



# QSD/QSP Training



*Schedule (approximate times):*  
Day 1 – For QSPs and QSDs

- **Module 1**    8:00 – 10:30 AM
- Module 2    10:45 – 12:00 PM
- Lunch        12:00 – 1:00 PM
- Module 3    1:00 – 4:30 PM

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# WELCOME!



**John M. Teravskis**  
Qualified SWPPP Practitioner / Developer #00022  
CPESC No. 0518  
CASQA Trainer of Record



**Jonah Sonner**  
Qualified SWPPP Practitioner #26747  
CISEC No. 2386

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**CERTIFICATE OF TRAINING**  
CALIFORNIA CONSTRUCTION GENERAL PERMIT

QUALIFIED SWPPP DEVELOPER (QSD)  
AND  
QUALIFIED SWPPP PRACTITIONER (QSP)

**John M. Teravskis**  
Nov 01, 2022 - Jan 18, 2025  
Certificate # 00022



California Stormwater Quality Association and  
California Construction General Permit Training Team

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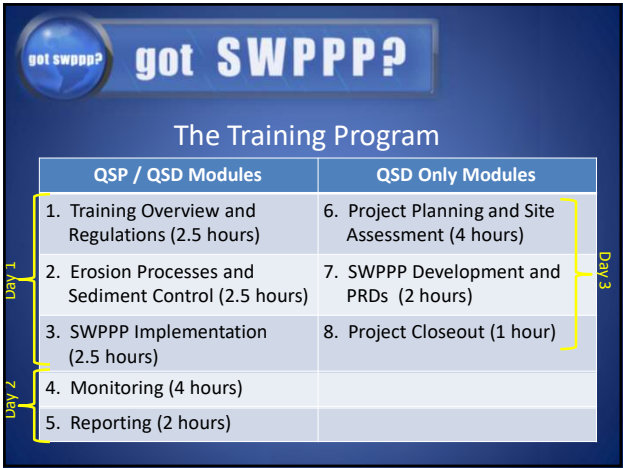
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got **SWPPP?**

*The Process ...*

1. Successfully complete this course and receive an email from WGR with a link to your exam.
2. Make sure that you have obtained the appropriate pre-requisite registration / certification (i.e. PE, PG, CPESC, CISEC, etc.)
3. Pay \$125 fee then take and pass the QSP / QSD portions of the on-line exam.
4. Obtain your QSP/QSD 2-year certification from CASQA.

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got **SWPPP?**

*And a certificate like this ...*

**CERTIFICATE OF TRAINING**  
CALIFORNIA CONSTRUCTION GENERAL PERMIT

QUALIFIED SWPPP DEVELOPER (QSD)  
AND  
QUALIFIED SWPPP PRACTITIONER (QSP)

**John M. Teravskis**

Nov 01, 2022 - Jan 18, 2025

Certificate # 00022



California Stormwater Quality Association and  
California Construction General Permit Training Team

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# QSD/QSP Training

*Module 1*

*Training Overview and Regulations*

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got **SWPPP?**

It all started with the Clean Water Act!

- Watershed assessment
- Beneficial uses
- Water Quality Standards
- BAT/BCT
- NPDES Permits
- Impairments
- TMDLs
- Waste Load Allocations



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It all started with the Clean Water Act!



- Sect. 301 Effluent Limits
- Sect. 303 Water Quality Standards and Effluent Plans
- Sect. 401 Water Quality Certifications
- Sect. 402 NPDES Permits
- Sect. 404 Permits for Dredged or Fill Material
- Sect. 505 Citizen Suits

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California Construction General Permit  
Historical Timeline



1992

Originally issued for sites with soil disturbance  $\geq$  5 acres

1999

Reissued to include sites with soil disturbance  $\geq$  1 acre

2009

Re-issued as Order 2009-0014-DWQ with QSP/QSD requirements and risk levels.

2022

Re-issued as Order 2022-0057-DWQ in July 2022.

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Qualified SWPPP Developer

In addition, a QSD shall have attended a 3-day State Water Board-approved QSD training course and pass the State's on-line exam.

A QSD applicant shall currently possess at least one of the following prerequisites:

a. A California landscape architect registration;


b. A professional hydrologist registration through the American Institute of Hydrology;

c. A Certified Professional in Erosion and Sediment Control (CPESC)<sup>TM</sup> registration through EnviroCert International, Inc.;

d. A Certified Professional in Stormwater Quality (CPSWQ)<sup>TM</sup> registration through EnviroCert International, Inc.; or

e. Any prerequisite course approved by the State Water Board's Division of Water Quality Deputy Director in accordance with Section V.G.

UNIVERSITY OF CALIFORNIA LANDSCAPE ARCHITECTS



TECHNICAL COMMITTEE

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QSD Underlying Cert.

[www.envirocertintl.org/cpesc](http://www.envirocertintl.org/cpesc)

ENVIROCERT International, Inc.

ABOUT EXAM/REVIEWS TRAINERS CERTIFICATIONS RESOURCES RENEWALS

CPESC

CPESCs are trained, tested and certified to the highest standards. CPESC following your name demonstrates qualification and provides confidence in your ability. CPESC team members ensure that projects run according to regulation, are permitted efficiently and perform exceptionally.

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QSP/QSD Option for PEs & PGs

Fact Sheet

Qualified Storm Water Pollution Prevention Plan (SWPPP) Training Program for Professional Engineers and Professional Geologists, Land Surveyors and Scientists

V.F. Becoming a Qualified SWPPP Developer (QSD) or Qualified SWPPP Practitioner (QSP)

V.F.1. All QSDs and QSPs shall have fundamental knowledge of erosion and sedimentation processes, best management practices, and their implementation to control pollutants in stormwater discharges.

V.F.2. California licensed professional engineers or geologists may self-certify their eligibility to serve as a QSD/QSP via the State Water Board Construction Stormwater Program website.

V.F.2.a. Consistent with Title 16, California Code of Regulations, § 476 Code of Professional Conduct, a California Board for Professional Engineers, Land Surveyors, and Geologists (CBPELSG) licensee shall provide service for a project in a manner that is consistent with the laws, codes, ordinances, and regulations applicable to that project. A CBPELSG licensee shall not misrepresent their scope of authority affiliated with their professional license.

V.F.2.b. The State Water Board expects that a CBPELSG licensee serving a discharger enrolled in this General Permit has thorough knowledge of the conditions and requirements of this General Permit and the required supporting documents and information.

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Qualified SWPPP Practitioner

In addition, a QSP shall have attended a 2-day State Water Board-approved QSP training course and pass the State's on-line exam.


A QSP applicant shall currently possess at least one of the following prerequisites:

a. A Certified Erosion, Sediment, and Stormwater Inspector (CESSWI) registered through Enviro Cert International, Inc.;

b. A certified inspector of sediment and erosion control registered through Certified Inspector of Sediment and Erosion Control (CISEC) Inc.;

c. A Construction Management degree from an accredited 4-year institution that includes coursework that covers the underlying principles of erosion and sediment control and practices of reducing pollution in stormwater; or

d. Any prerequisite course approved by the State Water Board's Division of Water Quality Deputy Director in accordance with Section V.H.



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got swppp?

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QSP Underlying Cert.

[www.envirocertintl.org/cesswi](http://www.envirocertintl.org/cesswi)

ENVIROCERT International, Inc.

ABOUT EXAM/REVIEWS TRAINERS CERTIFICATIONS RESOURCES RENEWALS

CESSWI

Certified Erosion, Sediment, & Stormwater Inspectors are rigorously trained, tested and certified ensuring they are qualified to inspect erosion, sediment and stormwater plans and their implementation.

