yes □ No □ N/A	Locations where soils encourage infiltration (Soil Group A and B) have been identified on the Opportunity and Constraints Map. Where feasible, these areas have been preserved or dedicated to SCM locations.
□ Yes □ No □ N/A	Locations where soils discourage infiltration (Soil Group C and D) have been identified on the Opportunity and Constraints Map. Where feasible, these locations have been dedicated to the proposed project improvements such as structures and hardscapes, or contractor staging and equipment storage areas, etc.
Yes No N/A	Locations where existing structures and hardscapes will be removed during construction (exposing highly compacted soils) have been identified on the Opportunity and Constraints Map. Placement of SCMs has been avoided in these areas.

#### 66 d. Geotechnical Analysis

67 Data from the preliminary geotechnical analysis or soil borings should be evaluated to support

- 68 identification of opportunities and constraints. These areas should be specifically identified with limits
- 69 noted on the Opportunities and Constraints Map.

🗆 Yes 🔲 No	The site contains areas designated as an erosion hazard, or landslide hazard.
Yes No	The site contains groundwater that drains into an erosion hazard, or landslide hazard area.
🗆 Yes 🗌 No	The geotechnical report identified contaminated soils:
	These soils will be removed during construction.
	$\Box$ These soils will remain in place during construction.
Yes No N/A	The groundwater table elevation (including seasonally high and historically high) has been determined.
🗆 Yes 🗌 No	The seasonally high groundwater table elevation is at least 10-feet below the proposed invert elevations of the proposed SCMs.
□ Yes □ No □ N/A	Fractured bedrock identified through geotechnical testing is at least 10-feet below the proposed invert elevations of the proposed SCMs.
🗆 Yes 🗌 No	Infiltration testing has been performed onsite at the proposed SCM locations and the geotechnical report has identified that the site is suitable for infiltration.

70

#### 71 e. Setbacks

First Establish setbacks and buffer zones surrounding restricted and/or sensitive areas. Identify all areas where SCMs cannot be constructed due to setback requirements. Examples include existing and

- 74 proposed building foundations, municipal water wells, private water wells, septic systems, easements,
- 75 etc.

□ Yes □	No 🗌 N/A	Private potable water wells in the vicinity have been identified (onsite and offsite) and a minimum offset radius has been established indicating where infiltration SCMs are not authorized.
Yes 🗌	No 🗌 N/A	Municipal potable water wells in the vicinity have been identified (onsite and offsite) and a minimum offset radius has been established indicating where infiltration based SCMs are not authorized.
Yes	No 🗌 N/A	Within the Coastal Zone, a setback of 100-feet has been established from the upland extent of riparian vegetation. The limits of these setbacks are indicated on the Opportunity and Constraints map.
Yes	No 🗌 N/A	Within the Urban Reserve Lines, a setback of 50-feet has been established from the upland extent of riparian vegetation. The limits of these setbacks are indicated on the Opportunity and Constraints map.
Yes	No 🗌 N/A	A setback of 10-ft has been established from all property lines to SCMs and the limits of these setbacks have been indicated on the Opportunity and Constraints Map.
Yes	No 🗆 N/A	A setback of 10-ft has been established from all existing and proposed building foundations with notes indicating infiltration SCMs are not authorized within these limits.

#### 77 f. Hydrology Features

78 Identify onsite and offsite downstream waterways, including creeks, wetlands, watercourse, seeps,

riparian zones areas of 100-year flood inundation, potential stormwater run-on locations and depths

80 to groundwater. All areas of hydrologic importance should be delineated at the earliest stage in the

81 development planning process.

□ Yes □ No □ N/A	Hydrological features such as creeks, wetlands, riparian zones, etc. have been identified and incorporated into the Opportunity and Constraints Map.
	Notes have been added to the Opportunity and Constraint Map indicating that these areas will be protected by exclusionary fencing during construction to prevent resource damage.
Yes No N/A	The pre-developed site drainage pathways have been identified and the limits of these features have been placed onto the Opportunities and Constraints Map.
Yes No N/A	Existing storm drain infrastructure, including potential points of connection have been identified and placed onto the Opportunities and Constraints Map.
Yes No N/A	Stormwater run-on locations have been identified and placed onto the Opportunities and Constraints Map.

83

#### g. Hazardous Areas & Pollutants of Concern (POCs)

84 Identify locations where existing or future pollutants may occur onsite and identify features that 85 may prevent these pollutants from being exposed to stormwater runoff. Examples include 86 chemical storage locations, fueling stations, and industrial operation areas.

Yes No N/A	Existing hazardous storage areas and POC sources have been identified and placed onto the Opportunities and Constraints Map.
Yes No N/A	Proposed hazardous storage areas and POC sources have been identified and placed onto the Opportunities and Constraints Map.

87

## PRELIM DRAFT

### 88 **Class V Well Requirements**

89 Dry wells and other sub-surface stormwater infiltration practices or technologies serving uses 90 other than single-family homes are considered Class V wells, subject to US Environmental 91 Protection Agency (US EPA) regulations. Typically, Class V wells are shallow wells used to place a 92 variety of fluids directly below the land surface. By definition, a well is "any bored, drilled, driven 93 shaft, or dug hole that is deeper than its widest surface dimension, or an improved sinkhole, or a 94 subsurface fluid distribution system" and an "injection well" is a "well" into which "fluids" are being 95 injected (40 CFR §144.3). Stormwater dry wells and other sub-surface stormwater infiltration practices/technologies may be authorized to operate as long as they are registered with the US 96 97 EPA, and only inject uncontaminated stormwater.

98

Applicants that submit drainage plans to the County for review will be notified of the need to register if the plans include a Class V system. The County requires Class V Well registration as part of permitting new development and will include a condition on the construction permit requiring registration. A condition for *'Public Works Inspection prior to Final'* will be added to the building permit with notes that the applicant must submit evidence to Public Works they have registered their Class V system with the US EPA's Region 9 Office. There is no fee associated with registration, and there are no ongoing reporting requirements. Applicants can satisfy the building permit

- 106 condition by providing evidence of system registration to Public Works. A confirmation email and
- 107 registration number from the US EPA are sufficient evidence of registration.
- 108 Local Requirements

There are no detailed State or Federal requirements for the design or approval of new Class V systems. However, the County is the local authority responsible for ensuring that new Class V wells do not endanger underground drinking water supplies. The County's requirements are intended to ensure that new systems meet the minimum requirements set forth by the US EPA to and protect underground water supplies. The County reserves the right to reject site designs that include underground infiltration systems in settings deemed high risk by the County's Environmental Health Department.

- 115 Er 116
- Per the County's Public Improvement Standards, underground infiltration system and dry well designs must incorporate a stormwater pretreatment device or features to protect groundwater, remove solids, and ensure that particulate debris can be isolated from inflows.
- 120
- The County requires that pretreatment for Class V systems meet one of the following two criteria:
   Pretreatment proprietary devices certified by the Technology Assessment Protocol
   Ecology (TAPE) Program supported by the Washington State Department of Ecology.
   Devices certified in the Pretreatment or General Use Level Designation (GULD)
   technologies are acceptable.
- The pretreatment requirements for PR#2 are met entirely upstream of the infiltration
   system through at-grade LID features such as bioretention or biofiltration features, and a
   settling vault or sump is installed.
- 129

- 130 Underground infiltration systems do not meet the standards to qualify as Low Impact
- 131 Development. Accordingly, Designers should demonstrate that a minimum of 30% of the site's
- 132 post-construction runoff volume has been managed through at-grade LID strategies before
- 133 proposing underground infiltration chambers or other Class V infrastructure.
- 134 Chapter 4 of the Post-Construction Stormwater Guidebook includes additional information about
- 135 structural and groundwater setbacks for siting Class V infrastructure.

#### 136 Soil Report Data

- 137 A soils report will be required to demonstrate soil infiltration rates in the location and elevation
- 138 of the proposed underground infiltration system and the minimum distance to seasonally high
- 139 groundwater. See Chapter 4 of the Post-Construction Guidebook for additional information about
- 140 required soils and infiltration testing and applicable factors of safety.
- 141 The soils report must include a statement indicating that the site soils at the proposed system
- 142 location and elevation are suitable for an underground infiltration system and will not present a
- 143 hazard to the site, adjoining properties, or the public right-of-way.

#### 144 <u>Groundwater Setbacks</u>

145 The minimum vertical groundwater setback for underground infiltration systems is 10 feet from

146 the elevation of seasonally high groundwater. Soil types with high infiltration rates require

- 147 additional setback distance to ensure adequate soil contact time in the vadose zone.
- 148 **Table C-3:**Groundwater setbacks for underground infiltration systems, Class V systems

Infiltration Rate	Minimum setback to seasonally high groundwater
<1 minute per inch	50 feet
1-4 minutes per inch	20 feet
>5 minutes per inch	10 feet

149

#### 150 <u>Construction Requirements</u>

151 Underground infiltration infrastructure is typically installed very early in the construction process.

152 Protecting drain inlets to underground infiltration systems is of paramount importance during site 153 construction.

153 construction.

154 Protective measures should be well documented in the erosion and sediment control plan or in 155 the site's Stormwater Pollution Prevention Plan. Protective BMPs and their required maintenance

156 frequency should be noted on grading and drainage plans. Drain inlets should remain offline until

- 157 site surfaces have been stabilized with permanent stabilization measures.
- 158 Construction managers should call for all milestone inspections noted on their issued permit.
- 159 County inspectors will observe and inspect the infrastructure at each milestone involved with
- 160 installation of the underground system.

#### 161 *Inspection Ports*

- 162 The County requires that an observation well or inspection port be installed in every other row of
- 163 chambers where multiple rows are installed. Where practical, an additional observation well that
- 164 extends into the foundation gravel bed should also be installed for each series of chambers. All
- 165 inspection and maintenance access ports should also be labeled "STORM", accessible for
- 166 inspection and maintenance at all times.
- 167 **Table C-4:** Web resources and reference hyperlinks for underground infiltration systems and dry wells

Page Hosting Agency	Site Title	Description	Link:
United States Environmental Protection Agency	Basic Information About Class V Injection Wells	Resources page with information about types, uses and requirements for Class V wells.	https://www.epa.gov/uic/ba sic-information-about- class-v-injection-wells
United States Environmental Protection Agency	Federal Requirements for Class V Wells	Resources page with information about submitting inventory information.	https://www.epa.gov/uic/fe deral-requirements-class-v- wells
Environmental Protection Agency, Southwest Region 9	Class V Underground Injection Well Registration	Resources page with instructions and links for registering dry wells and underground stormwater chamber systems.	https://www.epa.gov/uic/for ms/underground-injection- well-registration-epas- pacific-southwest-region-9
State of Washington, Department of Ecology	Emerging Stormwater Treatment Technologies (TAPE)	Stormwater treatment technologies reviewed and certified by the Washington state Technology Assessment Protocol – Ecology (the TAPE program).	https://ecology.wa.gov/Reg ulations-Permits/Guidance- technical- assistance/Stormwater- permittee-guidance- resources/Emerging- stormwater-treatment- technologies
County of San Luis Obispo, Public Works Department	Public Improvement Standards	Current County Public Improvement Standards, most recent version adopted in 2022.	https://www.slocounty.ca.g ov/Departments/Public- Works/Forms- Documents/Development- Services/Public- Improvements/Public- Improvement- Standards.aspx

#### 169 Guide to Plant Palette Tables

170 The plant palettes provided in tables D-1 through D-10 of this appendix provide shortened lists

171 of species known to be successful in vegetated stormwater features throughout San Luis Obispo

172 County. The palettes include descriptions of species, recommended planting zones, and

173 recommended planting sizes.

