**Guidance for Preparing**

**Post-Construction**

**STORMWATER CONTROL PLANS**

**For Projects that Trigger Performance Requirements Nos. 2, 3, and/or 4**

**BACKGROUND**

A Post-Construction Stormwater Control Plan (SWCP) documents the evaluation and resulting design of development projects meeting the Central Coast Water Quality Control Board’s Post-Construction Stormwater Management Requirements (PCRs)[[1]](#footnote-1). Documentation of this information aids communication between municipal representatives and project applicants and provides information needed by municipalities for compliance with the PCRs.

This example SWCP outline is intended to illustrate how a SWCP can be formatted. Each municipality may develop its own format and guidance for ensuring that project applicants provide the project information necessary for the municipality to comply with the PCRs. This document provides the project applicant guidance for developing their SWCP for projects subject to PCRs Performance Requirements No. 2 – Water Quality Treatment, No. 3 – Runoff Retention, and/or No. 4 – Peak Management.

**WHAT ARE THE GENERAL SECTIONS OF A SWCP?**

The general sections of the SWCP include:

1. Documentation of the Applicable Post-Construction Stormwater Requirements
2. General Project Data
3. Site Assessment
4. Applied Stormwater Control Measures:

a. Runoff Reduction Measures

b. Delineation of Drainage Management Areas

c. Structural Stormwater Control Measures

5. Operations and Maintenance Protocols for Structural Stormwater Control Measures

6. Post-Construction SWCP Summary and Certification

**SWCP SECTION 1 OF 6:**

**WHAT INFORMATION IS NEEDED TO DOCUMENT THE POST-CONSTRUCTION STORMWATER REQUIREMENTS THAT APPLY TO MY PROJECT?**

1. **Documentation of the Applicable Post-Construction Stormwater Requirements**

***Performance Requirements Nos. 2, 3, and/or 4 –*** This section of the SWCP provides a place for the project applicant to document the PCRs applicable to the project. Adjustments to the general PCRs may apply to the project due to factors such as project location, project type, and condition of the downstream receiving water.[[2]](#footnote-2) Projects subject to additional or tailored water quality requirements (e.g., a project subject to conditions of a TMDL [Total Maximum Daily Load] Wasteload Allocation Attainment Plan) should include those requirements in this section.

Also, remember that the PCRs are structured in a building block fashion; meaning that a project that triggers Performance Requirement No. 3 also must comply with Performance Requirements Nos. 1 and 2 (in most situations). In particular, note that Performance Requirement No. 1 requires implementation of *qualitative* design strategies that must be documented along with the *quantitative* water quality, runoff retention, and/or peak management requirements.

Document the following PCRs applicable to the project (including any applicable adjustments to the requirements):

* Site Design and Runoff Reduction – Performance Requirement No. 1
* Water Quality Treatment – Performance Requirement No. 2
* Runoff Retention – Performance Requirement No. 3
  + Specify which requirement applies from PCRs Section B.4.c.
* Peak Management – Performance Requirement No. 4
* Any applicable adjustments to the requirements

Provide supporting documentation to justify adjustments to the requirements.

**SWCP SECTION 2 OF 6:**

**WHAT INFORMATION IS NEEDED TO DOCUMENT THE GENERAL PROJECT DATA?**

**2. General Project Data**

***Performance Requirements Nos. 2, 3, and/or 4 –*** Include the following in the SWCP:

1. Project name and application number/reference number
2. Project location including address and assessor’s parcel number
3. Name of project applicant
4. Project phase number (if applicable)
5. Project type (e.g., commercial, industrial, single family home, multi-unit residential, mixed use, public) and project description/narrative
6. Is the project a detached single family home? Yes/No
7. Development type (new development or redevelopment)
8. Total project site area (acres)
9. Impervious area[[3]](#footnote-3)
10. Existing on-site impervious surface area (square feet)
11. New impervious surface area (square feet)
12. Replaced impervious surface area (square feet)
13. Net Impervious Area (square feet)
14. Total of new plus replaced impervious surface area (square feet)
15. Calculation of Net Impervious Area (square feet)[[4]](#footnote-4)
16. New pervious surface area (square feet)

Include supporting calculations for impervious surface area calculations.

***Performance Requirement No. 3 –*** Include the following in the SWCP:

1. 10 percent of Equivalent Impervious Surface Area (EISA) (square feet)[[5]](#footnote-5)
2. Watershed Management Zone in which the project is located
3. 85th and 95th percentile rainfall depths (as applicable to the project) associated with the project location
4. Is the Project Located in a Portion of Watershed Management Zones 4, 7, or 10 which overlies a Designated Groundwater Basin (Per PCRs Attachment B)? Yes/No
5. Is the Project Located within an Approved Urban Sustainability Area (Per PCRs Section C.3)? Yes/No
6. Owner of Stormwater Control Measures (SCMs)

Include supporting calculations for impervious surface area calculations.