Get Certified

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QSP Underlying Cert.

[www.cisecinc.org](http://www.cisecinc.org)

Certified Inspector of Sediment and Erosion Control

Home About Us Find a CISEC Show & Exhibit Find a Check Link My Account

TRAINING & EXAMS EXAMINATION INFORMATION CERTIFICATION INFORMATION



Leading the World in Certifying Construction Site Inspectors of Sediment and Erosion Control and Storm Water Management

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Another Option for Underlying Credentials

**1/ P.A.** A QSD applicant shall currently possess at least one of the following prerequisites:

- a. A California landscape architect registration;
- b. A professional hydrologist registration through the American Institute of Hydrology;
- c. A Certified Professional in Erosion and Sediment Control (CPESC)™ registration through ErosionControl International, Inc.;
- d. A Certified Professional in Stormwater Quality (CPSWQ)™ registration through ErosionControl International, Inc.;
- e. Any prerequisite course approved by the State Water Board's Division of Water Quality Deputy Director in accordance with Section 1.0.0.

**1/ P.B.** A QSP applicant shall currently possess at least one of the following prerequisites:

- a. A Certified Erosion, Sediment, and Stormwater Inspector (CESDI®) registered through Erosion Control International, Inc.;
- b. A Certified Inspector of sediment and erosion control registered through Certified Inspector of Sediment and Erosion Control (CISEC), Inc.;
- c. A Construction Management degree from an accredited 4-year institution that includes coursework that covers the underlying principles of erosion and sediment control and practices of reducing erosion in stormwater; or
- d. Any prerequisite course approved by the State Water Board's Division of Water Quality Deputy Director in accordance with Section 1.0.0.



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Additional QSP/QSD Credential Requirements

To remain in good standing with their certification, QSDs and QSPs registered through CASQA shall:

- a. Complete 6 hours, annually, of continuing education on site assessment techniques, best management practice design and implementation, inspection techniques, or monitoring approaches. This requirement can be fulfilled in whole or in part by continuing education taken to maintain any of the approved underlying prerequisites; and
- b. Complete the online QSD or QSP renewal process every two years, including a review of materials addressing permit implementation updates, clarifications, and experiences as provided by the Construction General Permit Training Team.

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QSD Permit-Specified Roles



**V.C. Discharger's Responsibilities for Qualified SWPPP Developer Performance**

**V.C.1.** The discharger shall retain a QSD from the beginning of the project through the Notice of Termination approval.

**V.C.2.** A QSD is required to assess how construction activities will affect sediment transport, erosion, and other discharges of pollutants in stormwater runoff in the SWPPP design and implementation. The QSD is required to revise the SWPPP to address potential problems identified by visual inspections, sampling data, comments from a QSP, or their own site observations.

**V.C.3.** A QSD is required to include in the SWPPP the name, email, and phone number of all the QSP-trained delegate(s).

**V.C.4.** The discharger shall ensure that a QSD performs the following on-site visual inspections<sup>3</sup>:

- a. Within 30 days of construction activities commencing on a site;
- b. Within 30 days of a discharger replacing the QSD;
- c. Twice annually, once August through October and once January through March;
- d. Within 14 calendar days after a numeric action level exceedance; and
- e. Within the time period requested in writing from Water Board staff.

**V.C.5.** A QSD may perform the work of a QSP.

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QSP Permit-Specified Roles

V.D.2. The discharger shall ensure that a QSP performs the following on-site visual inspections<sup>14</sup>:

- a. Once every calendar month;
- b. Within 72 hours prior to a forecasted Qualifying Precipitation Event to inspect areas of concern to verify the status of any deficiencies, BMPs, or other identified issues at the site. If extended forecast precipitation data (greater than 72 hours) is available from the National Weather Service, the pre-precipitation event inspection may be done up to 120 hours in advance;
- c. Within 14 days after a numeric action level exceedance the QSP shall visually inspect the drainage area of exceedance and document any areas of concern; and
- d. Prior to the submittal of General Permit Notice of Termination or Change of Information (for acreage changes) of all or part of a site.

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QSP Permit-Specified Roles

V.D.3. The discharger shall ensure that a QSP verifies the following:

- a. All BMPs required in the SWPPP are implemented, correctly installed, inspected, and maintained;
- b. Track out of construction related material at site entrances and exits is controlled;
- c. The SMARTS generated WDID number notification form is in a site location viewable by the public or readily available upon request, kept up to date, and the start and end dates are correct and match the dates listed in SMARTS for the project;
- d. Sampling protocols for stormwater and non-stormwater discharges are correctly performed as described in the SWPPP by on-site trained personnel delegated by a QSP (including, but not limited to, taking representative samples of the runoff);
- e. Contact information including, name, phone number, and email address for the discharger, Legally Responsible Person, QSD(s), and QSP(s) is correct and updated in SMARTS within 90 days of a change); and
- f. Photo documentation of problem areas of erosion, new sediment deposition, unauthorized non-stormwater discharges, and/or failed BMPs is included in the SWPPP and are made available upon a regulatory inspector's request.

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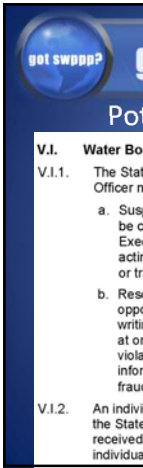
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Potential Certification Rescission

V.I. Water Board Rescission of a QSP or QSD Certification

- V.I.1. The State Water Board Executive Director or a Regional Water Board Executive Officer may:
  - a. Suspend any QSD or QSP certification and require that additional training be completed as a condition of re-instatement if the Executive Director or Executive Officer finds, in writing, that the QSD or QSP in the course of acting as a QSD or QSP at one or more site(s) lacked adequate knowledge or training to perform duties required by the General Permit; and/or
  - b. Rescind any QSD or QSP certification if, after providing notice and an opportunity to be heard, the Executive Director or Executive Officer finds, in writing, that the QSD or QSP has in the course of acting as a QSD or QSP at one or more site(s), (1) willfully or negligently caused or allowed a violation of this General Permit; (2) submitted false or misleading information to the State Water Board or any Regional Water Board, (3) used fraud or deception; or (4) failed to use reasonable care and good judgment.
- V.I.2. An individual whose QSD or QSP certification has been rescinded may request the State Water Board to review the rescission. Any request for review must be received by the State Water Board no later than 30 days after the date that the individual received written notice of the rescission.

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Side by side comparison...

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NEW

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Old Permit

2009-0009-DWQ Construction general permit (effective July 1, 2009)

Construction Stormwater General Permits

2009-0009-DWQ Construction general permit (effective July 1, 2009)

1. Purpose and Scope (CGP)

1.1. This permit applies to all construction activities that result in a disturbance of one or more acres, or less than one acre but are part of a larger common plan of development or sale that totals one or more acres of land disturbance, such as the following:

1. Construction activity that includes, but is not limited to, clearing, grading, excavation, stockpiling, and demolition activities that expose or disturb soil.

2. Construction activity related to residential, commercial, or industrial development on lands currently used for agriculture including, but not limited to, the construction of buildings related to agriculture that are considered industrial pursuant to U.S. EPA regulations, such as dairy barns or food processing facilities.

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What is Covered by the CGP?


II.A. Traditional Construction Activities

Subject to this General Permit include construction or land disturbance activities that result in a disturbance of one or more acres, or less than one acre but are part of a larger common plan of development or sale that totals one or more acres of land disturbance, such as the following:

1. Construction activity that includes, but is not limited to, clearing, grading, excavation, stockpiling, and demolition activities that expose or disturb soil.