Table Number	Table Title	Notes
D-1	Roadside Plant Palette (without trees)	Palette suggested for roadside stormwater features. Designed to ensure low vegetation height, without long-term irrigation.
D-2	Approved Roadside Trees for Stormwater Features	Subset of the approved tree list included in County of San Luis Obispo 2022 Public Improvement Standards.
D-3	Basic Commercial Palette, Coastal	Palette suggested for coastal commercial developments where heavy foot and vehicle traffic may be present.
D-4	Basic Commercial Palette, Inland	Palette suggested for inland commercial developments where heavy foot and vehicle traffic may be present.
D-5	Flowering Commercial Palette, Coastal	Palette suggested for coastal commercial developments. Features species with more prominent flowers than the basic palette.
D-6	Flowering Commercial Palette, Inland	Palette suggested for inland commercial developments. Features species with more prominent flowers than the basic palette.
D-7	Basic Residential Palette, Coastal	Low maintenance palette of native species with modest color variation. Species adapted for success in cooler coastal climates.
D-8	Basic Residential Palette, Inland	Low maintenance palette of native species with modest color variation. Species adapted for success in warmer and dryer inland climates.
D-9	Flowering Residential Palette Coastal	Moderate maintenance palette of native species with showy seasonal flowers. Palette thrives with supplemental irrigation during dry months.
D-10	Flowering Residential Palette, Inland	Moderate maintenance palette of native species with showy seasonal flowers. Palette thrives with supplemental irrigation during dry months.

#### 175 **Table D-5:** Roadside Plant Palette (without trees)

Common Name	Scientific Name	Native	Zone	Description	Туре	Size
California Grey Rush	Juncus patens	Yes	A	Tolerates poor drainage, drought, shade, and resists deer.	Grass-like	1-gallon
Clustered field sedge	Carex praegracilis	Yes	A	Tolerates wide range of growing conditions, foot traffic.	Grass	Plugs
Deer Grass	Muhlenbergia rigens	Yes	A	Highly drought tolerant but can tolerate regular water. Large bunch grass.	Grass	1-gallon
Common yarrow	Achillea millefolium	Yes	А, В	Tolerates regular watering, occasional summer watering required inland. Can be mowed, handles foot traffic.	Perennial, Upright herb	1-gallon or Seed
Coffeeberry	Rhamnus californica	Yes	В	Deer resistant. Fire resistant when watered regularly.	Shrub	5-gallon
Toyon	Heteromeles arbutifolia	Yes	В	Tolerates sand, clay and serpentine soils, seasonal water with good drainage.	Shrub	5-gallon
Sky Lupine	Lupinus nanus	Yes	В	Annual spring wildflower which prefers lean soil and will self-sow.	Annual herb	Seed
California Poppy	Eschscholzia californica	Yes	В	Orange flowering perennial in spring-late spring, self- seeds, can tolerate periodic inundation.	Perennial	Seed

176

#### 177 **Table D-6:** Approved Roadside Trees for Stormwater Features

178 This table includes a subset of roadside trees approved in the County's 2022 Public Improvement Standards.

Common Name	Scientific Name	Drought Tolerant	Native	Water Use	Region
California Bay	Umbellularia californica	Yes	Yes	Moderate	Coastal
Laurel	, ,				
Coast Live Oak	Quercus agrifolia	Yes	Yes	Very Low	Coastal & Inland
Cork Oak	Quercus suber	Yes	Yes	Low	Coastal
Goldenrain Tree	Koelreuteria paniculata	Yes	No	Moderate	Inland
Interior Live Oak	Quercus wislizenii	Yes	Yes	Very Low	Inland
London Plane Tree	Platanus acerifolia	No	No	Moderate	Coastal & Inland
Maidenhair Tree	Gingko biloba 'Fairmont'	No	No	Moderate	Coastal & Inland

179 **Table D-7:** Basic Commercial Palette (Coastal)

#### Appendix D – PLANT PALETTES

Common Name	Scientific Name	Exposure	Native	Zone	Description	Туре	Size
Small Cape Rush	Chondropetalum tectorum	Full Sun- Part Sun	No	А, В	Tough, reed-like plant, tolerates boggy or clay soils. Evergreen. Drought tolerant once established.	Grass- like	1-gallon
California Field Sedge	Carex praegracilis	Sun or Shade	Yes	A	Tolerates wide range of growing conditions, foot traffic.	Grass	plugs
California Grey Rush	Juncus patens	Sun-Part Sun	Yes	A	Tolerates poor drainage, drought, shade. Forms clumps from short rhizomes.	Grass- like	1-gallon
California Sycamore	Platanus racemosa	Sun	Yes	В	Tolerates sand and clay soils, seasonal flooding, drought tolerant once established along coast. Likes sun and moderate water.	Tree	15- gallon
Coast Live Oak	Quercus agrifolia	Sun- Shade	Yes	В	Tolerates drought, coastal fog, and winter wet. Evergreen, produces significant leaf duff.	Tree	15- gallon

180

#### 182 **Table D-8:** Basic Commercial Palette (Inland)

Common Name	Scientific Name	Exposure	Native	Zone	Description	Туре	Size
Small Cape Rush	Chondropetal -um tectorum	Full Sun- Part Sun	No	А, В	Tough, reed-like plant tolerates boggy or clay soils. Evergreen. Drought tolerant once established.	Grass- like	1-gallon
Berkeley Sedge	Carex divulsa	Sun - Part Shade	Yes	А, В	Tolerates foot traffic. Best planted with regular to occasional irrigation. Fairly drought tolerant once established. Can be mowed to 4" for clean look.	Grass	plugs
California Grey Rush	Juncus patens	Sun-Part Sun	Yes	A	Tolerates poor drainage, drought, shade.	Grass- like	1-gallon
California Sycamore	Platanus racemosa	Sun	Yes	В	Tolerates sand and clay soils, seasonal flooding, drought tolerant once established along coast.	Tree	15- gallon
Coast Live Oak	Quercus agrifolia	Sun- Shade	Yes	В	Tolerates drought, coastal fog, and winter wet. Evergreen, produces significant leaf duff.	Tree	15- gallon

183

185 Table D-9: Flowering Commercial Palette (Co	oastal)
---	---------

Common Name	Scientific Name	Exposure	Native	Zone	Description	Туре	Size
Douglas Iris	Iris douglasiana	Sun-Full Shade	Yes	В	Fast growing. Full sun near coast, afternoon shade inland. Prefers richer soils. Tolerates sand, clay and serpentine soils and seasonal wet. Needs summer water.	Perennial	1- gallon
Yarrow	Achillea millefolium	Sun-Part Shade	Yes	А, В	Tolerates regular watering, occasional summer watering required inland. Can be mowed, handles foot traffic.	Perennial, Upright herb	1-gallon or Seed
California Goldenrod	Solidago californica	Sun-Part Shade	Yes	А, В	Late summer/fall yellow flowering perennial. Spreads by underground runners. Winter dormant.	Perennial	1-gallon
Western Redbud	Cercis occidentalis	Sun	Yes	В	Small tree or large shrub. Tolerates clay, winter wet, drought. Pink/red blooms in spring prior to leaf bud out.	Tree	15- gallon

#### 188 **Table D-10:** Flowering Commercial Palette (Inland)

Common Name	Scientific Name	Exposure	Native	Zone	Description	Туре	Size
Sky Lupine	Lupinus nanus	Full Sun	Yes	В	Small purple flowers. Annual spring wildflower which prefers lean soil and will self-sow.	Annual herb	Seed
Yarrow	Achillea millefolium	Sun-Part Shade	Yes	А, В	Tolerates regular watering, occasional summer watering required inland. Can be mowed, handles foot traffic.	Perennial, Upright herb	1-gallon or Seed
California Wild Rose	Rosa californica	Part Shade	Yes	А, В	Small pink flowers. Tolerates wide variety of soils, seasonal flooding, some drought but likes some moisture.	Shrub	5-gallon
Western Redbud	Cercis occidentalis	Sun	Yes	В	Pink/red blooms in spring prior to leaf bud out. Small tree or large shrub. Tolerates clay, winter wet, drought.	Tree	15- gallon

189

#### 191 **Table D-11:** Basic Residential Palette (Coastal)

Common Name	Scientific Name	Exposure	Native	Zone	Description	Туре	Size
California Gray Rush	Juncus patens	Sun, shade	Yes	A	Tolerates poor drainage, drought, shade. Forms clumps from short rhizomes.	Grass-like	1- gallon
Elk Blue California Grey Rush	Juncus patens 'Elk Blue'	Sun, shade	Yes	A	Tolerates poor drainage, drought, shade, and resists deer. Forms clumps from short rhizomes.	Grass-like	1- gallon
San Diego Sedge	Carex spissa	Full Sun- Part Shade	Yes	А, В	Large clumping grass, tolerates alkaline, clay, serpentine soils, in or out of water, drought (once established) and resists deer.	Grass	1-gallon
Toyon D	Heteromeles arbutifolia	Sun-Part Sun	-Yes	В	Tolerates sand, clay and serpentine soils, seasonal water with good drainage. No summer water after first year.	Shrub	5-gallon
Pacific Wax Myrtle	Myrica californica	Sun-Part Sun	Yes	В	Large shrub/small tree. Tolerates seaside conditions, sand, clay & seasonal inundation.	Shrub	5-gallon
Western Redbud	Cercis occidentalis	Sun	Yes	В	Small tree or large shrub. Tolerates clay, winter wet, drought. Pink/red blooms in spring prior to leaf bud out.	Tree	15- gallon

192

#### 194 **Table D-12:** Basic Residential Palette (Inland)

Common Name	Scientific Name	Exposure	Native	Zone	Description	Туре	Size
Deer Grass	Muhlenbergia rigens	Sun or Shade	Yes	В	Tolerates poor drainage, drought, shade. Forms clumps from short rhizomes.	Grass	1-gallon
Small Cape Rush	Chondropetal- um tectorum	Full Sun- Part Sun	No	А, В	Tough, reed-like plant tolerates boggy or clay soils. Evergreen. Drought tolerant once established.	Grass- like	1- gallon
San Diego Sedge	Carex spissa	Full Sun- Part Shade	Yes	А, В	Large clumping grass, tolerates alkaline, clay, serpentine soils, in or out of water. Drought tolerant (once established) and resists deer.	Grass	1-gallon
Toyon	Heteromeles arbutifolia	Sun-Part Sun	Yes	В	Tolerates sand, serpentine and clay soils, seasonal water with good drainage. No summer water after first year.	Shrub	5-gallon
California Goldenrod	Solidago californica	Sun-Part Shade	Yes	А, В	Late summer/fall yellow flowering perennial, spreads by underground runners. Winter dormant.	Shrub	1-gallon
Coast Live Oak	Quercus agrifolia	Sun, Shade	Yes	В	Tolerates drought, coastal fog, and winter wet. Evergreen, produce significant leaf duff.	Tree	15- gallon

195

	197	Table D-13:	Flowering	Residential	Palette	(Coastal)
--	-----	-------------	-----------	-------------	---------	-----------