***Performance Requirement No. 4 –*** Include the following in the SWCP:

1. Watershed Management Zone in which the project is located
2. Owner of SCMs

**SWCP SECTION 3 OF 6:**

**WHAT INFORMATION IS NEEDED FOR THE SITE ASSESSMENT?**

**3. Site Assessment**

***Performance Requirement No. 3 –*** The Site Assessment section of the SWCP will include a description of site conditions and features that may influence stormwater management opportunities and constraints. Generally, a map with accompanying text can be used to document site conditions and features. A text summary of project post-construction stormwater control opportunities and constraints should also be included in this section. Possible constraints may include low-infiltrative soils, high groundwater, existing groundwater pollution or contaminated soils, steep slopes, geotechnical instability, and existing infrastructure and buildings. Possible opportunities may include existing natural areas, oddly configured or otherwise unbuildable areas, high-infiltrative soils, easements and required landscape amenities including open space and buffers that might be used for bioretention facilities, and differences in elevation, which can provide needed hydraulic head.

See Site Assessment Measures, in PCRs Section B.4.d.i, for a list of the site features and conditions that must be included, as applicable, in the SWCP.

Include supporting documentation for site assessment (site maps, geotechnical reports, etc.).

**SWCP SECTION 4 OF 6:**

**WHAT INFORMATION IS NEEDED TO DOCUMENT THE POST-CONSTRUCTION STORMWATER CONTROL MEASURES APPLIED TO THE PROJECT DESIGN?**

**4. Applied Stormwater Control Measures**

This section of the SWCP documents the SCMs used to reduce runoff, provide water quality treatment, provide volume retention, and manage peak stormwater runoff. The SCMs include physical control measures and design control measures that are applied to the overall site as well as to specific Drainage Management Areas (DMAs). The sequencing of approach for application of SCMs is generally as follows:

Minimize runoff generated within the project site

Delineate DMAs that will address runoff that cannot be otherwise eliminated.

Quantify the volume of runoff each DMA must manage.

For each DMA identify, describe, and quantify the applied SCM

1. Minimize Runoff Generated within the Project Site

In this section of the SWCP, the project applicant documents how site design and runoff reduction practices were used to reduce the amount of runoff generated within the site.

***Performance Requirements Nos. 2, 3, and/or 4 –*** Explain, and include supporting information if applicable, about how the project implements the design strategies included in PCRs Section B.2.

Include supporting documentation, if applicable, to demonstrate how project optimized site design and runoff reduction design strategies. If project does not optimize site design and runoff reduction design strategies, provide justification for why not.

***Performance Requirement No. 3 –*** Explain, and include supporting information if applicable, about how the project implements the design strategies included in PCRs Section B.4.d.ii. The applicant must demonstrate how further use of site design measures to reduce runoff is technically infeasible.

Include supporting documentation, if applicable, to demonstrate how project optimized site design and runoff reduction design strategies. If project does not optimize site design and runoff reduction design strategies, provide justification for why not.

1. Delineate Drainage Management Areas (DMAs) and Quantify Runoff

***Performance Requirements No. 2 (optional, but recommended), No. 3 (required), and/or No. 4 (optional, but recommended) –*** Decentralized post-construction stormwater control is one of the principles of Low Impact Development (LID) design. In this section of the SWCP, the project area is divided into discrete DMAs. The tables, text, and calculations in the SWCP should illustrate, describe, and account for runoff from each of these DMAs. Lines delineating DMAs should follow grade breaks and roof ridge lines. For example, a parking lot may be graded to route runoff to two or more locations for treatment and/or retention and DMAs for each should be delineated. It is best to use separate DMAs for each surface type (e.g., landscaping, parking lot, roofs, etc.). Assign each DMA an identification number and determine its size in square feet (see below example in Table 1).

|  |  |  |
| --- | --- | --- |
| **Table 1: Drainage Management Areas\*** | | |
| **DMA Name** | **Surface**  **Type** | **DMA Area**  **(square feet)** |
| DMA 1 | Example: asphalt shingle roof |  |
| DMA 2\*\* | Example: asphalt parking lot |  |
|  |  | Total (square feet): |
| \* Reference map where DMAs are shown  \*\* Extend table as necessary to list additional DMAs | | |

Include map(s) delineating DMAs.