2. Construction activity related to residential, commercial, or industrial development on lands currently used for agriculture including, but not limited to, the construction of buildings related to agriculture that are considered industrial pursuant to U.S. EPA regulations, such as dairy barns or food processing facilities.

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Order p. 8

What is Covered by the CGP?

II.A. **Traditional Construction Activities** Subject to this General Permit include construction or land disturbance activities that **result in a disturbance of one or more acres**, or less than one acre but are part of a larger common plan of development or sale that totals one or more acres of land disturbance, such as the following:

3. Construction activity associated with oil and gas exploration, production, processing, or treatment operations or transmission facilities pursuant to 40 Code of Federal Regulations § 122.26(c)(1)(iii), which:

- a. Had a discharge of stormwater resulting in the discharge of a reportable quantity for which notification is or was required pursuant to 40 Code of Federal Regulations §§ 117.21 or 302.6 at any time since Nov. 16, 1987;
- b. Had a discharge of stormwater resulting in the discharge of a reportable quantity for which notification is or was required pursuant to Code of Federal Regulations § 110.6 at any time since Nov. 16, 1987; or
- c. Contributes to a violation of a water quality standard.

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What is Covered by the CGP?

II.C. **Linear Underground and Overhead Projects** Subject to this General Permit

1. Linear underground and overhead projects include, but are not limited to conveyance facilities, culverts, pipelines, or other linear corridors for:

- a. The transportation of any gaseous, liquid, liquescent, and slurry material;
- b. Cable line or wire for the transmission of:
  - i. Electrical energy; or
  - ii. Communications, including internet, telephone, telegraph, radio, or television messages.
- c. Ancillary facilities and substructures such as new access roads, helicopter landing zones, laydown yards, staging areas, substations, valve stations, etc. that primarily function as support for linear underground and overhead project construction activities.<sup>4</sup>

<sup>4</sup>Regional Water Board staff may require, in writing, that the discharger obtain coverage through a traditional construction notice of intent when the construction of ancillary facilities more closely resembles traditional construction activities.

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What is Covered by the CGP?

II.C. **Linear Underground and Overhead Projects** Subject to this General Permit

2. Construction support activities associated with linear underground and overhead projects include, but are not limited to:

- a. Activities necessary for the installation of underground and overhead linear facilities (e.g., conduits, substructures, pipelines, towers, poles, cables, wires, connectors, switching, regulating and transforming equipment, vegetative management, and associated ancillary facilities); and
- b. Activities including underground utility mark-out, potholing, concrete and asphalt cutting and removal, trenching, excavating, boring and drilling, access road and pole/tower pad and cable/wire pull station, substructure installation, construction of tower footings and/or foundations, pole and tower installations, pipeline installations, welding, concrete and pavement repair or replacement, and stockpile/borrow locations.

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Order p. 8-10

What is Not Covered?

**II.B. Traditional Construction Activities Not Subject to this General Permit**  
*This General Permit does not apply to the following construction activity:*

1. Routine maintenance. Routine maintenance is defined as activities intended to maintain the original line and grade, hydraulic capacity and/or purpose of the facility. This General Permit further defines routine maintenance for road and highway projects as the replacement of the structural section, but not when the activity exposes the underlying soil or erodible subgrade. The road surface and base are not part of the subgrade. As such, those portions of a project that remove the paved road surface and base down to the erodible subgrade and/or underlying soil would not be considered routine maintenance.
2. Disturbances to land surfaces solely related to growing crops or agricultural operations such as disking, harrowing, terracing, and leveling, and soil preparation.
3. Discharges of stormwater from areas on tribal lands; construction on tribal lands is regulated by a federal permit.

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Order p. 8-10

What is Not Covered?

**II.B. Traditional Construction Activities Not Subject to this General Permit**  
*This General Permit does not apply to the following construction activity:*

4. Discharges of stormwater within the Lake Tahoe Hydrologic Unit. The Lahontan Regional Water Board has adopted its own permit to regulate stormwater discharges from construction activity in the Lake Tahoe Hydrologic Unit. Owners of construction sites in this watershed must apply for the Lahontan Regional Water Board permit rather than the statewide Construction Stormwater General Permit. Construction sites within the Lahontan region must also comply with the Lahontan Region Project Guideline for Erosion Control (R6T-2016-0010).
5. Construction activity that disturbs less than one acre of land surface, unless part of a larger common plan of development or the sale of one or more acres of disturbed land surface.
6. Construction activity covered by an individual NPDES Permit for stormwater discharges.

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Order p. 8-10

What is Not Covered?

**II.B. Traditional Construction Activities Not Subject to this General Permit**  
*This General Permit does not apply to the following construction activity:*

7. Construction activity that is subject to the Industrial Stormwater General Permit (IGP):
  - a. Landfill operations as described by Standard Industrial Classification (SIC) code 4953. Landfill operators typically enroll under the Construction Stormwater General Permit for initial construction and final closure of the landfill.
  - b. Concrete manufacturers of prefabricated products, ready-mix concrete, or slurries that are delivered to construction sites require enrollment in the Industrial Stormwater General Permit. Examples of this industrial activity are those facilities primarily engaged in manufacturing concrete building blocks and bricks, other concrete products not building blocks and bricks, or ready-mix concrete. Concrete manufacturing of prefabricated products, ready-mixed concrete, or slurries that are transported from construction sites where mixing occurs and delivered to a separate site require enrollment in the IGP.

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Order p. 8-10

What is Not Covered?

**II.B. Traditional Construction Activities** Not Subject to this General Permit

*This General Permit does not apply to the following construction activity:*

- 8. Construction activity that discharges to combined sewer systems.
- 9. Discharges of stormwater identified in Clean Water Act § 402(l)(2), 33 USC § 1342(l)(2) (stormwater runoff from oil, gas, and mining operations) unless the discharge meets the conditions of 40 Code of Federal Regulations § 122.26(c)(1)(iii) as described in this General Permit.
- 10. Discharges of dredged or fill material to waters of the state. Those portions of the construction project that are located outside of waters of the state or waters of the United States are subject to this General Permit if the non-water portions disturb one or more acres of land.

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Order p. 8-10

What is Not Covered?

**II.D. Linear Underground and Overhead Projects** Not Subject to this General Permit

*This General Permit does not apply to the following linear underground and overhead project construction activity:*

- 1. Routine maintenance projects. Routine maintenance projects are projects associated with operations and maintenance activities that are conducted on existing lines and facilities and within existing right-of-way, easements, franchise agreements, or other legally binding agreements of the discharger granting access to land. Routine maintenance projects include, but are not limited to projects that are conducted to:
  - a. Maintain the original purpose of the facility or hydraulic capacity;
  - b. Update existing lines and facilities to comply with applicable codes, standards, and regulations regardless of if such projects result in increased capacity; and/or
  - c. Repair leaks.

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Order p. 8-10

What is Not Covered?

**II.D. Linear Underground and Overhead Projects** Not Subject to this General Permit

*This General Permit does not apply to the following linear underground and overhead project construction activity:*

- 2. Routine maintenance does not include construction of new lines or facilities resulting from compliance with applicable codes, standards, and regulations.
- 3. Routine maintenance projects do not include those areas of maintenance projects that are outside of an existing right-of-way, franchise, easements, or agreements. When a project must secure new areas, those areas may be subject to this General Permit based on the area of disturbed land outside the original right-of-way, easement, or agreement.

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Order p. 8-10

What is Not Covered?

II.D. **Linear Underground and Overhead Projects** Not Subject to this General Permit

*This General Permit does not apply to the following linear underground and overhead project construction activity:*

4. Linear underground and overhead project construction activity does not include field activities associated with the planning and design of a project (e.g., activities associated with route selection).