Common Name	Scientific Name	Exposure	Native	Zone	Description	Туре	Size
Deer Grass	Muhlenbergia rigens	Sun or Shade	Yes	В	Tolerates poor drainage, drought, shade. Forms clumps from short rhizomes.	Grass	1-gallon
Small Cape Rush	Chondropetal- um tectorum	Full Sun- Part Sun	No	А, В	Tough, reed-like plant tolerates boggy or clay soils. Evergreen. Drought tolerant once established.	Grass- like	1- gallon
San Diego Sedge	Carex spissa	Full Sun- Part Shade	Yes	А, В	Large clumping grass, tolerates alkaline, clay, serpentine soils, in or out of water. Drought tolerant (once established) and resists deer.	Grass	1-gallon
Toyon	Heteromeles arbutifolia	Sun-Part Sun	Yes	В	Tolerates sand, serpentine and clay soils, seasonal water with good drainage. No summer water after first year.	Shrub	5-gallon
California Goldenrod	Solidago californica	Sun-Part Shade	Yes	А, В	Late summer/fall yellow flowering perennial, spreads by underground runners. Winter dormant.	Shrub	1-gallon
Coast Live Oak	Quercus agrifolia	Sun, Shade	Yes	В	Tolerates drought, coastal fog, and winter wet. Evergreen, produce significant leaf duff.	Tree	15- gallon

#### **Table D-14:** Flowering Residential Palette (Inland)

Common Name	Scientific Name	Exposure	Native	Zone	Description	Туре	Size
Yarrow	Achillea millefolium	Sun-Part Shade	Yes	А, В	White or light pink flowers. Tolerates regular watering, occasional summer watering required inland. Can be mowed.	Perennial, Upright herb	1- gallon or seed
California Poppy	Eschscholzia californica	Full Sun	Yes	В	Orange flowering perennial in spring- late spring. Self- seeds, can tolerate periodic inundation.	Perennial	Seed
California Wild Rose	Rosa californica	Part Shade	Yes	А, В	Small pink flowers. Tolerates wide variety of soils, seasonal flooding, some drought.	Shrub	5- gallon
Coffeeberry	Rhamnus californica (Frangula)	Sun to Part Shade	Yes	В	Deer resistant. Fire resistant when watered regularly.	Shrub	5- gallon
Elk Blue California Grey Rush	Juncus patens 'Elk Blue'	Sun, shade	Yes	A	Tolerates poor drainage, drought, shade, and resists deer.	Grass-like	1- gallon
Western Redbud	Cercis occidentalis	Sun	Yes	В	Pink/red blooms in spring prior to leaf bud out. Small tree or large shrub. Tolerates clay, winter wet, drought.	Tree	15- gallon

Appendix D – PLANT PALETTES

#### 204 Guide to Extended LID Plant Lists

205 The plant information provided in tables D-11 and D-12 of this appendix include a more extensive

variety of species known to grow successfully in vegetated stormwater features throughout San
 Luis Obispo County. Species from these lists can be used to augment or modify any of the palettes

207 Luis Obispo County. Species from these lists can be used208 suggested in tables D-1 through D-10.

Loo sugges

209

Table Number	Table Title	Notes
D-11	Extended Coastal Low Impact Development Plant List	Comprehensive table of ground cover, shrubs, and tree species adapted to succeed in coastal vegetated stormwater features.
D-12	Extended Inland Low Impact Development Plant list	Comprehensive table of ground cover, shrubs, and tree species adapted to succeed in warmer inland climates.

210

## PRELIM DRAFT

#### 211 Table D-15: Extended Coastal Low Impact Development Plant List

Common Name	Scientific Name	Height	Spread	Exposure	Туре	Planting Zone	Tolerates Periodic Inundation	Erosion Control	Native	No
Yarrow	Achillea millefolium	1'-3'	2'	Sun-Part Shade	Perennial	А, В	x	x	x	Tol sun mo
Yerba Mansa	Anemopsis californica	1'	2'	Part Sun- Shade	Perennial	А, В			х	Pre dor
Berkeley Sedge	Carex divulsa	1'	Spreading	Sun - Part Shade	Grass	А, В	x			Go Tol lea
California Meadow Sedge	Carex pansa	6"-8"	Spreading	Sun - Part Shade	Grass	А, В	x		x	Go cor est yea
California Field Sedge	Carex praegracilis	<1'	Spreading	Sun or Shade	Grass	А, В		x	Х	Go cor
San Diego Sedge	Carex spissa	3'-4'	2'-3'	Full Sun- Part Shade	Grass	А, В	×	x	x	Lar soil res
Small Cape Rush	Chondropetalum tectorum	2'-3'	3'-4'	Full Sun- Part Sun	Grass-like	А, В	x			Tou Eve
California Fuchsia	Epilobium canum	1'-3'	1'-3'	Full Sun	Perennial	В		x	х	No req res
California Poppy	Eschscholzia californica	1'-3'	1'-3'	Full Sun	Perennial	В	х		х	Ora see
Douglas Iris	Iris douglasiana	6" - 2'-6"	2'-4'	Sun - Full Shade	Perennial	В	x	x	x	Fas Pre soi
Soft Rush	Juncus effusus	1'-2'	1'-2'	Full Sun- Part Shade	Grass-like	A,B	x	x	х	Tol Ne
California Grey Rush	Juncus patens	1'-2'	1'-2'	Sun-Shade	Grass-like	A,B	x	х	х	Tol fro
Elk Blue California Grey Rush	Juncus patens 'Elk Blue'	1'-2'	1'-2'	Sun-Shade	Grass-like	A,B	x	х	x	Tol For

212

#### tes

erates regular watering to no watering, occasional nmer watering helps keep plants attractive. Can be wed, handles foot traffic.

fers moist soil, does best in damp areas. Goes mant from late summer to early winter.

od lawn substitute, can be planted in light shade. erates foot traffic, dry to moist conditions. Blue-grey ves. Can be mowed to 4" for clean look.

od lawn substitute. Tolerates wide range of growing nditions, foot traffic. Drought tolerant once ablished. Can be mowed occasionally (2-3 times per ar) to 4" for clean look.

od lawn substitute. Tolerates wide range of growing nditions, foot traffic. Bank stabilizer.

ge clumping grass, tolerates alkaline, clay, serpentine ls, in or out of water, drought (once established) and ists deer.

ugh, reed-like plant, tolerates boggy or clay soils. ergreen. Drought tolerant once established.

supplemental water after established. Hot dry areas uire periodic summer water. Orange/red flowers, fire istant.

ange flowering perennial in spring-late spring, selfeds, can tolerate periodic inundation.

st growing. Full sun near coast, afternoon shade inland. Fers richer soils. Tolerates sand, clay and serpentine Is and seasonal wet. Needs summer water.

erates heavy soils, poor drainage, seasonal flooding. eds more supplemental water than *Juncus patens*.

erates poor drainage, drought, shade. Forms clumps m short rhizomes.

erates poor drainage, drought, shade, and resists deer. ms clumps from short rhizomes.

#### 213 **Table D-11 (continued):** Extended Coastal Low Impact Development Plant List

Common Name	Scientific Name	Height	Spread	Exposure	Туре	Planting Zone	Tolerates Periodic Inundation	Erosion Control	Native	No
Giant Wild Rye	Leymus condensatus	4-6'	3'	Full Sun	Grass	В	x	x	х	Eve Tol ove
Canyon Prince Wild Rye	Leymus condensatus 'Canyon Prince'	3'	Running	Full Sun	Grass	В	x	x	x	Tol loo gro
Sky Lupine	Lupinus nanus	4"-18"	1'	Full Sun		В			Х	Anı self
Deer Grass	Muhlenbergia rigens	4'-5'	4'-6'	Sun or Shade	Grass	В	x	х	х	Hig Lar wir
Blue Eyed Grass	Sisyrinchium bellum	1'-2'	6"	Full Sun	Perennial	В	×D/	L.	x	Sm dor sun cor
Coyote Brush	Baccharis pilularis	3'-6'	5'	Sun	Evergreen	В		X	X	Ada tole sea
Toyon	Heteromeles arbutifolia	8'-12'	8'-15'	Sun-Part Sun	Evergreen	В	X	X	x	Tol wit afte bire
Pacific Wax Myrtle	Myrica californica	15'	15'	Sun-Part Sun	Evergreen	В	X		Х	Lar san for
Coffeeberry	Rhamnus californica (Frangula)	6'-10'	6'-10'	Sun to Part Shade	Evergreen	В			х	Dee Goo
Pacific Blackberry	Rubrus ursinus	3'	20'	Sun to Shade	Semi -deciduous	B		Х	Х	Pric coc
Western Elderberry	Sambucus mexicana	10-20'	8'-20'	Sun-Part Shade	Deciduous	A,B	X		X	Lar
California Goldenrod	Solidago californica	1-3'	1-3'	Sun-Part Shade	Perennial	А,В	x	X	Х	Lat und

#### tes

ergreen bunching grass, highly drought tolerant. erates sand, clay, serpentine soil. Does not like to be er watered.

erates wet, not soggy soils. Drought resistant but ks better with occasional supplemental irrigation. Can w 5' tall with regular watering. Spreads by rhizomes.

nual spring wildflower which prefers lean soil and will f-sow.

phly drought tolerant but can tolerate regular water. ge warm season bunch grass. Best cut back in late nter/early spring.

all purple/blue flowers in early/late spring. Summer rmant and drought tolerant, requires occasional nmer water in hot dry areas. Tolerates seaside nditions, clay, sand, and resists deer. Fire resistant.

aptable, provides quick cover and bank stabilization, erant of coastal conditions, alkaline soil, sand, clay and isonal wet. Deer resistant.

erates sand, clay and serpentine soils, seasonal water h good drainage. Should not receive summer water er first year. Some fire resistance. Good food source for ds.

ge shrub/small tree. Tolerates seaside conditions, nd, clay and seasonal inundation. Can be used as a mal hedge. Drought tolerant in coastal plantings.

er resistant. Fire resistant when watered regularly. od as a hedge, screen, and wildland interface.

ckly branches, edible fruit. Vigorous spreader. Needs of temperatures and moisture to set large fruit.

ge shrub/small tree. Tolerates clay, seasonal flooding, d extreme drought once established.

e summer/fall yellow flowering perennial. Spreads by derground runners. Winter dormant.

214 **Table D-11 (continued):** Extended Coastal Low Impact Development Plant List

Common Name	Scientific Name	Height	Spread	Exposure	Туре	Planting Zone	Tolerates Periodic Inundation	Erosion Control	Native	No
California Sycamore	Platanus racemosa	40'-80'	40'-70'	Sun	Deciduous	В			x	Fas cla est
Coast Live Oak	Quercus agrifolia	25'-60'	40'-70'	Sun-Shade	Evergreen	В			х	Tol tre

216

## PRELIM DRAFT

#### tes

st growing tree found along creeks. Tolerates sand and ay soils, seasonal flooding, drought tolerant once tablished along coast. Likes sun and moderate water.

lerates drought, coastal fog, and winter wet. Mature es produce significant leaf duff.

#### 217 **Table D-16:** Extended Inland Low Impact Development Plant List

Common Name	Scientific Name	Height	Spread	Exposure	Туре	Planting Zone	Tolerates Periodic Inundation	Erosion Control	Native	
Yarrow	Achillea millefolium	1'-3'	2'	Sun-Part Shade	Perennial	A,B	х	х	х	۲ ۱ f
Yerba Mansa	Anemopsis californica	1'	2'	Part Sun-Shade	Perennial	А			x	F f
Berkeley Sedge	Carex divulsa	1'	Spreading	Sun - Part Shade	Grass	A,B	Х			ר ע ו
California Meadow Sedge	Carex pansa	6"-8"	Spreading	Sun - Part Shade	Grass	A,B	× D /		x	
California Field Sedge	Carex praegracilis	<1'	Spreading	Sun or Shade	Grass	A	x	x	x	ר t c
San Diego Sedge	Carex spissa	3'-4'	2'-3'	Full Sun-Part Shade	Grass	A,B	х	x	x	l e g
Small Cape Rush	Chondropetalum tectorum	2'-3'	3'-4'	Full Sun-Part Sun	Grass-like	A,B	х			i e
California Fuchsia	Epilobium canum	1'-3'	1'-3'	Full Sun	Perennial	В		x	x	f
California Poppy	Eschscholzia californica	1'-3'	1'-3'	Full Sun	Perennial	В	Х		х	( 5
Soft Rush	Juncus effusus	1'-2'	1'-2'	Full Sun-Part Shade	Grass-like	A	Х	Х	x	f J

#### Votes

Tolerates regular watering, occasional summer watering required inland. Can be mowed, handles foot traffic.