1. Identify, Describe, and Quantify Runoff Reduction and Structural Stormwater Control Measures

This section of the SWCP is intended to document the SCMs used to address runoff within each DMA. The selection of SCMs should align with project PCRs (e.g., on-site retention, water quality treatment, peak management). Designs that store, infiltrate, and evapotranspirate stormwater, such as those associated with LID, may be required, where appropriate. Each DMA will use at least one of the following types of SCMs to address runoff:

* + Runoff Reduction Control Measures – These are non-engineered techniques used to disperse stormwater runoff to landscape and other pervious areas within the site such as downspout disconnections that route water to a landscaped area or sloping sidewalks and pathways that direct runoff to landscaped areas.
  + Structural SCMs – These are designed and sized to achieve a specific numeric stormwater control performance (e.g., retention, water quality treatment). Structural SCMs can include bioretention areas, pervious pavements, green roofs, cisterns, retention ponds, and infiltration basins. Small, decentralized Structural SCMs such as those associated with LID are often superior in achieving retention and natural resource protection benefits versus large, centralized conventional designs.

Complete information for each applicable Performance Requirement in Tables 2 through 5 below. Note the following:

* + For each DMA, document information related to the SCM including type (e.g., self-retaining or structural stormwater control) and location.
  + For each DMA, document the hydrologic analyses, sizing, and resulting performance (e.g., volume treated by SCM, volume retained by the SCM) of the associated SCM. Be sure that runoff volumes, sizing, and other hydrologic analyses are calculated in a manner consistent with the PCRs.

***Performance Requirement No. 2 –*** Note: If project is subject to Performance Requirement No. 3, skip Table 2 and move on to Table 3.

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| --- | --- | --- | --- | --- | --- | --- |
| **Table 2: Water Quality Treatment Stormwater Control Measures** | | | | | | |
| **DMA Name**  **(if applicable)** | **Impervious Surface Area (square feet)\*** | **Required Runoff to be Controlled (units vary)** | **SCM Type(s)** | **SCM Treatment Method(s) (LID, biofiltration, non-retention based)** | **Location on Plan Set** | **Volume and/or Flow Retained** |
| DMA 1 |  |  | Example: Harvesting and use LID treatment system |  |  |  |
| DMA 2\*\* |  |  | Example: Structural Control- biofiltration treatment system |  |  |  |
|  | Total (square feet): | Total (units vary): | n/a |  | n/a | Total (units vary): |
| \* Include new and replaced impervious surfaces. Where runoff from existing impervious surfaces cannot be separated from runoff from new and replaced impervious surfaces, include existing impervious surfaces as well.  \*\* Extend table as necessary to list additional DMAs | | | | | | |

At a minimum, include the following: supporting calculations, SCM design specifications, and a map or maps showing location of SCMs. The PCRs identify clear preferences for stormwater treatment. If LID treatment (infiltration) is not proposed, project applicants must include justification for using the lesser preferred treatment options (biofiltration, and non-retention based treatment systems). If LID treatment systems and biofiltration treatment systems are not proposed, project applicants must include justification for using the least preferred treatment option (non-retention based treatment systems).

***Performance Requirement No. 3 –***

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Table 3: Runoff Retention Stormwater Control Measures** | | | | | | | |
| **DMA Name** | **Area (square feet)** | **Retention Tributary Area**  **(square feet)** | **Retention Volume Required to be Controlled (cubic feet)** | **SCM Type(s)** | **SCM Retention Method(s) (infiltration, storage, rainwater harvesting, evapotranspiration)** | **Location on Plan Set** | **Volume Retained (cubic feet)** |
| DMA 1 |  |  |  | Example: Self-retaining – using undisturbed and natural landscape areas |  |  |  |
| DMA 2\* |  |  |  | Example: Structural Control- bioretention |  |  |  |
|  | Total (square feet): | Total (square feet): | Total (cubic feet): | n/a | n/a | n/a | Total (cubic feet): |
| \* Extend table as necessary to list additional DMAs | | | | | | | |

At a minimum, include the following: supporting calculations, SCM design specifications, and a map or maps showing location of SCMs.

If using PCRs Attachment D to determine sizing and design of SCMs, provide the information outlined in Attachment D.

If project is required to comply with Performance Requirement No. 3 by optimizing infiltration, project applicants must provide justification for using other compliance options (storage, rainwater harvesting, and evapotranspiration), if infiltration is not the only means of compliance.