5. Tie-ins conducted immediately adjacent to "energized" or "pressurized" facilities by the discharger are not considered construction activities where all other linear underground and overhead project construction activities associated with the tie-in are covered by a Notice of Intent and SWPPP of a third party or municipal agency.

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Obtaining Permit Coverage



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got swPPP?

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Legally Responsible Person

The Legally Responsible Person is a representative of a permittee and signatory that is legally designated to sign, certify, and electronically submit any documents required by the General Permit, the State or Regional Water Board, or U.S. EPA. An LRP must be one of the following:

1. For a corporation or limited liability company: a responsible corporate officer. For the purpose of this section, a responsible corporate officer means: (a) a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation or limited liability company; or (b) the manager of the facility if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures;
2. For a partnership or sole proprietorship: a general partner or the proprietor, respectively;
3. For a municipality, state, federal, or other public agency: a principal executive officer, ranking elected official, city manager, council president, or any other authorized public employee with managerial responsibility over the construction or land disturbance project (including, but not limited to, project manager, project superintendent, or resident engineer);
4. For an individual: the individual; or
5. For any type of entity not listed above (e.g., trusts, estates, receivers): an authorized person with managerial authority over the construction or land disturbance project.

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**Duly Authorized Representative (DAR) / Approved Signatory**

A Duly Authorized Representative is a named individual or position that has responsibility for the overall operation of the regulated construction project or activities including, but not limited to, a superintendent, project manager, or other positions of equivalent or higher responsibility. Additionally, an individual or position that has overall responsibility for environmental matters for the owner or company may be designated as a Duly Authorized Representative. The Legally Responsible Person designates the Duly Authorized Representative through SMARTS, authorizing the Duly Authorized Representative to sign, certify, and electronically submit Permit Registration Documents, Notices of Termination, and any other supporting documents, reports, or information required by this General Permit, the State or Regional Water Boards, or U.S. EPA. A Duly Authorized Representative cannot be a contractor, consultant, or other third party.

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got swppp?

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Obtaining Permit Coverage



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Coverage for  
New  
Traditional  
Projects

ORDER WQ 2022-0057-DWG  
NPDES No. CA5000002

**III. OBTAINING, REVISING, AND TERMINATING PERMIT COVERAGE**

**III.A. Obtaining Permit Coverage for Traditional Construction Projects**

**III.A.1.** The Discharger shall obtain a Waste Discharge Identification (WDOI) number prior to the commencement of construction activity by electronically certifying and submitting the following Permit Registration Documents through the State Water Board Stormwater Multiple Application and Report Tracking System (SMARTS):

- a. Notice of Intent, including Risk Level determination as described in Attachment D.1;
- b. Site Drawings and Maps;
- c. Stormwater Pollution Prevention Plan (SWPPP) (see Section IV C, below);
- d. Applicable plans, calculations, and other supporting documentation for compliance with existing permitted Phase I or Phase II municipal separate storm sewer system post-construction requirements or the post-construction standards of this General Permit;
- e. Annual fee per the current 23 California Code of Regulations Chapter 9 fee schedule for NPDES stormwater permits; and
- f. All applicable additional Permit Registration Document information as required in Attachment D.2 of this General Permit.

**III.A.2.** An applicant is considered to have General Permit regulatory coverage and can commence construction activity upon receipt of a WDOI number generated by SMARTS. Dischargers shall post their site-specific WDOI number in a site location that is visible to the public or readily available upon request if unable to post publicly.

**III.A.3.** In the case of a public emergency that requires immediate construction activities involving one acre or more of land disturbance, a discharger shall submit a brief description of the emergency construction activity to the applicable Regional Water Board within five calendar days of the onset of site construction. The discharger shall then submit the required Permit Registration Documents through SMARTS within 30 calendar days of commencing site activity.

**III.A.4.** Failure to obtain General Permit coverage for stormwater and non-stormwater discharges covered by this General Permit to waters of the United States is a violation of the Clean Water Act and the California Water Code.

6 Dischargers are required to have a signed original Electronic Authorization Form on file with the State Water Board for each organization in SMARTS.

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PAGE 10

**H.B. Obtaining Permit Coverage for Linear Underground and Overhead Projects**

The discharger for a linear underground and overhead project shall designate a Legally Responsible Person for each of the WQIDs numbers. The discharger is required to obtain and maintain a valid Electronic Signature Permit. The Legally Responsible Person, as defined in Attachment B to the General Permit, shall be the electronic signatory of the registration requirements to obtain Permit coverage under Section III.H. Electronic Signature and Certification (Requirements).

**III.B.1. Discharger for a linear underground and overhead project shall obtain General Permit coverage under one or more applications submitted through SMARTS.**

**III.B.2. The Legally Responsible Person shall electronically certify and submit the following application Permit Registration Documents through SMARTS and obtain WQID number prior to the commencement of any construction activities.**

- a. Notice of Intent, including linear underground and overhead project type designation as described in Attachment A.
- b. Site-specific Stormwater Pollution Prevention Plan (SWPPP), Drawings, and Maps (see Section IV.F. below).
- c. Schedule for the California Code of Regulations Chapter 9.6 for approval for NPDES stormwater permits; and
- d. All applicable additional Permit Registration Document information as described in Attachment B.

**III.B.3. Regulatory coverage for linear underground and overhead project segments**

**III.B.3.a. The discharger may separate a contiguous linear underground and overhead project into separately registered segments based on different risk types and overhead project segments may consist of different risk types.**

**III.B.3.b. The discharger shall include a clear description of the Permit Registration Document segmenting how each segment relates to the overall linear underground and overhead project by identifying one or more of the following discharger categories:**

- i. The segments are managed by separate contractors;
- ii. The segments are constructed during distinct project phases; or
- iii. The segments are located in different topography, watersheds, or jurisdictional boundaries.

**D**ischargers are required to have a signed original Electronic Authorization Form on file with the Water Board for each jurisdictional authorization.

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NPDES No. CA50000021

41B.3.c. Segments with corresponding linear underground and overhead project segments that cross Regional Water Board's jurisdiction.

41B.4. Segments of same project located within different Regional Water Board jurisdiction must file separate applications.

41B.5. Programmatic Permitting Regulatory coverage for linear underground and overhead projects

41B.6. a. Applicants may submit one Notice of Intent requesting regional programmatic General Permit coverage for multiple non-contiguous linear underground and overhead projects, if the projects

41B.7. i. Are located within one Regional Water Board jurisdiction;

41B.8. ii. Are a group of projects of similar scales with common construction activities; and

41B.9. iii. Have the same Legality Responsible Person.

Effective December 17, 2020, a dischargee applying Executive Order N-73-20, per the requirements and due dates of the executive order, or any subsequent therein, may apply for regional programmatic General Permit coverage for multiple non-contiguous linear underground and overhead broadband projects, where the installation of the utilities is outside of a construction project that is otherwise regulated under the General Permit.

41B.10. a. Applicants applying Executive Order N-73-20 may apply for a statewide programmatic permit for regulatory coverage under Order 2009-0029/DWG 0000000000 by Order 2020-0097-DWG 0000000000 on or before December 17, 2020, until September 1, 2021, by submitting the information required by Attachment E.2.

41B.11. Linear underground and overhead project discharges with programmatic permitting coverage shall submit, prior to the commencement of any construction activities for each non-contiguous project:

41B.12. i. Common SWPPP with the Notice of Intent covering all the activities common to the projects; and

41B.13. ii. Linear Construction Activity Notification for each site describing activity information in accordance with Attachment E.2, Section I(A.2).