Prefers moist soil and damp areas. Goes dormant from late summer to early winter.

Tolerates foot traffic. Best planted in light shade with regular to occasional irrigation. Fairly drought tolerant once established. Blue-grey leaves. Can be mowed to 4" for clean look.

Lawn substitute, edge of meadows. Moderate water requirements. Tolerates wide range of growing conditions, some foot traffic. Has period of summer dormancy in warm, dry weather. Can be mowed to 4" for clean look.

Tolerates wide range of growing conditions, foot traffic. Has period of summer dormancy in warm, dry weather.

Large clumping grass, tolerates alkaline, clay, serpentine soils, in or out of water, drought (once established) and resists deer. Best in wet native garden.

Tough, reed-like plant, tolerates boggy or clay soils. Evergreen. Drought tolerant once established.

Requires periodic summer water. Orange/red flowers, fire resistant.

Orange flowering perennial in spring-late spring, self seeds.

Tolerates heavy soils, poor drainage, seasonal flooding. Needs more supplemental water than Juncus patens.

#### 218 Table D-12 (continued): Extended Inland Low Impact Development Plant List

Common Name	Scientific Name	Height	Spread	Exposure	Туре	Planting Zone	Tolerates Periodic Inundation	Erosion Control	Native	
California Grey Rush	Juncus patens	1'-2'	1'-2'	Sun-Shade	Grass-like	А	х	х	x	(
Elk Blue California Grey Rush	Juncus patens 'Elk Blue'	1'-2'	1'-2'	Sun-Shade	Grass-like	A	Х	Х	x	E c c i
Giant Wild Rye	Leymus condensatus	4-6'	3'	Full Sun	Grass	В	х	х	x	E t r
Canyon Prince Wild Rye	Leymus condensatus 'Canyon Prince'	2'-3'	Running	Full Sun	Grass	В	x	x	х	۱ و i
Sky Lupine	Lupinus nanus	4"-18"	1'	Full Sun		В		1	x	l a
Deer Grass	Muhlenbergia rigens	4'-5'	4'-6'	Sun or Shade	Grass	В	х	х	х	H V Ł
Blue Eyed Grass	Sisyrinchium bellum	1'-2'	6"	Full Sun	Perennial	В	х	x	x	
Coyote Brush	Baccharis pilularis	3'-6'	5'	Sun	Evergreen	В	х	х	x	۲ t
Toyon	Heteromeles arbutifolia	8'-12'	8'-15'	Sun-Part Sun- Shade	Evergreen	В	Х	Х	x	

#### Votes

Tolerates poor drainage, drought, shade. Forms clumps from short rhizomes.

Excellent in bioretention areas. Tolerates poor drainage, drought, shade, and resists deer. Forms clumps from short rhizomes. Occasional summer irrigation in full sun.

Evergreen bunching grass, highly drought tolerant. Tolerates sand, clay, serpentine soil. Does not like to be over watered.

Very hardy evergreen grass. Tolerates wet, not soggy soils. Drought resistant but requires supplemental irrigation in summer. Grows 2-3' tall in drier locations. Spreads by rhizomes.

Annual spring wildflower which prefers lean soil and will self-sow.

Highly drought tolerant but can tolerate regular water. Large warm season bunch grass. Best cut back in early spring.

Small purple/blue flowers in early/late spring. Summer dormant and drought tolerant with occasional summer water. Tolerates clay, sand, and resists deer. Fire resistant.

Adaptable, provides quick cover and stabilization, tolerant of alkaline soil, sand, clay and seasonal wet. Deer resistant.

Tolerates sand, clay and serpentine soils, regular & seasonal water with good drainage. Prefers part sun and supplemental summer water inland. Some fire resistant.

#### 219 **Table D-12 (continued):** Extended Inland Low Impact Development Plant List

Common Name	Scientific Name	Height	Spread	Exposure	Туре	Planting Zone	Tolerates Periodic Inundation	Erosion Control	Native	P
Pacific Wax Myrtle	Myrica californica	15'	15'	Part Sun	Evergreen	В	Х		х	L s a d
Coffeeberry	Rhamnus californica (Frangula)	6'-10'	6'-10'	Sun to Part Shade	Evergreen	В			х	C re ir
California Wild Rose	Rosa californica	3'-6'	3'-6'	Part Shade	Deciduous	А, В	Х		х	T li
Pacific Blackberry	Rubrus ursinus	3'	20'	Part Sun to Shade	Semi - deciduous	В		х	x	P N Ia
California Goldenrod	Solidago californica	1-3'	1-3'	Sun-Part Shade	Perennial	А, В	x	×	х	L S r/
Western Redbud	Cercis occidentalis	20'	15-20'	Sun	Deciduous	В	х	х	х	S V le p fa
Desert Willow	Chilopsis linearis	25'	20-25'	Sun	Deciduous	В	х		х	F a d
California Sycamore	Platanus racemosa	40'-80'	40'-70'	Sun	Deciduous	В			х	F a e L
Coast Live Oak	Quercus agrifolia	25'-60'	40'-70'	Sun-Shade	Evergreen	В			х	т р

220

#### Votes

Large shrub/small tree. Does best in afternoon shade with summer watering. Tolerates sand, clay and seasonal inundation. Cold tolerant to 20 degrees.

Deer resistant. Fire resistant when watered regularly. Good as a hedge, screen, and wildland nterface.

Tolerates wide variety of soils, seasonal flooding, ikes some moisture.

Prickly branches, edible fruit. Vigorous spreader. Needs cool temperatures and moisture to set large fruit.

ate summer/fall yellow flowering perennial. Spreads by underground runners. Likes nonreflective sun to part shade. Winter dormant.

Small tree or large shrub. Tolerates clay, winter wet, drought. Pink/red blooms in spring prior to eaf bud out. Needs winter chill for flowers to set properly. Hardy to 10 degrees, protect young plants below 20 degrees. Some summer water for faster growth.

Fragrant pink flowers in spring/summer. Tolerates alkaline, sand, clay soils, seasonal flooding, and drought.

Fast growing tree , tolerates sand and clay soils, and seasonal flooding. Drought tolerant once established where there is a high water table. Likes sun and moderate water.

Folerates drought, winter wet. Mature trees produce significant leaf duff.

APPENDIX E- EXAMPLE PROJECTS AND CALCULATIONS

221

- 222 PLACEHOLDER FOR TWO EXAMPLE PROJECTS
- 223 **TO BE INCLUDED ONCE SWCP APP AND TEMPLATE ARE FINALIZED.**

# PRELIM DRAFT

COUNTY উ SAN LUIS OBISPO	COUNTY OF SAN LU STORMWATER PRO	JIS OBIS GRAM	PO	
	Detention Stormwater I	Feature In	spection Form	
	Inspection Date:		Inspector Name:	
Inspection Details	PW Permit P&B Per	rmit	Permit Number:	
	CCM Case #:		SCM #s:	
	SCM Type: Detention Basin	n 🗌 Infil	tration/retention Fe	ature 🗌 Media Filter
	Inspection Type: 🗌 Construct	ion Active	(Interim) 🗌 Consti – Annual Inspection	ruction Complete (Final)
Excavation In progress Complete N/A	Soil subgrade visible:	Deptl	n to top of soil:	Subgrade soils uncompacted:
Geotextile Fabric In progress Complete N/A	Types used: Field Material slips verified:	Deptl	n to fabric:	Placement locations:
Structures In progress Complete N/A	Inlet Structure:	Outle	t Structure:	Overflow Structure:
Vegetation In progress Complete N/A	Plant palette types:	Biore	tention Soil Media:	Percent of vegetation cover/establishment:
Protection from construction impacts Yes No	Comments:			Fencing Cover: Other: None:

Vegetation Cover Condition:	Vegetation healthy (if present). No potential flood or fire hazards from dead vegetation, noxious weeds o overgrowth.	Moderate overgrowth or vegetation death. Mowing, trimming, or removal necessary to maintain capacity and flow paths.	Vegetation overgrowth presents hazards to inflows, outflows, and retention. Maintenance required immediately.
Visual assessment of inlets and outlets:	Inlets and outlets fully stabilized, no signs of surface erosion or scour. No repair necessary.	<ul> <li>Inlets/outlets require</li> <li>minor repair or retrofit to control surface erosion or scour.</li> </ul>	Inlets/outlets show signs of erosion or scour more than 2". Repairs required immediately.
Sediment or particle accumulation:	No evidence of particle accumulation at base, inlets or outlets. No impacts to outflow.	Sediment/particulate accumulation less than 15% of basin depth or partially obstructing inlets/outlets. No significant impacts to outflow.	Sediment/particulate accumulation greater than 25% of basin depth. Basin requires maintenance to remove accumulated sediment.
Sidewalls condition:	No evidence of erosion, rodent holes or compromise	<ul> <li>Minor damage due to</li> <li>erosion or rodent holes.</li> <li>Sidewalls require repair or</li> <li>soil stabilization.</li> </ul>	Evidence of piping through sidewalls due to rodent holes or erosion damage. Immediate repair required.
Presence of debris or illicit activity:	No debris, litter, or evidence of illicit dumping. Perimeter fence or control i secure (if present).	Small amount of debris, litter. Perimeter fence or control is secure (if present). Debris and litter removed at time of inspection.	Debris and litter present in significant quantities. Evidence of illicit dumping. Perimeter fence or control needed or requires repair.
Deficient Items & Proposed	Resolution:		
Additional Notes:			
Photographs taken? 🗌 Ye	s 🗌 No	Photo File storage: 🗌 Energov	PermitTrax Server
Follow up inspection neces	sary based on findings? 🗌 Y	es 🗌 No	

COUNTY উ SAN LUIS OBISPO	COUNTY OF SAN LU STORMWATER PRO Bioretention or Filtratio	JIS OBISP GRAM n Stormwat	<b>D</b> Ter Feature Inspe	ction Form
	Inspection Date:		Inspector Name:	
	PW Permit P&B Per	rmit	Permit Number:	
Inspection Details	CCM Case #:		SCM #s:	
	SCM Type: 🗌 Biofiltration Fe	eature 🗌 B	ioretention Featur	e 🗌 Bioswale
	Inspection Type:  Construc Post Co	tion Active ( onstruction –	Interim) 🗌 Cons Annual Inspectio	truction Complete (Final) n
Excavation In progress Complete N/A	Soil subgrade visible:	Depth t	o top of soil:	Subgrade soils uncompacted:
Geotextile Fabric In progress Complete N/A	Types used:	Depth t	o fabric:	Placement locations:
Gravel Bed In progress Complete N/A	Gravel Type: Field Material slips verified:	Gravel -	Thickness:	Depth to top of gravel:  Underdrain:
Bioretention Soil Media In progress Complete N/A	Typical Mixture – 70% sand/30% compost	Thickne Field M verified:	aterial slips	Soil media contaminated or impacted. Erosion or spilled material evident in SCM. Repair required.
Structures In progress Complete N/A	Inlet Structure:	Overflow	/ Structure:	Underdrain:  Pipe Size Elevation Cleanout
Vegetation Cover	Plant palette types:	Zone A	Noted: Bark/Mulch:	Zone B Noted:

N∕A			
Protection from construction Impacts: Yes No	Comments:		encing/flagging overed )ther: lone
Drainage performance:	No standing water present 24-hours following 0.50" storm event.	No standing water present 72 hours following 0.50" storm event.	Standing water present longer than 72 hours following 0.50" storm event.
Sediment/particle accumulation:	Sediment accumulation less than 1.0" throughout feature	Sediment accumulation 1.0-3.0" throughout feature. Functionality is not impaired.	Sediment covers vegetation greater than 3.0" in any location. Maintenance required.
Evidence of erosion:	No visible loss of soil media or mulch. No rill erosion or scour observed.	Soil media or mulch requires infill/repair. Minor erosion visible.	Soil media significantly impacted. Rill erosion evident in SCM. Maintenance required.
Deficient Items & Proposed	Resolution:	DRA	
Additional Notes:			
Photographs taken? 🗌 Ye	s 🗌 No Pł	noto File storage: 🗌 Energov 🏾	PermitTrax Server
Follow up inspection neces	sary based on findings? 🗌 Ye	s 🗌 No	

#### Agenda Item #6.b.ii: Attachment 4

### How to comment on this document:

- This document is locked for editing and cannot be modified using traditional editing or track changes methods.
- Comments can be made on specific lines of this document using the 'New Comment' feature in the Review Tab.
- There are two (2) methods for adding a new comment:
  - Method 1: Click on the line of text where you would like to add a comment, then select 'New Comment' in the Review tab to add a comment.

	↓ New Comment → Next
Translate Language	Delete Y Show Comments
ř ř	♥ Previous

• Method 2: Right-click on the line of text where you would like to add a comment, and select 'New Comment' from the provided menus.



- When you have finished adding your comments:
  - o Save the word document with your initials at the end of the file name.
  - Return the file via email to matty@wallacegroup.us
  - Comments are due by April 28, 2023

## Applicant and Engineer Information

Applicant Name:	Daytime Phone:	
Mailing Address:	Zip Code:	
Email Address:		
Engineer Name:	Daytime Phone:	
Mailing Address:	Zip Code:	
Email Address:		

## **Project Information**

Preliminary entitlements-	🗌 Final-		
Subdivision or Land Use Permit approval	Building and/or Grading Permit for construction		
Land Use Permit Number(s):	Building Permit Number(s):		
Project Address:	Assessor's Parcel Number (APN):		
Brief narrative description of project:			

## **Impervious Surface Areas**

#### Calculate and identify all items listed in the table below.

New Impervious Area (square feet):	
Example: New buildings, new pavement, etc.	
Replaced Impervious Area (square feet):	
Example: Buildings demolished to build a new parking lot or vice versa	
Reduced Impervious Area (square feet):	
Example: Pavement/buildings demolished with area scarified, re-vegetated, replaced	
with pervious pavers, etc.	
<u><b>Credit</b></u> for Reduced Impervious Area (square feet):	
<pre>If [New + Replaced) &gt; Reduced, use Credit = 0</pre>	
If (New + Replaced) < Reduced, use Credit = Reduced	
Net Impervious Area (square feet) = (New + Replaced) Credit	
(Square reer) – (New + Replaced) - Credit	

Departmental Use Only

Do Not Mark

### **Stormwater Performance Requirements**

The following table summarizes the mandatory Performance Requirements based on the amount of impervious surface area that is created or replaced. Please review this table to determine which requirements apply to the project.

	Performance Requirements			
Net Impervious Surface square feet	Performance Requirement #1	Performance Requirement #2	Performance Requirement #3	Performance Requirement #4
0 - 2,499	Complete Stormwater PCR Waiver Request Form			
2,500 - 4,999	✓			
5,000 - 14,999	<b>~</b>	✓ *		
15,000 – 22,499	<b>~</b>	✓	¥	
≥ 22,500	✓	✓	✓	✓

\* Not applicable for a single-family residence

## *Check the applicable performance requirements and indicate whether the project meets the requirement:*

Performance Requirement #1- Site Design	Requirement met? 🗌 Yes 🗌 No		
(Projects that meet Performance Requirement 1 only, complete this SWCP application and attach any applicable exhibits)			
Performance Requirement #2- Water Quality Treatment	Requirement met? 🗌 Yes 🔲 No		
Performance Requirement #3- Runoff Retention	Requirement met? 🗌 Yes 🗌 No		
Performance Requirement #4- Peak Management	Requirement met? 🗌 Yes 🔲 No		

- Projects that create or replace less than 2,500 square feet of impervious surface area must complete and submit the Stormwater PCR Waiver Request Form.
- Projects required to meet Performance Requirement 1 only, must complete this SWCP application and attach any applicable exhibits.
- Projects required to meet Performance Requirement 2, 3, or 4, must submit this SWCP application in addition to a complete Stormwater Control Plan using the County provided template.

### Performance Requirement #1: Site Design Measures Applicants Can Incorporate to Reduce Stormwater Impacts

Applicants are encouraged to reduce stormwater impacts associated with development and redevelopment.

Performance Requirement 1: Site Design and Runoff Reduction Summary				
Minimize stormwater runoff by implementing <u>one or more</u> of the following Site Design Measures. Selected Design Measures must be clearly referenced on the project plans.				
Site Design Measures	Implemented?	lf Yes, provide Plan Sheet / Detail location	lf No, provide an explanation below	
Roof runoff directed into cisterns or rain barrels for reuse?	🗆 Yes 🗆 No			
Roof runoff directed into vegetated areas (safely away from building foundations and footings)?	🗆 Yes 🗆 No			
Runoff from sidewalks, walkaways, and/or patios directed onto vegetated areas (safely away from the building foundations and footings)?	🗆 Yes 🗆 No			
Runoff from driveways and/or uncovered parking lots onto vegetated areas (safely away from the building foundations and footings)?	🗆 Yes 🗆 No			
Are bike lanes, driveways, uncovered parking lots, sidewalks, walkways, and patios constructed with permeable surfaces?	🗆 Yes 🗆 No			

### Performance Requirement #1: Stormwater Site Design & Runoff Reduction Summary

For each of the following, please describe how this project has complied to the maximum extent practicable with the following site design and runoff reduction:

1. Limit disturbance of creeks and natural drainage features.
2. Minimize compaction of highly permeable soils.

3.	Limit clearing and grading of native vegetation at the site to the minimum area needed to build the
	project, allow access, and provide fire protection.

4. Minimize impervious surfaces by concentrating improvements on the least-sensitive portions of the site, while leaving the remaining land in a natural, undisturbed state.

## **Certification\***

I hereby certify that this project is designed to achieve full compliance with each of the applicable Central Coast Post-Construction Requirements.

Preparer Name:	
Preparer Signature:	Date:
Was this application completed by a rea	gistered professional?
License Number:	License Type:
Stamp:	
Certification is required for projects sub	ject to Performance Requirements 2, 3, or 4 and may be provided

by a registered professional engineer, geologist, architect, and/or landscape architect.

1		How to	comment	t on this docu	iment:
2 • 3 4 • 5 6	This docu track cha Commen feature ir	ument is locked f inges methods. its can be made o in the Review Tab	or editing and on specific line	cannot be modifie es of this documen	d using traditional editing or t using the 'New Comment'
7 • 8 9	There ar	e two (2) method lethod 1: Click or elect 'New Comm ailings Review Vi	the line of te nent' in the Re ew Help BLU Delete Previous	a new comments xt where you would eview tab to add a d EBEAM Acrobat ent Next Show Comments	d like to add a comment, then comment.
10		Language		Comments	
11					
12 13	O IV al 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 01 12 13 14 25 26 26 26 26 26 26 26 26 26 26	Idefinition       2: Right-Cl         nd select 'New C         broad diversity of landscapes present development. Protecting the country's preserving it.         projects is esse         1. Intro         The California Regional Water Quality (PCRs) for Deve spearate Storr The Country's water or preserving it.         The California Regional Water Quality (PCRs) for Deve spearate Storr The Country's water op reserving it.         The PCRs are County's water op regervel water op regervel water op reserving it.         Several version table 7: Summe Date May 10. March 3. 2010         Date         March 3. 2010         March 3. 2010	ICK ON THE IINE omment' from is unique challenges for constru- is waterways and natural resou and a subject of the central of the central ind	Coor text where you the provided ment ction projects and new cress is fundamental to styles where styles where to coast Region (Central gement Requirements 113-0032) in July 2013. PCRs to development nated places. New or nia Phase II Municipal o the PCRs. peneficial uses of the The PCRs are designed in Table 1: Summary o County. The current e detailed and robust uis Obispo County. Applicable Area 2003 MS4 Boundaries	would like to add a comment, us.
		March 3, 2011 a 3 Iranslate March 6, 2014	>	2003 MS4 Boundaries	
	4	March 6, 204	ment	2013 M54 Boundaries	
14				1	

17

- When you have finished adding your comments:
  - Save the word document with your initials at the end of the file name.
  - Return the file via email to matty@wallacegroup.us
  - Comments are due by April 28, 2023

19	
20	
	Post-Construction Stormwater Control Plan for:
	Name of Project
21	
22 23	[Bracketed red text throughout this template is instructional and should be replaced with project specific information.
24	DO NOT DELETE ANY SECTION OR TABLE.
25 26	Where information is not pertinent or applicable to the proposed project indicate 'Not Applicable.']
27	
	Date:
	Name of owner:
	Owner's representative and contact information:
	Plan prepared by:
	Preparer's name and contact information:
	Submitted to: [Name of permitting jurisdiction]
28	
29	
	Preparer's signed stamp:

## 31 Stormwater Control Plan Submittal Completion Checklist

#### 32

#### 33 Exhibits:

Element	Included?	Notes
Exhibit depicting SCMs, Drainage Management Areas (DMAs).		
Exhibit depicting pre and post project pervious and impervious areas.		
Opportunities and constraints map.		

#### 34

#### 35 Required Submittals for PR#2

Element	Included?	Notes
Source control checklist.		
Plan sheet detail indicating location of PR#1 implementation.		
Draft long term operations and maintenance plan.		

#### 36

### 37 Required Submittals for PR#3

Element	Included?	Notes
LID opportunities and constraints analysis with map.		
Underground infiltration system pretreatment device certification.		
Soils testing report and design infiltration rate supporting documentation.		

#### 38

#### **39** *Requirements for PR#4*

Element	Included?	Notes
Calculations for peak management.		