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| --- | --- | --- | --- |
| **Table 4: Water Quality Treatment Stormwater Control Measures for Projects Also Subject to Performance Requirement No. 3** | | | |
| **DMA Name** | **Impervious Surface Area (square feet)\*** | **Required Runoff to be Controlled (units vary)** | **Is the runoff from all water quality events being retained by SCMs for Performance Requirement #3? (y/n)\*\*** |
| DMA 1 |  |  |  |
| DMA 2\*\*\* |  |  |  |
|  | Total (square feet): | Total (units vary): | n/a |
| \* Include new and replaced impervious surfaces. Where runoff from existing impervious surfaces cannot be separated from runoff from new and replaced impervious surfaces, include existing impervious surfaces as well.  \*\* If answer is yes in all rows in last column, then project has complied with Performance Requirement #2. If answer is no in any of the rows in the last column, then project the applicant must compete Table 2 to demonstrate that it has implemented adequate SCMs to comply with Performance Requirement #2.  \*\*\* Extend table as necessary to list additional DMAs | | | |

Include supporting calculations and any other supporting documentation.

***Performance Requirement No. 4 –***

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Table 5: Peak Management Stormwater Control Measures** | | | | | | |
| **DMA Name** | **Pre-project peak flows\*** | | | **Post-project peak flows\*** | | |
| **2-year** | **5-year** | **10-year** | **2-year** | **5-year** | **10-year** |
| DMA 1 |  |  |  |  |  |  |
| DMA 2\*\* |  |  |  |  |  |  |
|  | Totals (cubic feet per second): | | | Totals (cubic feet per second): | | |
|  |  |  |  |  |  |  |
| \* May provide peak flows for additional storm events.  \* Extend table as necessary to list additional DMAs | | | | | | |

Provide supporting documentation from any hydrologic modeling exercises conducted to compare pre- and post- flows.

**SWCP SECTION 5 OF 6:**

**WHAT INFORMATION IS NEEDED TO DOCUMENT OPERATIONS AND MAINTENANCE PLAN FOR THE PROJECT’S STRUCTURAL STORMWATER CONTROL MEASURES?**

1. **Operations and Maintenance Plan for Structural Stormwater Control Measures**

***Performance Requirements No. 3 and/or 4 –*** The appropriate type and frequency of maintenance is crucial for structural SCMs to function as designed. In this section of the SWCP, the project applicant will document facility maintenance practices for each of the structural SCMs included within the project design. The operations and maintenance plan may be included as an attachment and must include the following information:

* Site map (including address and type of SCM) identifying all structural SCMs requiring operations and maintenance practices to function as designed.
* Operational and maintenance practices for each structural SCM
* Short-term and long-term maintenance requirements and frequency
* Party responsible for operations and maintenance and owner of facilities
* Estimated cost for operations and maintenance and source of funding

Include the operations and maintenance plan.

**SWCP SECTION 6 OF 6:**

**WHAT INFORMATION IS NEEDED TO SUMMARIZE THE PROPOSED SWCP?**

**6. Post-Construction Stormwater Control Plan Summary and Certification**

This section of the SWCP is intended to concisely summarize whether the project design will comply with the PCRs defined in Section 1. Where on-site compliance cannot be achieved, the project applicant needs to indicate whether off-site mitigation is necessary for compliance.

A simple table, such as the example below, can be used to quickly summarize the PCRs and whether the project design achieves those requirements.

***Performance Requirements Nos. 2, 3, and/or 4 –***

|  |  |  |  |
| --- | --- | --- | --- |
| **Table 6: Post-Construction Stormwater Control Measures Summary for (insert Project Name)** | | | |
| **Post-Construction Requirements (from Section 1). *For example:*** | **Design Volume to be Controlled (from Section 4c)** | **Performance of SCMs (from Section 4c)** | **Does the Project Design meet the post-construction control requirements? (y/n)** |
| *Use of Site Design Measures* | *n/a* |  |  |
| *Water Quality Treatment: 85th percentile, 24-hour storm event* | *Required volume/flow to be treated* | *Volume/flow treated by SCMs* |  |
| *Retention: 95th percentile, 24-hour storm event* | *Required volume to be retained* | *Volume retained by SCMs* |  |
| *Peak Management: 2- through 10-year storm events* |  |  |  |

***Performance Requirements Nos. 2, 3, and/or 4 –***

When the project applicant indicates that the PCRs cannot be achieved onsite, information and analyses used to support technical infeasibility must be included in the SWCP. Situations that constitute technical infeasibility are described in the PCRs. The table below provides an example of how to document what portion of the PCRs cannot be achieved onsite and whether infeasibility information exists. The project applicant must show this information for each applicable performance requirement where the applicant did not achieve compliance onsite.