41B.15. An applicant is considered to have General Permit regulatory coverage and may not be required to submit a separate application for coverage if the applicant's SMARTS Discharges shall post the project-specific DWG number in a site location that is visible to the public or readily available upon request if unable to post public.

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**II.C. Regulatory Coverage under the Previous Permit**

II.C.1. Dischargers that obtain coverage under State Water Board Order 2009-0009-DWG, as amended by Orders 2011-01-04-DWG and 2012-01-04-DWG, (previous permit) prior to the effective date of this permit, continue coverage under the previous permit until its regulated project(s) receive an approved Notice of Intention from the Regional Water Board, up to two years after the effective date of this General Permit. Two years after September 1, 2023, all Expiring Notices of Intent submit to the previous permit, and the discharge is subject to regulatory coverage under this General Permit.

II.C.1.a. A discharger continuing regulatory coverage under the previous permit cannot increase a project's disturbed acreage through the Change of Information process, on or after the effective date of this General Permit; the discharger must submit a Notice of Intent to obtain coverage under this General Permit for increase in disturbed acreage.

II.C.2. Dischargers with the previous permit's Small Construction Rainfall Exemption continue to operate under that permit until the expiration of the Exemption Waivers granted under the previous permit cannot be modified or extended.

II.C.3. Dischargers that submit a Notice of Intention for previous permit termination up to two years after the effective date of this General Permit and receive Notice of Intent approval from the Regional Water Board are not subject to this General Permit (unless the discharger subsequently submits new Permit Registration Documents).

II.C.4. Dischargers with coverage under the previous permit that need regulatory coverage after September 1, 2025 under this General Permit, shall submit, in SMARTS, the following terms by August 31, 2025:

- a certification of the discharger's intent to obtain regulatory coverage under this General Permit;
- A Revised Notice of Intent and other Permit Registration Documents, revised to address new or changed requirements per this General Permit, as applicable; and
- The applicable fee.

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Coverage for Projects Under the Erosivity Waiver

LOOK

**III.D. Small Construction Rainfall Erosivity Waiver**

III.D.1. Dischargers are eligible for the Small Construction Rainfall Erosivity waiver (waiver) if:

- a. The site is between one and five acres; and
- b. The construction activity will take place during a period when the calculated rainfall erosivity factor is less than five.

III.D.2. Dischargers with small sites that are part of a larger common plan of development, or dischargers that have programmatic permit coverage, do not qualify for a waiver unless the entire project qualifies for a waiver.

III.D.3. To request a waiver, the Legally Responsible Person shall submit a waiver application through SMARTS, and pay the appropriate fee to the State Water Board. If approved by the State Water Board, SMARTS will electronically provide the discharger with the waiver and a unique waiver identification number. The waiver is effective on the date the waiver identification number is issued and valid between the construction start and end dates, as entered in the waiver application.

III.D.4. A discharger qualifying for a waiver shall obtain a waiver identification number prior to starting any construction activities regulated by this General Permit.

III.D.5. A waiver is valid only if the correct start and end dates of construction activities are entered and updated if necessary through the Change of Information process in SMARTS.

III.D.6. The discharger may revise an original construction start date through the Change of Information process in SMARTS and shall provide documentation demonstrating the project had not started on the date originally submitted through SMARTS.

III.D.7. The discharger shall update the project end date through the Change of Information process in SMARTS prior to expiration of the waiver if the project completion date is anticipated to extend past the waiver expiration date. If the updated project end date results in a rainfall erosivity factor of five or greater, the discharger shall obtain coverage under this General Permit. If the discharger fails to update the project end date prior to expiration of waiver, they shall immediately obtain coverage under this General Permit.

III.D.8. The discharger shall post the unique waiver identification number in a site location that is visible to the public or readily available upon request if unable to post publicly.

III.D.9. A waiver does not provide General Permit coverage. Dischargers with a waiver are not required to comply with post-construction, sampling, monitoring, or other SWPPP requirements in the General Permit.

III.D.10. Regional Water Board staff may terminate a waiver if the Regional Water Board staff determines the discharge of stormwater runoff causes or contributes to an exceedance of a water quality standard or violates a prohibition in an applicable regional or statewide water quality control plan. The Regional Water Board Executive Officer or their delegate may require the discharger to obtain regulatory coverage under this General Permit or an NPDES permit issued by the Regional Water Board.

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Coverage for Projects that Do Not Discharge

NEW

**III.E. Notice of Non-Applicability**

III.E.1. A discharger claiming "No Discharge" through a Notice of Non-applicability (NONA) as set forth in Water Code § 13399.30 shall meet the following eligibility requirement:

- a. The site's physical location is not hydrologically connected to waters of the United States.

III.E.2. When claiming the "No Discharge" option, the discharger shall submit and certify via SMARTS both the NONA and a No Discharge Technical Report. The No Discharge Technical Report shall identify the site by address or parcel number and demonstrate that the site meets the eligibility requirement described above in Section III.E.1.a.

III.E.3. The No Discharge Technical Report shall be signed (wet signature and license number) by a California licensed professional engineer or geologist with hydrological expertise.

III.E.4. The Regional Water Board may require the No Discharge Technical Report to be reassessed if it determines that there are errors in the No Discharge Technical Report or if the site is hydrologically connected to waters of the United States.

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Modifying Permit Coverage

LOOK

**III.F. Revising Permit Coverage Information**

The discharger shall revise permit coverage information, as appropriate, to:

III.F.1. Update Construction Start and End Dates

III.F.1.a. The discharger shall electronically certify and submit a revised Notice of Intent through a Change of Information in SMARTS, when the construction start or end date changes, recalculating sediment risk and revising the SWPPP as appropriate. The Change of Information shall be submitted at least 14 days prior to the date that was modified, unless infeasible due to unforeseen circumstances.

III.F.1.b. If the discharger is revising the construction start date to a later date than previously submitted, the Change of Information shall contain time-stamped photo documentation depicting that construction activities have not commenced for the entirety of the site.

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Modifying Permit Coverage - Reduced Acreage

Order p. 17

III.F.2. Reduce Acreage

III.F.2.a. When a portion of the site meets conditions for termination of coverage (Section III.H) or is sold/transferred to a new owner, the discharger may reduce the disturbed acreage covered under the General Permit. The discharger reducing disturbed acreage shall electronically certify and submit the following Permit Registration Document revisions in SMARTS, through a Change of Information, within 30 days of the reduction in acreage:

i. A revised Notice of Intent indicating the new site size;

ii. Photos demonstrating final stabilization, if applicable;

iii. Revised site map(s) showing (as applicable) acreage currently under construction; acreage sold/transferred, and/or added; and acreage currently stabilized in accordance with the Conditions for Termination of Coverage in Section III.H below; and

iv. A revised SWPPP to match the change in acreage.

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Modifying Permit Coverage - Subdivisions and Home Lots

Order p. 18

III.F.2.b. For a larger common plan of development for residential use, the discharger may, through the Change of Information process, remove residential lots from permit coverage once the lot meets the following criteria:

i. The residential lot has been sold to the individual homeowner(s) for residential use.

NEW ii. A certificate of occupancy or equivalent document, is maintained on-site and can be made available during inspections;

iii. The lot is less than one acre of disturbance;

iv. All construction activity conducted on the lot by the discharger is complete; and

v. The discharger has temporarily stabilized any unfinished yard and landscaping areas with BMPs.

III.F.2.c. The discharger shall upload, as an attachment in SMARTS, documentation of a contract (e.g., Covenants, Conditions, and Restrictions) requiring the individual homeowner to stabilize the yard and landscaping within one year and to maintain the temporary BMPs until the yard and landscaping are stabilized.