### 1. Table of Contents

1.	Summary Project Data	1
2.	Project setting	2
a	Project Location and Description	2
b	Existing Site Features and Conditions	2
C.	Opportunities and Constraints for Stormwater Control	3
3.	Low Impact Development Design Strategies	3
a	Site Design Strategies	3
b	Runoff Reduction Strategies	4
C.	Self-treating and self-retaining areas	5
4.	Documentation of Drainage Design	5
a	Drainage Management Areas Summary	5
b	Stormwater Structural Control Measures	6
C.	Areas Draining to Self-retaining Areas	8
d	SCM Construction Checklist	9
5.	Pollutant Source Control Measures	9
6.	Stormwater Infrastructure Maintenance	11
a	Operations and Maintenance Agreements	11
b	Summary of Maintenance Requirements for each Structural Control Measure	12
7.	Conclusions and Certification of Compliance	12
List	of Tables	

## List of Tables

Table 1: Summary Project Data	. 1
Table 2: Site Soils summary data	. 2
Table 3: Performance Requirement #1 Runoff Reduction Strategies	. 4
Table 4: Performance Requirement #3 Additional LID Design Strategies	. 4
Table 5: Drainage Management Areas and Characteristics	. 5
Table 6: Structural Control Measure Summary Table (PR2 – Treatment Only)	. 6
Table 7: Structural Control Measure Summary Table (PR3 – Runoff Retention)	. 7
Table 8: Structural Control Measure Summary Table (PR4 – Peak Management)	. 7
Table 9: Subgrade Stormwater Structural Control Measures	. 7
Table 10: Self-retaining area summary	. 8
Table 11: SCM Construction Details Summary Table	. 9
Table 12: Permanent Pollutant Source Control Measures	. 9

## **List of Figures**

Figure 1:Project Vicinity Map	. 2
Figure 2: Project Site Soils Map (optional)	. 3

### List of Attachments

Attachment 1: Site Maps and Exhibits	.14
Attachment 2: SCM Sizing Calculator Outputs	.15
Attachment 3: Non-retention Based Treatment System Documentation	.16
Attachment 4: LID Opportunities and Constraints Checklist	.17
Attachment 5: Anticipated SCM Maintenance Costs and Maintenance Frequency	.20

[Table of Contents, List of Tables and List of Figures and List of Attachments page numbers will update with right-click and selecting 'Update Field' function.

Bracketed red text throughout this template is instructional and is intended to be replaced with project specific information.]

1. Summary Project Data Table 1 provides a summary of project data related to demonstrating compliance with the Post-2

3 Construction Stormwater Management Requirements (the PCRs) for Development Projects in

- 4 the Central Coast [Resolution R3-2013-0032]. The proposed project is designed to comply with 5 applicable requirements outlined in the PCRs.
- 6 Table 1: Summary Project Data

Project name:	[Insert name]					
Project or permit number:	[Tract number, parcel map number, PMT number]					
Preliminary or Final SWCP:	□ Preliminary entitlements Subdivision or Land Use Permit approval. □ Final Building and/or Grading Permit for construction.					
Project location:	[Street address	if ava	ilable, and	APN]		
Project Description:	[Example entries: "Single-family residence, driveway and agriculture storage building," "Residential subdivision with public improvements and 160 single-family residences," "Mixed use retail and residential development (apartments) with parking and roadway improvements" 1					
Total project site area:	[area in acres and square feet]					
Total Existing Impervious Area:	[area in square feet] [Example: existing buildings, pavement, etc. within project area]					
New Impervious Area:	[area in square feet] [Example: New buildings, new pavement, etc.]					
Replaced impervious Area:	[area in square feet] [Example: Parking area demolished to construct a new building, etc.]					
Reduced Impervious Area:	[area in square feet] [Example: Pavement/buildings demolished with area scarified and re-vegetated, etc.]					
Credit for Reduced Impervious Area:	[area in square feet] If [New + Replaced) > Total Existing, use Credit = 0 If (New + Replaced) < Total Existing, use Credit = Reduced					
Net impervious area: (Exhibit required)	[area in square feet] [( <u>New</u> + <u>Replaced</u> ) – <u>Credit]</u>					
Watershed management zone:	[Site-specific WMZ]					
Design storm frequency and depth:	85 <sup>th</sup> percent	ile	□ 95 <sup>th</sup> pe	ercentile	[Dep	oth in inches]
Applicable performance requirements:	□ PR #1		PR #2	□ PR #3		□ PR #4

- 9 Table 2 summarizes the predominant soil characteristics of the development site and data
- 10 generated from web generated soils reports and site soils explorations and testing.
- 11 Table 2: Site Soils summary data

Predominant soil type(s) of site:	[Example entry: Baywood fine sand, clear lake clay, gazos shaly loam.]				
Predominant hydrologic soils group classification of site:	Group A	Group B	Group C	Group D	
Soils testing conducted at	Borings		□ Percolation testing		
site:	□ Infiltration te	sting	☐ Other		
Brief summary of soil testing conducted:	[Number of borings, percolation tests, infiltration tests.]			sts.]	
Design soil infiltration rate:					
Factor of Safety applied:					

# 13 2. Project setting

- 14 a. Project Location and Description
- 15 [May include site location, community, division of parcels, existing and intended site use (i.e.
- 16 parking lot, open space), zoning, setback and open space requirements, project phasing,
- 17 number of residential units, square footage of office or retail, parking requirements,
- 18 neighborhood character, other notable project characteristics.]
- 19 Figure 1:Project Vicinity Map



20

22

- 21 [Insert project vicinity map]
  - b. Existing Site Features and Conditions

23 [May include site size, shape, and topography. Hydrologic features, including any contiguous

24 natural areas, wetlands, watercourses, seeps or springs. Existing land uses, vegetative cover,

and impervious areas, if any. Wells, landslides, slumps, or rock outcrops, if any. Existing

drainage for site and nearby areas, including location of municipal storm drains.]

27 Figure 2: Project Site Soils Map (optional)



28 29

## c. Opportunities and Constraints for Stormwater Control

Projects triggering PR#3 and above are required to submit a LID opportunities and constraints
 analysis.

This project is PR#3 or above:	Yes	🗆 No		
The LID opportunities and constraints checklist is included as an Attachment to this SWCP.	☐ Yes	🗆 No	□ Not Applicable	
The LID opportunities and constraints site map is included as an Attachment to this SWCP.	□ Yes	🗆 No	□ Not Applicable	
[Please indicate the Attachment that includes the checklist and map.]				

32

# 3. Low Impact Development Design Strategies

33 34

35

a. Site Design Strategies

Performance Requirement #1 is applicable to all regulated projects that create and/or replace
 ≥2,500 sf of impervious surface area. This project has incorporated Low Impact Development site
 design strategies as detailed below.

- 39 *Limit disturbance to creeks and natural drainage features*
- 40 [Indicate locations where natural low points, drainages, wetlands or channels have been
- 41 protected, avoided, or preserved.]
- 42 <u>Minimize compaction of highly permeable soils</u>
- 43 [Indicate whether the project contains sandy or high percolating soil types that will be protected44 from disturbance or development.]
- 45 Limit clearing and grading of native vegetation to minimum area necessary
- 46 [Indicate whether any trees or vegetated areas will be protected during development. This may
- 47 include environmentally sensitive areas of the site. Include any open space easements, or areas
- 48 that will be protected from disturbance during construction.'

- 49 Minimize impervious surfaces and concentrate improvements on the least-sensitive portions of
- 50 <u>the site.</u>
- 51 [Indicate where setbacks have been maintained or open space areas preserved. Setbacks may
- 52 include riparian or wetland setbacks, sensitive habitats, or bluff/slope setbacks.]
- 53 b. Runoff Reduction Strategies
- 54

55 Performance Requirement #1 mandates that one or more runoff reduction measures be 56 integrated into the site design. Table 3 indicates where runoff reduction measures have been 57 incorporated into the proposed project.

- Location Guidelines Plan sheet and detail **Runoff Reduction Strategy** implemented [Indicate location of Direct roof runoff into cisterns Minimum 100-gallon [Indicate plan sheet and project where or rain barrels for reuse. volume for collection. detail] implemented] Direct roof runoff to vegetated Minimum 10% of roof [Indicate location of [Indicate plan sheet and areas away from foundations area directed to project where detail] and footings. implemented] vegetated areas. Minimum 10% of Direct runoff from sidewalks, [Indicate location of flatwork area [Indicate plan sheet and walkways and/or patios onto project where drainage directed to detail] vegetated areas. implemented] vegetated areas. Minimum 10% of [Indicate location of Direct runoff from driveways flatwork area [Indicate plan sheet and and/or parking lots onto project where drainage directed to detail] vegetated areas. implemented] vegetated areas. Minimum 10% of [Indicate location of flatwork area Construct flatwork with [Indicate plan sheet and project where constructed with permeable surfaces. detail] implemented] permeable surfaces.
- 58 Table 3: Performance Requirement #1 Runoff Reduction Strategies

59

60 Additional site design and runoff reduction strategies are required for projects that must comply

61 with Performance Requirement #3. Table 4 indicates the design strategies that were incorporated

62 into the project design to optimize the use of LID.

63 Table 4: Performance Requirement #3 Additional LID Design Strategies

Augmented PR#3 LID Design Strategies	Implemented?	Explanation
Define the development envelope and protected areas. Identify areas suitable for development and areas to remain undisturbed.	🗆 Yes 🗌 No	[Indicate whether the strategy was applicable to the project and if applicable, where the strategy was implemented.]
Conserve natural areas, including existing trees, vegetation, and soils.	🗆 Yes 🗌 No	[Indicate whether the strategy was applicable to the project and if applicable, where the strategy was implemented.]
Limit the overall impervious footprint of the project.	🗆 Yes 🗌 No	[Indicate whether the strategy was applicable to the project and if applicable, where the strategy was implemented.]

Augmented PR#3 LID Design Strategies	Implemented?	Explanation
Construct streets, sidewalks, parking lot aisles to minimum widths required.	🗆 Yes 🗌 No	[Indicate whether the strategy was applicable to the project and if applicable, where the strategy was implemented.]
Set back development from creeks, wetlands, and riparian habitats.	🗆 Yes 🗌 No	[Indicate whether the strategy was applicable to the project and if applicable, where the strategy was implemented.]
Conform the site layout along natural landforms.	🗆 Yes 🗌 No	[Indicate whether the strategy was applicable to the project and if applicable, where the strategy was implemented.]
Avoid excessive grading and disturbance of vegetation and soils.	🗆 Yes 🗌 No	[Indicate whether the strategy was applicable to the project and if applicable, where the strategy was implemented.]

- 65 c. Self-treating and self-retaining areas
- 66 This project reduces the amount of runoff for which Stormwater Structural Control Measures 67 (SCMs are required by utilizing self-treating and self-retaining areas.
- 68 [Describe where self-treating and self-retaining areas will be located on the developed site.
- Self-treating areas are undisturbed areas, or areas planted with native, drought-tolerant, or LID appropriate vegetation and do not receive runoff from other areas.
- Self-retaining areas are low-lying areas that receive runoff from adjoining areas. They may have
   natural vegetation, be landscaped, or utilize pervious pavements.]
- 4. Documentation of Drainage Design
- 75

76

- a. Drainage Management Areas Summary
- 77 The project site has been delineated into distinct Drainage Management Areas (DMAs), sized per

the guidelines in the County of San Luis Obispo Post-Construction Stormwater Guidebook.

- 79 Descriptions of each DMA are included in Table 5.
- 80 Table 5: Drainage Management Areas and Characteristics

DMA Number/ID	Surface Type & description	Area (sf)	Drains to:		
EXAMPLE: DMA 1	Self-retaining landscape area	5,200	Self-treating	Self-retaining	□ scm
EXAMPLE: DMA 4,5	Walkways and parking area	10,000	Self-treating	Self-retaining	SCM
			Self-treating	Self-retaining	□ ѕсм
			Self-treating	Self-retaining	□ ѕсм
			Self-treating	Self-retaining	□ ѕсм

## 82 b. Stormwater Structural Control Measures

83

84 [The County of San Luis Obispo recognizes a limited described suite of SCM Types. Please

reference Chapter 4 of the Post-Construction Stormwater Guidebook for SCM Type descriptions
 before completing this section.]