|  |  |  |
| --- | --- | --- |
| **Table 7: Post-construction Stormwater Control Measures Summary for (insert Project Name) - Summary of Inability to Achieve Requirements** | | |
| **Project Requirements**  **(same as column two in the table above)** | **Design Volume/Flow NOT Retained and/or Treated** | **Does supporting infeasibility information exist to justify the inability to achieve the PCR? y/n\*** |
| *Required volume/flow to be retained/treated* | *Design volume/flow not retained/treated* |  |

\* Where the response is “no,” the project applicant must modify the design such that it can achieve compliance with all applicable PCRs on-site. For Performance Requirements Nos. 2 and 4, where the response is “yes,” the project applicant may need to seek off-site mitigation (i.e. Alternative Compliance) to comply with the PCRs. The project applicant should communicate with the municipal representative to confirm whether Alternative Compliance for the project is necessary. For Performance Requirement No. 3, where the response is “yes” in the table above, the project applicant must provide the information in Table 8 below.

Include supporting documentation for infeasibility determinations and other relevant calculations.

***Performance Requirement No. 3 –***

Where an initial determination is made that the design volumes for retention cannot be achieved onsite AND sufficient documentation exists to justify technical infeasibility, the project applicant can then determine whether onsite compliance with the PCRs can be achieved using the “10% Equivalent Impervious Surface Area” (10% EISA). The table below provides an example of how a project applicant might document the determination of on-site compliance using the 10% EISA.

Where the response is “yes” in Table 8 below, the project is in compliance with the PCRs. Where the response is “no,” the project applicant may need to seek off-site mitigation (i.e. Alternative Compliance) to comply with the PCRs. The project applicant should communicate with the municipal representative to confirm whether Alternative Compliance for the project is necessary.

Achieving the 10% EISA for the project only satisfies the Runoff Retention requirement, not the Water Quality Treatment or Peak Management requirements. Project applicants must demonstrate the Water Quality Treatment and Peak Management requirements have been achieved.

Include any supporting documentation to demonstrate compliance with 10% EISA option.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Table 8: Post-Construction Stormwater Control Measures Summary for (insert Project Name) - On-Site Compliance Summary in Cases of Documented Infeasibility (insert Project Name)** | | | | |
| **10% EISA for the Project (area)** | **Percentage of EISA used for Stormwater Structural Controls** | **Does the Project Achieve On-Site Compliance for Runoff Retention? (if the project area dedicated to retention-based structural SCMs is at least equal to the 10% EISA, then “yes”, if not, “no”** | **Project Requirements**  **(same as column one in the table above)** | **Design Volume NOT Treated and/or Retained** |
| *See Section 2* | *From Section 4.c (calculate structural controls only)* |  | *Required Volume to be Retained* | *Design Volume not retained* |

**Post-Construction Stormwater Control Plan Statement of Compliance**

***Performance Requirements Nos. 2, 3, and/or 4 –***

The last section of the SWCP includes certification by a licensed professional (e.g., civil engineer, architect, landscape architect) that the selection, sizing, and preliminary design of the stormwater treatment and control measures in the plan meet the requirements of the Central Coast Regional Water Quality Control Board.

1. <http://www.waterboards.ca.gov/centralcoast/water_issues/programs/stormwater/docs/lid/hydromod_lid_docs/2013_0032_attach1_post_construction_requirements.pdf> [↑](#footnote-ref-1)
2. See PCRs for adjustments to requirements for Special Circumstances and projects covered by an approved Watershed Plan, Regional Plan, or Urban Sustainability Area designation. [↑](#footnote-ref-2)
3. The initial determinant for applicability of PCRs is the amount of new and replaced impervious surface. PCRs Attachment C defines impervious surfaces. Impervious surface calculations are also used to determine the stormwater runoff volume that must be controlled at the project site. For calculating runoff volume, the definition of impervious area includes all land uses that can generate runoff and includes partially impervious surfaces such as lawn. [↑](#footnote-ref-3)
4. Net Impervious Area = (New and Replaced Impervious Area) – (Reduced Impervious Area Credit), where Reduced Impervious Area Credit is total pre-project to post-project reduction in impervious area, if any (as defined in PCRs Attachment C). Net Impervious Area is used to determine which Performance Requirements apply, e.g., detached single-family residential projects with NIA less than 15,000 square feet are exempt from Performance Requirement 3. [↑](#footnote-ref-4)
5. Where a project applicant can show that site conditions as defined by PCRs Section C.1.c. limit ability to meet Performance Requirement 3, AND ten percent of a project’s EISA has been dedicated to retention-based SCMs, then off-site mitigation of full Retention Volume is not required. Guidance to calculate the ten percent EISA can be found in PCRs Attachment E. [↑](#footnote-ref-5)