LOOK III.F.2.d. The discharger shall maintain General Permit coverage for any site, parcel, or individual lot that has not received Change of Information or Notice of Termination approval from the Regional Water Board or obtained coverage under the new owner's Notice of Intent.

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Modifying Permit Coverage - Increase Acreage

Order p. 19

III.F.4. Increase Acreage

III.F.4.a. If the disturbed acreage of the site will increase, the discharger shall certify and submit the following Permit Registration Documents revisions in SMARTS, through a Change of Information, prior to the increase in disturbed acreage:

i. A revised Notice of Intent indicating the new site size;

ii. A revised site map(s) showing (as applicable) acreage currently under construction; acreage sold, transferred, and/or added; and acreage currently stabilized in accordance with the conditions for terminating coverage in Section III.H below; and

iii. A revised SWPPP to match current site size.

III.F.4.b. The discharger shall submit the applicable fees, in accordance with the revised fee notification, within 14 calendar days of the notification date. The Change of Information will be returned if these fees are not received by the State Water Board within 14 calendar days of the notification date.

III.F.4.c. Regulatory coverage under this General Permit for the added acreage is not approved until the Regional Water Board approves the Change of Information.

LOOK III.F.4.d. If the increased acreage is greater than one-fourth mile from the existing site boundary and is an acre or larger, the discharger is required to submit a separate Notice of Intent.

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Modifying Permit Coverage - Change of Ownership

Order p. 19

III.F.5. Change in Ownership

III.F.5.a. Prior to a sale/transfer of a site, parcel, or individual lot (change of ownership), the existing discharger shall submit a Notice of Termination for change of ownership and a certification that the new owner has been notified of applicable requirements to obtain new General Permit for the qualifying activities. The existing discharger certification shall include the name, address, telephone number, and email address of the proposed new owner in the Notice of Termination submitted through SMARTS.<sup>1</sup>

III.F.5.b. General Permit coverage is not transferable to a new owner. The new discharger will need to submit their own Permit Registration Documents to obtain a new WDID number prior to continuing construction activities and/or installing final landscaping (including meeting conditions for termination of coverage). The new discharger shall enter the original project start date (initial date of disturbance) from the previous discharger(s).

8 Dischargers that are submitting a Notice of Termination for a change of ownership, where the new owner will obtain permit coverage to complete construction, are not required to comply with the requirements in Order Section III.H.

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Modifying Permit Coverage - Periods of Inactivity

Order p. 20

III.G. Inactive Projects

III.G.1. Dischargers with projects where all construction activities (including passive treatment, active treatment systems, and/or active equipment) will be suspended for 30 days or more may submit a Change of Information through SMARTS to revise the SWPPP. The Change of Information shall include:

a. Revised site map depicting the current status of construction; and

b. Photographs showing the temporary stabilization BMPs that were implemented.

III.G.2. Upon Regional Water Board approval of the Change of Information, sampling may be suspended, and monitoring and inspections may be reduced as follows:

III.G.2.a. A QSD shall visit the inactive project within 14 days of Regional Water Board approval of the Change of Information to verify that the SWPPP is being implemented accordingly. If necessary, the QSD shall amend the SWPPP to address all new conditions not previously considered through a Change of Information in SMARTS.

III.G.2.b. A QSP or trained delegate shall visually inspect the inactive project at least once every calendar month and prior to any weather pattern that is forecasted to have a 50 percent or greater chance of 0.5 inches or more in a 24-hour period. Please refer to Attachments D and E Section III.C for information pertaining to visual inspection requirements.

i. The QSP or trained delegate shall verify BMPs are functioning in accordance with the SWPPP and implement corrective actions where necessary.

III.G.2.c. The above inspections are not required during dangerous weather conditions or when access to the site is infeasible (e.g., due to snow accumulation) or unsafe.

III.G.3. Dischargers wishing to resume construction activities or the use of passive treatment, active treatment systems, and/or active equipment shall submit a Change of Information through SMARTS requesting to resume the project along with a revised site map based on current site conditions. Upon Regional Water Board approval of the Change of Information, the discharger is required to comply with all applicable requirements of this General Permit to resume construction activities at the site.

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Prohibitions



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Module 1 – Page 19



Non-Storm  
Water  
Discharges

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Authorized  
Discharges



Order p. 23

IV.A. Authorized Non-Stormwater Discharges

IV.A.1. Non-stormwater discharges from the following **de-chlorinated** potable and non-potable water sources are authorized if they comply with the requirements in Section IV.A.2 of this General Permit:

a. Fire-fighting activity;

b. Fire hydrant system flushing;

c. Irrigation of vegetative erosion control measures;

d. De-chlorinated potable water, including uncontaminated water line flushing;

e. Hydrostatic pipe flushing and testing water;

f. Air conditioning or compressor condensate;

LGSK

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g. Uncontaminated groundwater or spring water from construction dewatering activities in compliance with Attachment J, and

h. Water to control dust.

IV.A.2. The above non-stormwater discharges are authorized under the following conditions:

a. The discharge is not routed through site areas with exposed soil, except for water used for dust control or to vegetation irrigation to stabilize areas;

b. The discharge does not cause or contribute to an exceedance of water quality standards in the receiving water;

c. The discharge complies with other applicable requirements of this General Permit including applicable action levels, effluent limitations, and monitoring and reporting requirements;

d. The discharge is not prohibited by an applicable regional or statewide water quality control plan;

e. The discharge is in accordance with other applicable State and Regional Water Board permits; and

f. The discharge does not contain toxic constituents in toxic amounts and does not cause toxicity in the receiving water body.

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Non-Storm  
Water  
Discharges

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Dewatering

NEW

Attachment J

A. AUTHORIZED CONSTRUCTION DEWATERING DISCHARGES

A.1. Dischargers with dewatering activities subject to a separate NPDES permit for dewatering activities are not subject to the provisions in this Attachment, and shall obtain separate NPDES coverage as required by the State or Regional Water Board. Dischargers shall include in its Stormwater Pollution Prevention Plan (SWPPP), the separate NPDES permit coverage it holds for dewatering discharges.

LGSK

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A.2. Dewatering discharges authorized by this General Permit include mechanical pumping or syphoning of non-potable water from sources including, but not limited to: excavations, trenches, foundations, vaults, groundwater removal specifically related to the construction activities, and/or water collected in impoundments (e.g., ponds, puddles, low points on the active site, or other similar accumulation points).

A.3. This General Permit does not limit the State or Regional Water Boards' authority to modify dewatering discharge requirements upon providing written notice to the discharger, including but not limited to the following:

a. Adding constituents to be monitored;

b. Adding or modifying frequency of monitoring;

c. Adding or modifying sampling locations;

d. Requiring all or part of the discharge to be treated by an active treatment system (in accordance with Attachment F) prior to discharge; and/or

e. Revoking authorization of dewatering dischargers under this General Permit and requiring the discharger to obtain different NPDES permit coverage for dewatering discharges to waters of the United States.

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Non-Storm  
Water  
Discharges

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Dewatering

Attachment J

B. GENERAL DEWATERING DISCHARGE REQUIREMENTS

B.1. Dischargers shall comply with the following dewatering discharge requirements:

a. The discharge complies with receiving water limitations in Section IV.D of this General Permit's Order;

b. The discharge is absent of pollutants in quantities that threaten to cause pollution or a nuisance;

c. The dewatering activity takes place in an area without known (including, but not limited to information from: Geotracker, local permitting authorities, Water Boards, etc.) soil and/or groundwater contamination where that contamination could cause an exceedance of receiving water limitations;

d. The discharger shall utilize outlet structures that withdraw water from the surface when conducting dewatering activity from sediment basins or similar impoundments, unless infeasible; and

e. The discharger shall cease discharge if necessary, as follows:

i. Through an automated sampling device capable of ceasing the discharge if a single sample concentration/level exceeds the numeric action level(s); or

ii. By a Qualified SWPPP Practitioner (QSP) or trained delegate who is present during the operation of the mechanical pumping and/or syphoning of the dewatering activity and is able to halt dewatering if a numeric action level is exceeded for a single sample.