### 87 <u>Structural Control Measures for PR#2 Treatment</u>

This project requires construction of Stormwater Structural Control Measures (SCMs) to treat runoff in compliance with Performance Requirement #2, Water Quality Treatment. Treatment for each DMA is provided by one of the following types of features:

- 91 (1) Bioretention Basins 92 Required SCM Capacity = Volume (CF) of 85<sup>th</sup> percentile storm runoff from DMAs flowing to SCM 93 94 Provided SCM Capacity = Design volume (CF) of bioretention basin 95 96 (2) Biofiltration Features (i.e., bioretention w/ underdrain) 97 Required SCM Capacity = Area (SF) of DMAs flowing to SCM x 0.04 Provided SCM Capacity = Surface area of SCM 98 99 100 (3) Flow-Based Treatment Devices (i.e., filters, mechanical separators) 101 Required SCM Capacity = Peak flow rate (CFS) to SCM 102 Provided SCM Capacity = Maximum recommended flow rate (CFS) to the SCM for 103 effective treatment per manufacturer's specifications 104 105 No treatment is to be provided by direct infiltration facilities. All direct infiltration facilities must receive flows treated by flow-based treatment devices or by above-ground biofiltration or 106 107 bioretention facilities. Direct infiltration should be reserved for treatment and peak management. 108
- 109 Key attributes of these SCMs for Water Quality Treatment are summarized in Table 6. 110
- 111 Table 6: Structural Control Measure Summary Table (PR2 Treatment Only)

SCM Number/ID	DMA Number/ID	SCM Type	Required SCM Capacity (CFS, SF, CF)	Provided SCM Capacity (CFS, SF, CF)
EXAMPLE: SCM 2	SCM 4,5	Biofiltration	10,000 * 0.04 = 4646 SF	5000 SF

### 115 <u>Structural Control Measures for PR#3 Retention</u>

116 This project requires construction of Stormwater Structural Control Measures to achieve

117 compliance with Performance Requirement #3, Retention. Key attributes of the SCMs are 118 summarized in Table 7.

SCM Number/ID	DMA Number/ID	SCM Туре	Required SCM volume (cf) (Area x runoff coefficient x 85 <sup>th</sup> percentile rainfall depth)	Provided SCM volume (cf)
EXAMPLE: SCM 4	DMA 3	Underground chambers	30,000*0.9*1.25 = 33,750 CF	35,000 CF
EXAMPLE: SCM 3	DMA 6	Bioretention	10,000*0.9*1.25 = 11,250 CF	12,500 CF

119 Table 7: Structural Control Measure Summary Table (PR3 – Runoff Retention)

120

- 121 <u>Summary of Structural Control Measures (PR4 Peak Management)</u>
- 122 This project requires construction of Stormwater Structural Control Measures to achieve
- 123 compliance with Performance Requirement #4, Peak Management. Key attributes of the SCMs
- 124 are summarized in Table 8.
- 125 Table 8: Structural Control Measure Summary Table (PR4 Peak Management)

SCM Number/ID	DMA Number/ID	SCM Type	2-Year Runof	Storm f (CFS)	5-Year Runof	Storm f (CFS)	10-Yea Runof	r Storm f (CFS)
			Pre	Post	Pre	Post	Pre	Post
EXAMPLE: SCM 4	DMA 3	Underground chambers	15	14.5	20	18.5	22	20.5

- 127 <u>Underground Structural Control Measures</u>
- 128 Projects that intend to utilize underground stormwater structural control measures for retention,
- 129 infiltration, or peak management must complete Table 9.
- 130 Table 9: Subgrade Stormwater Structural Control Measures

This project includes subgrade SCMs: (i.e. dry wells, chambers, vaults.)	□ Yes	🗆 No
--	-------	------

The project design distributes at least 30% of the post-construction runoff volume to at-grade SCMs or LID features.	□ Yes	No (If no, provide explanation below)
Explanation (as needed):		
	-	1
The project design includes a TAPE certified* pre- treatment device upstream of subgrade features. (Include documentation in Attachment)	□ Yes	🗆 No
The project design achieves PR#2 water quality treatment using at-grade features upstream of subgrade features	□ Yes	🗆 No

- 131 \*Information about TAPE certified pre-treatment devices is included in the San Luis Obispo County Post-Construction
   132 Stormwater Guidebook.
- 133 c. Areas Draining to Self-retaining Areas
- 134 A portion of the project has been designed to drain to self-retaining areas, summarized in Table
- 135 5. The pervious self-retaining areas included in Table 10 account for only the functional bottom
- 136 width of the SRA in the receiving self-retaining DMA area column. Perimeter areas are not
- 137 included when calculating the impervious to pervious ratio.
- 138 [Describe design of any non-vegetative SRAs here. For example, pervious pavers with storage
- 139 to retain paver surface area plus assigned DMA run-on. Reference acceptable run-on ratios in
- 140 the Post-Construction Stormwater Guidebook. Table 10 may be substituted with output from the
- 141 Santa Barbara County Sizing Calculator.]
  - [B] [A] **DMAs Draining** SRA **Total Areas** Ratio to SRA Description SRA Area Number/ID Draining to [A]/[B] (SF) Number/ID SRA (SF) EXAMPLE: Pervious pavers w/ DMA 5 10,000 1.81 5,500 SRA 1 gravel storage below Landscaped island in EXAMPLE: 7.500 SF DMA 8 14.500 1.93 parking lot with 3" SRA 2 minimum ponding
- 142 Table 10: Self-retaining area summary

- 143
- 144 The proposed design meets the criteria for the use of self-retaining areas as written in the
- 145 County of San Luis Obispo Post-Construction Stormwater Guidebook:

☐ 2:1 Sizing Ratio (acceptable)

>2:1 Sizing Ratio (un-acceptable)

## 147 d. SCM Construction Checklist

148 Construction details are provided for each SCM planned for the site. These details include

- specifications for materials, elevations, plants, and protection of features during construction
- 150 Table 11 indicates where SCM construction details can be reviewed.

DMA Name/ID	SCM ID and Type	Plan Sheet No.	Plan set	SCM Detail No.
DMA 3	SCM 4, Underground chambers	Sheet U-1.2	<ul><li>☑ Grading Permit</li><li>□ Structure Permit</li></ul>	Details 5, 6, 7.
DMA 6	SCM 3, Bioretention	Sheet L-1	<ul><li>☑ Grading Permit</li><li>□ Structure Permit</li></ul>	Details 1, 2.
			□ Grading Permit	
			□ Structure Permit	

151 Table 11: SCM Construction Details Summary Table

# 152 5. Pollutant Source Control Measures

153 The project design includes pollutant source control measures to limit the exposure of potential

154 pollutants once construction is complete. Source controls may be operational, structural or

155 procedural. Permanent source control measures that are applicable to the project site and that

156 will be implemented are indicated in Table 12.

## 157 [Select strategies as applicable to project.]

158 Table 12: Permanent Pollutant Source Control Measures

Pollutant Generating Activities and Sources	Source Control BMP	Method selected
Vehicle or equipment cleaning. Un-authorized non- stormwater discharges.	Educational stormwater signage. <i>(Operational.)</i>	<ul> <li>'No Dumping' storm drain inlet markers.</li> <li>'Rainwater only' storm drain inlet markers.</li> <li>Educational or informational stormwater signage for LID features.</li> </ul>

Pollutant Generating Activities and Sources	Source Control BMP	Method selected
Fuel dispensing areas. Chemical or material storage areas.	Secondary containment devices. <i>(Structural)</i>	<ul> <li>Raised permanent containment around liquid storage tanks.</li> <li>Rolling berm containment around liquid handling or loading areas.</li> </ul>
Loading docks. Parking/storage areas.	Permanent protective shelters/covers. <i>(Structural.)</i> Waste collection and disposal equipment. <i>(Operational.)</i>	<ul> <li>Permanent storage sheds/canopies to shield equipment or materials.</li> <li>Canopy downspouts routed away from shelters covering equipment and materials.</li> <li>Trash and recycling receptacles provided in parking and storage.</li> </ul>
Refuse/ trash disposal areas. Building and grounds maintenance.	Permanent protective shelters/covers. ( <i>Structural</i> ) Informational signage. ( <i>Operational</i> ) Periodic inspection. ( <i>Operational.</i> )	<ul> <li>Drainage from adjoining areas diverted away from trash storage area.</li> <li>Trash storage area walled and covered.</li> <li>Storm drains located away from trash storage areas.</li> <li>Trash storage area paved to mitigate spills.</li> <li>Informational signage posted.</li> <li>Scheduled periodic inspection of waste receptacles.</li> </ul>
Loading & unloading areas.	Permanent protective shelters. ( <i>Structural.</i> ) Drainage routing or containment. ( <i>Structural.</i> ) Spill cleanup and control materials. ( <i>Operational</i> )	<ul> <li>Permanent overhead canopy covering loading docks.</li> <li>Below-grade loading docks drain to water quality pre-treatment device.</li> <li>Trash receptacles provided near loading docks.</li> <li>Spill cleanup kit provided near loading docks.</li> <li>Loading docks located away from storm drain inlets.</li> </ul>
Restaurants, grocery stores, and other food service operations.	Equipment cleaning and maintenance procedures. (Operational) Drains clearly marked and verified. (Operational)	<ul> <li>Indoor sinks and cleaning facilities sized for largest possible items for cleaning.</li> <li>Sinks and cleaning areas connected to grease interceptors.</li> <li>Indoor floor drains connected to sanitary sewer.</li> <li>Outdoor floor drains connected to sanitary sewer in permanently covered areas.</li> <li>Cleaning and degreasing agents used on site are low-hazard or biodegradable.</li> </ul>
High traffic pedestrian areas. Pet-friendly areas.	Waste collection and disposal equipment. (Operational) Educational signage. (Operational)	<ul> <li>Permanent pet waste bag dispenser stations provided.</li> <li>Trash and recycling receptacles provided in areas of heavy pedestrian traffic.</li> <li>Informational pet waste signage installed.</li> </ul>

Pollutant Generating Activities and Sources	Source Control BMP	Method selected
Outdoor Pools, Spas, Fountains	Drainage design to manage overflows, backwashing, and maintenance. <i>(Structural)</i> Technician training and disposal plans. <i>(Operational)</i>	<ul> <li>Design prevents overflow discharge to streets, storm drains or creeks/waterways.</li> <li>Design incorporates filter backwash treatment plan.</li> <li>Service technicians trained in appropriate chemical application and disposal.</li> <li>Disposal plan for periodic water feature draining/refilling is established.</li> </ul>
Landscaping maintenance. Landscaping irrigation systems.	Storage areas for landscaping chemicals. (Structural.) Water efficient irrigation system. (Operational.) Training for maintenance staff and chemical applicators. (Operational.) Less hazardous chemicals selected for maintenance. (Procedural.)	<ul> <li>Covered and contained storage area provided for all pesticide, herbicides, and landscaping chemicals.</li> <li>Temporary landscape material stockpiling area provided away from water courses and drain inlets.</li> <li>Water efficient irrigation systems installed.</li> <li>Scheduled semi-annual irrigation maintenance and system verification.</li> <li>Employees and maintenance contractors appropriately licensed and trained.</li> <li>Chemical use (fertilizers, herbicides, pesticides) is minimized.</li> <li>Chemical applicators licensed or trained in proper application and disposal requirements.</li> <li>Less toxic chemicals substituted for hazardous toxic chemicals.</li> </ul>
Fire Sprinkler Test Water	Fire system flushing water disposal plan. (Operational.)	<ul> <li>Fire system flushing area sited near landscaping for test water infiltration.</li> <li>Fire sprinkler line flush testing area designed for flow direction to sanitary sewer.</li> </ul>
Vehicle or Equipment Parking areas.	Parking area regular maintenance. ( <i>Operational.</i> ) Vehicle and equipment regular maintenance. ( <i>Operational.</i> )	<ul> <li>Trash receptacles provided in areas of heavy pedestrian traffic.</li> <li>Sweeping and litter removal scheduled as part of ongoing maintenance.</li> <li>Vehicles and equipment regularly serviced at offsite location.</li> <li>Vehicles and equipment fueled in designated location with spill control kits.</li> </ul>
Un-authorized non- stormwater discharges	Employee/contractor training. (Operational.)	<ul> <li>Mobile cleaning vendors appropriately trained, capable of collecting and removing wash waters for offsite disposal.</li> <li>Service contractors equipped with appropriate washout and containment supplies.</li> </ul>