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Module 1 – Page 20

Attachment J

Non-Storm Water Discharges - Dewatering

**C. DEWATERING DISCHARGE MONITORING REQUIREMENTS**

C.1. The discharge shall be analyzed for pH and turbidity at the discharge location within the first hour of discharge and daily for continuous dewatering discharges. Each sample must instantaneously comply with the numerical action levels for pH (within 6.5 – 8.5 standard pH units) and turbidity (250 nephelometric turbidity units);

C.2. Dewatering discharge(s) exceeding the numeric action levels for pH and turbidity shall immediately cease until the dewatering discharge complies with the requirements in Sections B.1.a through e and D.5 and E.

**D. DEWATERING DISCHARGE REPORTING REQUIREMENTS**

D.1. At least 24 hours prior to the beginning of a dewatering discharge, the discharger shall notify the applicable Regional Water Board stormwater staff via email<sup>2</sup> of the anticipated dewatering discharge.

D.2. The discharger shall notify the corresponding Regional Water Board and the applicable municipal separate storm sewer system within 24 hours of a discharge occurring if an exception to the requirement to cease discharge, as outlined in Section B.1.e, is necessary to protect human life and health or prevent severe property damage.

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Attachment J

Non-Storm Water Discharges - Dewatering

D.3. The Qualified SWPPP Developer (QSD) shall update the site-specific SWPPP on-site at least 24 hours prior to the beginning of a dewatering discharge and upload the amended SWPPP to SMARTS within 14 days with current information required in Section D.4 below, if necessary. The revised SWPPP shall be uploaded as part of a Change of Information through SMARTS.

D.4. The QSD shall include the following site-specific SWPPP updates to address dewatering discharges:

- a. On-site BMPs that are selected and implemented:
  - i. To prevent the dewatering discharge from contacting construction materials or equipment;
  - ii. That do not use waters of the United States as part of the treatment area, at all areas or points where dewatering is discharged; and
  - iii. To decelerate the velocity of dewatering discharge (e.g., check dams, sediment traps, riprap, and grouted riprap at outlets);
- b. Cleaning and maintenance plan for all dewatering devices and filter media when the pressure equals or exceeds the manufacturer's specifications (if applicable);
- c. Site-specific dewatering sampling protocols used to comply with requirements in Section B.1; and
- d. A site map depicting the dewatering activity discharge area location(s).

D.5. The discharger shall enter results of all numeric action level (e.g., turbidity and pH) exceedances through SMARTS within 10 days of the field measurements demonstrating the exceedance.

D.6. The QSD shall revise the SWPPP to incorporate immediate corrective actions to prevent further exceedances of the numeric action levels for pH and turbidity, within 10 days of the exceedance.

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Order p. 23

Other Prohibitions - Don't Violate the Plans or Permits



**IV.B. Discharge Prohibitions**

IV.B.1. Dischargers shall not violate any discharge prohibitions contained in applicable water quality control plans.

IV.B.2. Discharges to Areas of Special Biological Significance (ASBS) are prohibited by the California Ocean Plan, unless granted an exception issued by the State Water Board.

IV.B.3. All discharges are prohibited except for the stormwater and non-stormwater discharges specifically authorized by this General Permit or another NPDES permit. The discharger shall notify the Regional Water Board of existing or anticipated non-stormwater discharges not authorized by this General Permit, within 24 hours of the discharge, to determine if regulatory coverage is necessary through a separate NPDES permit.

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Other Prohibitions - Don't Violate the Plans or Permits

Order p. 24

IV.B.4. All of the following discharges are prohibited:

a. Debris and trash, in accordance with State Water Board Resolution 2015-0019, the Trash Provisions of the Water Quality Control Plan for Ocean Waters of California and the Water Quality Control Plan for Inland Surface Waters, Enclosed Bays, and Estuaries of California, as applicable to construction stormwater discharges.

b. To comply with the Trash Provisions, dischargers shall implement, operate, and maintain trash management, treatment, and institutional controls to eliminate debris and trash from all stormwater discharges and authorized non-stormwater dischargers consistent with the prohibition of the discharge of debris and trash regulated by this General Permit. If the discharger is unable to comply with the prohibition of the discharge of debris and trash, the discharger must submit, for Regional Water Board Executive Office or designee approval, an amended Stormwater Pollution Prevention Plan addressing:

1. A demonstration that the discharger is unable to comply with this outright prohibition of the discharge of debris and trash; and

2. A demonstration that the discharger's chosen combination of trash management, treatment, and institutional controls achieves full capture system equivalency.

DON'T TRASH CALIFORNIA

www.dot.ca.gov

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Other Prohibitions - Don't Violate the Plans or Permits

Order p. 24

IV.B.4. All of the following discharges are prohibited:

b. Treatment chemicals except as authorized in Attachment F and G;


c. Wastewater from washout or cleanout of areas, structures or equipment with concrete, grout, stucco, paint or other construction materials;

d. Form-release oils and curing compounds;

e. Fuels, oils, fluids, or other materials used in vehicle and equipment operation and maintenance;

f. Soaps, solvents, or detergents (e.g., used in vehicle equipment washing or external building wash down); and

g. Toxic or hazardous substances (e.g., asbestos, lead, mercury, or PCBs).



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Limitations & Standards





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Module 1 – Page 22



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Order p. 25

## Permit Effluent Limits

**IV.C. Effluent Limitations and Action Levels**

**IV.C.1. Narrative Effluent Limitations**

**IV.C.1.a.** Stormwater discharges and authorized non-stormwater discharges regulated by this General Permit shall not contain a hazardous substance equal to or in excess of reportable quantities established in 40 Code of Federal Regulations §§ 117.3 and 302.4, unless a separate NPDES Permit has been issued to regulate those discharges.

**IV.C.1.b.** Dischargers shall minimize or prevent pollutants in stormwater discharges and authorized non-stormwater discharges through the use of controls, structures, and management practices set forth in the order and attachments of this General Permit that achieve best available technology (BAT) for toxic and non-conventional pollutants and best conventional technology (BCT) for conventional pollutants.

**IV.C.2. Numeric Effluent Limitations<sup>10</sup>**

**IV.C.2.a.** All dischargers implementing active treatment systems are subject to the numeric effluent limitations required in Attachment F.

**IV.C.2.b.** All dischargers that are Responsible Dischargers for a TMDL with a waste load allocation that was translated into a TMDL-related numeric effluent limitation, are subject to the numeric effluent limitations as indicated by Table H-2 in Attachment H.

**Appendix B Definition for Numeric Effluent Limitation (NEL)**

Numeric effluent limitation is a technology-based or water quality-based limit (e.g., pH range, turbidity value, or concentration) established for discharges covered under this General Permit. The numeric effluent limitation compliance location(s) applies to each sample and/or discharge location at the point of discharge from an active treatment system if applicable.