# 159 6. Stormwater Infrastructure Maintenance

- 160 a. Operations and Maintenance Agreements
- 161 [Projects that trigger Performance Requirements 2, 3, or 4, are required to record an Agreement
   162 with the County or incorporate language into CC&Rs accepting responsibility for inspection,

- operation and maintenance of stormwater management facilities. The Agreement /CC&Rs is
   established in conjunction with a Condition Compliance Monitoring (CCM) permit case.
- 165 Within the Stormwater Control Plan, please indicate whether the project will utilize an
- Agreement or CC&Rs to meet this requirement, and who the responsible party will be.
- Public Works will request a CCM Case number from the Department of Planning & Buildingduring review of the SWCP.]
- 169 The project [owner, HOA, agency] will be responsible for operations and maintenance of the
- 170 stormwater system in perpetuity. These responsibilities are transferred to future owners upon
- 171 completion of sale of the project site or portion thereof. This project intends to delegate
- 172 responsibility for long-term operations and maintenance as follows:

Recorded maintenance agreement type:	□ Agreement	□ Codes, Covenants & Restrictions language.
The party responsible for operations and maintenance of the system will be:	□ Single owner	☐ Multiple owners
	□ Owner's association	□ Corporation
The party responsible for operations and maintenance of the system:	Is located locally in San Luis Obispo County.	☐ Has a designated local representative in San Luis Obispo County.
	Is located outside the County, within California.	Is located outside California.
The party responsible for operations and Maintenance intends to complete annual inspections and maintenance by the following methods:	☐ Self-inspect and maintain. Contract out for additional maintenance support as necessary.	☐ Contract out all system inspection and maintenance services.

- b. Summary of Maintenance Requirements for each Structural Control
   Measure
- 176 The maintenance requirements and anticipated annual costs for maintaining each SCM
- associated with the project are documented in County form SWP-1008. Copies of these forms
- are included as Attachment 5. An operations and maintenance agreement will be recorded with
- 179 the County Clerk Recorder prior to final of project construction.
- 180 7. Conclusions and Certification of Compliance
- 181 This project meets each of the applicable Performance Requirements stipulated by the PCRs.

Performance Requirement #1	Compliance achieved onsite?	Measure(s) implemented:
	□ Yes □ No	

Performance Requirement #2	Volume of treatment required for project:	Volume of treatment provided by project:	Compliance achieved:
			Onsite     Offsite
Performance Requirement #3	Volume of retention required for total	Volume of retention provided by total	Compliance achieved:
	project:	project:	□ Onsite □ Offsite
Performance Requirement #4	Peak management reduction required:	Peak management reduction achieved:	

- 183 The registered professional engineer, geologist, architect or landscape architect authoring this
- 184 report certifies that all applicable post-construction stormwater performance requirements have
- 185 been applied to this project and that this plan conforms to the requirements of the Central Coast
- 186 Post-Construction Stormwater Management Resolution R3-2013-0032 and the current edition of
- 187 the County's Post-Construction Stormwater Guidebook.

Preparer Name:	
Date:	
License Number:	License Type:

- 188
- 189
- 190

## Attachment 1: Site Maps and Exhibits

Include the following:

All projects:

- Pre-existing impervious area exhibit
- Post-project impervious area exhibit (with DMAs and SCMs)
- (Only if applicable) Net impervious area exhibit

## PR#4 projects:

- Pre-existing modeled conditions exhibit
- Post-project modeled conditions exhibit

## Attachment 2: SCM Sizing Calculator Outputs

Include the following: Performance Requirement # 2 Treatment Performance Requirement # 2 Storage (if applicable) Performance Requirement # 3 Retention (if applicable) Others (if applicable)

## Attachment 3: Non-retention Based Treatment System Documentation

[Include if applicable to project. Documentation should include product specifications, evidence of TAPE device approval, analysis indicating that treatment device is appropriately sized for project flows.]

## Attachment 4: LID Opportunities and Constraints Checklist

#### Existing Vegetation

Preserve or minimize disturbance to existing natural vegetated features. Designs that integrate natural features of the project site are better at mimicking pre-development runoff characteristics. Effective management of both existing and proposed site vegetation can reduce a development's impact on stormwater runoff quality and quantity.

Yes No N/A	Existing, high-quality vegetation has been identified and noted on the Opportunity and Constraints Map. Access to these areas will be restricted during construction.
□ Yes □ No □ N/A	Existing trees have been identified and noted on the Opportunity and Constraints Map. The location of tree protection fencing is identified to restrict site disturbance and protect these locations during construction.
☐ Yes ☐ No ☐ N/A	Notes have been included on the corresponding site plans in areas where highly visible temporary fencing shall be placed around vegetation and tree areas that are to be preserved during construction.

#### Survey and Site Topography

Identify opportunities and constraints within site topography and natural drainage patterns that can be incorporated into the design. Integrating existing drainage patterns into the site plan can maintain a site's predevelopment hydrologic function and will result in lower construction costs over sites that modify site topography and develop new drainage patterns.

□ Yes □ No □ N/A	The site has been surveyed and a topographic base file has been created to identify topography and natural drainage patterns.
☐ Yes ☐ No ☐ N/A	Existing low-spots and sumps within the topography have been identified on the Opportunity and Constraints Map. These areas will be preserved and utilized as BMP locations where technically feasible.
□ Yes □ No □ N/A	Existing high-spots within the topography have been identified on the Opportunity and Constraints Map. These areas be preserved for placement of structures or hardscapes where feasible, allowing runoff to drain to low lying areas for treatment.
Yes No N/A	Areas within 50 feet from the top of slopes that are greater than 20% and over 10 feet of vertical relief have been identified on the Opportunity and Constraints Map. Notes on the map indicate that SCMs are not authorized within these areas.

#### Soil Analysis

Native undisturbed soils have a complex matrix created by the growth and decay of plant roots, earthworms, and insect activity. Topsoil stripping and stockpiling destroys soil structure and diminishes natural biological activity. Avoid and limit unnecessary site disturbances during construction. Plan LID and SCM placement where soils support infiltration (Soil Groups A and B). To the extent feasible, plan buildings and structures and hardscapes placement where soils discourage infiltration (Soil Group C and D).

Yes No N/A	Locations where soils encourage infiltration (Soil Group A and B) have been identified on the Opportunity and Constraints Map. Where feasible, these areas have been preserved or dedicated to SCM locations.
□ Yes □ No □ N/A	Locations where soils discourage infiltration (Soil Group C and D) have been identified on the Opportunity and Constraints Map. Where feasible, these locations have been dedicated to the proposed project improvements such as structures and hardscapes, or contractor staging and equipment storage areas, etc.
□ Yes □ No □ N/A	Locations where existing structures and hardscapes will be removed during construction (exposing highly compacted soils) have been identified on the Opportunity and Constraints Map. Placement of SCMs has been avoided in these areas.

#### Geotechnical Analysis

Data from the preliminary geotechnical analysis or soil borings should be evaluated to support identification of opportunities and constraints. These areas should be specifically identified with limits noted on the Opportunities and Constraints Map.

Yes No	The site contains areas designated as an erosion hazard, or landslide hazard.
🗆 Yes 🗌 No	The site contains groundwater that drains into an erosion hazard, or landslide hazard area.
☐ Yes ☐ No	The geotechnical report identified contaminated soils:
	These soils will be removed during construction.
	□ These soils will remain in place during construction.
Yes No N/A	The groundwater table elevation (including seasonally high and historically high) has been determined.
Yes No	The seasonally high groundwater table elevation is at least 10-feet below the proposed invert elevations of the proposed SCMs.
Yes No N/A	Fractured bedrock identified through geotechnical testing is at least 10- feet below the proposed invert elevations of the proposed SCMs.
Yes No	Infiltration testing has been performed onsite at the proposed SCM locations and the geotechnical report has identified that the site is suitable for infiltration.

#### Setbacks

Establish setbacks and buffer zones surrounding restricted and/or sensitive areas. Identify all areas where SCMs cannot be constructed due to setback requirements. Examples include existing and proposed building foundations, municipal water wells, private water wells, septic systems, easements, etc.



Private potable water wells in the vicinity have been identified (onsite and offsite) and a minimum offset radius has been established indicating where infiltration SCMs are not authorized.

Yes No N/A	Municipal potable water wells in the vicinity have been identified (onsite and offsite) and a minimum offset radius has been established indicating where infiltration based SCMs are not authorized.
□ Yes □ No □ N/A	Within the Coastal Zone, a setback of 100-feet has been established from the upland extent of riparian vegetation. The limits of these setbacks are indicated on the Opportunity and Constraints map.
□ Yes □ No □ N/A	Within the Urban Reserve Lines, a setback of 50-feet has been established from the upland extent of riparian vegetation. The limits of these setbacks are indicated on the Opportunity and Constraints map.
□ Yes □ No □ N/A	A setback of 10-ft has been established from all property lines to SCMs and the limits of these setbacks have been indicated on the Opportunity and Constraints Map.
Yes No N/A	A setback of 10-ft has been established from all existing and proposed building foundations with notes indicating infiltration SCMs are not authorized within these limits.

#### Hydrology Features

Identify onsite and offsite downstream waterways, including creeks, wetlands, watercourse, seeps, riparian zones areas of 100-year flood inundation, potential stormwater run-on locations and depths to groundwater. All areas of hydrologic importance should be delineated at the earliest stage in the development planning process.

□ Yes □ No □ N/A	Hydrological features such as creeks, wetlands, riparian zones, etc. have been identified and incorporated into the Opportunity and Constraints Map.
	Notes have been added to the Opportunity and Constraint Map indicating that these areas will be protected by exclusionary fencing during construction to prevent resource damage.
Yes No N/A	The pre-developed site drainage pathways have been identified and the limits of these features have been placed onto the Opportunities and Constraints Map.
Yes No N/A	Existing storm drain infrastructure, including potential points of connection have been identified and placed onto the Opportunities and Constraints Map.
Yes No N/A	Stormwater run-on locations have been identified and placed onto the Opportunities and Constraints Map.

#### Hazardous Areas & Pollutants of Concern (POCs)

Identify locations where existing or future pollutants may occur onsite and identify features that may prevent these pollutants from being exposed to stormwater runoff. Examples include chemical storage locations, fueling stations, and industrial operation areas.

Yes No N/A	Existing hazardous storage areas and POC sources have been identified and placed onto the Opportunities and Constraints Map.
□ Yes □ No □ N/A	Proposed hazardous storage areas and POC sources have been identified and placed onto the Opportunities and Constraints Map.

## Attachment 5: Anticipated SCM Maintenance Costs and Maintenance Frequency

[Include copies of County form SWP-1008 or similar level of documentation that includes anticipated SCM maintenance activities, frequency, and costs.]