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Order p. 27

## Permit Action Levels

**Table 1. Numeric Action Levels, Test Methods, Detection Limits, and Reporting Units**

Parameter	Test Method	Discharger Type	Method Detection Limit	Units	Numeric Action Level
TMDL-Related Pollutant	U.S. EPA-approved test method for specific pollutant parameter	Responsible Dischargers	Depends on the test method	mg/L	Refer to Table H-2 in Attachment H
pH	Field test with calibrated portable instrument using EPA approved procedures	Risk Level 2 and 3 Risk Type 2 and 3	0.2	pH Units	Lower Value= 6.5 Upper Value= 8.5
Turbidity	EPA 0180.1 and/or field test with calibrated portable instrument	Risk Level 2 and 3 Risk Type 2 and 3	1	NTU	250

**Appendix B Definition for Numeric Action Level (NAL)**

A numeric action level (e.g., a pH range, turbidity value, or concentration) is a level that triggers a required evaluation of the effectiveness of best management practices implemented on the subject construction site, and the required implementation of additional corrective actions necessary to reduce the subject pollutant below the numeric action level. The numeric action level compliance location applies to each sample location and/or corresponding discharge location.

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Order p. 28

## Are You a “Responsible Discharger”?

*It doesn't mean what you think!*

**Appendix B Definition for Responsible Discharger**

Responsible dischargers are dischargers who:

- Discharge stormwater and authorized non-stormwater directly, or through a municipal separate sewer system (MS4) or other conveyance, to impaired water bodies or watersheds identified in a U.S. EPA-approved TMDL with a waste load allocation assigned to construction stormwater sources; and
- Have identified, through the site-specific pollutant source assessment, that one or more pollutants specific to the TMDL are present on-site with the potential to enter construction stormwater discharges.

**Responsible Dischargers shall comply with the applicable requirements in Attachment H of the Construction General Permit.**

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Other Regulations & Permit

- The Regional Water Quality Control Board's Basin Plan
- The Water Board's Ocean Plan
- The Water Board's 401 Water Quality Certification
- The U.S. Army Corps of Engineers 404 Nationwide Dredge / Fill Permit
- The Dept. of Fish & Wildlife Section 1600 Permit
- Regional Water Board non-storm water NPDES permits
- The local air district dust control plan requirements
- The local municipal ordinances and code

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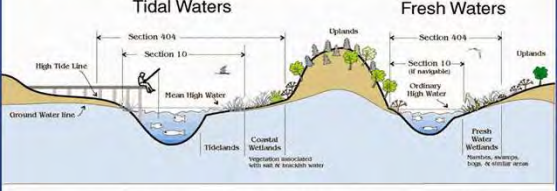
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401 / 404 Permits ... when are they needed?

CORPS OF ENGINEERS REGULATORY JURISDICTION

Tidal Waters

Fresh Waters



Section 103  
Ocean Disposal  
of Dredged Material

Section 404  
Discharge of Dredged or Fill Material  
(all waters of the U.S.)

Section 10  
All Structures and Work  
(navigable waters)

Typical examples  
of regulated activities

Ocean discharge of  
dredged material

All filling activities, utility lines, coastal structures,  
port crossings, beach nourishment, dredging,  
jettying, some recreation activities, etc.

Dredging, marinas, piers, wharves,  
roads, dikes / outfall pipes,  
pumps, bulkheads, dams, fills,  
overhead transmission lines, etc.

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The Laws & Enforcement

Who's going to make me do it?

The Law	Enforcing Agency	Likelihood to be Inspected	Potential Penalties
The Clean Water Act	USEPA	About the same as getting hit by lightning	<ul style="list-style-type: none"><li>• Civil: \$37,500/day/violation</li><li>• Criminal: up to 15 years in prison</li></ul>
California Water Code	CalEPA / State Water Board	40 – 60% probability	<ul style="list-style-type: none"><li>• Mandatory minimum penalties of \$3,000</li><li>• \$10,000/day/violation or</li><li>• \$10/gallon of contaminated water</li><li>• Criminal prosecution</li></ul>
Municipal Code	Local municipality	90% probability	<ul style="list-style-type: none"><li>• Code penalties ranging from \$100 to \$2,500</li></ul>
The Clean Water Act	Public / NGO	Random, but increasing in occurrences	<ul style="list-style-type: none"><li>• Settlements ranging from \$5,000 to \$100,000 or more</li></ul>

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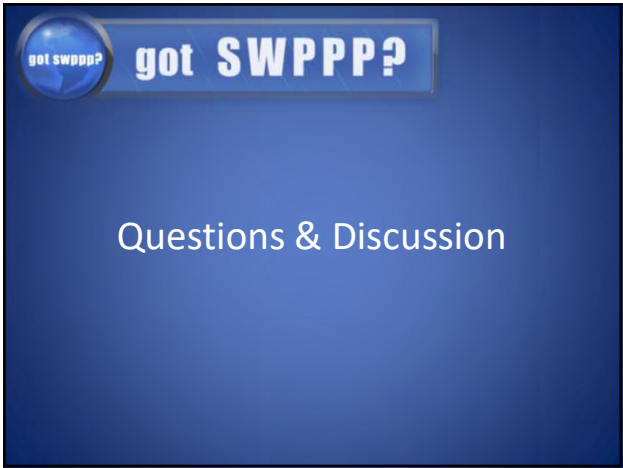
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# QSD/QSP Training



*Schedule (approximate times):*

Day 1 – For QSPs and QSDs

- Module 1 8:00 – 10:30 AM
- **Module 2 10:45 – 12:00 PM**
- Lunch 12:00 – 1:00 PM
- Module 3 1:00 – 4:30 PM

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# QSD/QSP Training

*Module 2*

*Erosion Theory*

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got SWP

Erosion can be beautiful



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got swPPP?

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But not on your project!

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What is Erosion?

Soil erosion is the process by which soil particles become **detached** by water, wind, or gravity and are transported from their original location.



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Geologic Erosion

- Natural process
- Can be beneficial
- Tempered by natural forces
- Typically causes little damage



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Accelerated Erosion

= natural erosion + human activities



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Erosion Accelerators

- Removal of surface cover
- Increased imperviousness
- Exposure of more erodible soil
- Uncontrolled offsite runoff flowing through disturbed areas



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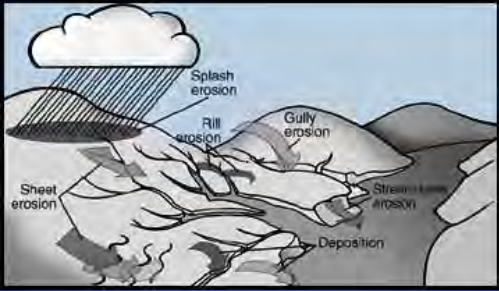
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Erosion Processes



Source: extension.missouri.edu

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What is Sedimentation?

Sedimentation is the **deposition** of the eroded material.



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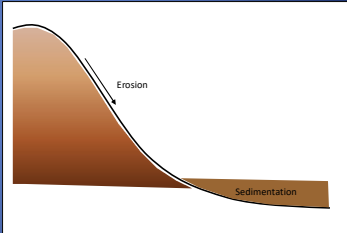
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What is Sedimentation?

Sedimentation is the **deposition** of the eroded material.



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Erosion Processes



Source: The United States Department of Agriculture Forest Service, 1948

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The BMP Tool Box



Sediment Control Tools

Table 3-2 Temporary Sediment Control BMPs

BMP#	BMP Name
SE-1	Silt Fence <sup>a</sup>
SE-2	Sediment Basin <sup>a</sup>
SE-3	Sediment Trap
SE-4	Check Dam <sup>a</sup>
SE-5	Fiber Rolls <sup>a</sup>
SE-6	Gravel Bag Berm <sup>a</sup>
SE-7	Street Sweeping and Vacuuming
SE-8	Sandbag Barrier <sup>a</sup>
SE-9	Straw Bale Barrier
SE-10	Storm Drain Inlet Protection <sup>a</sup>
SE-11	Active Treatment Systems <sup>a</sup>
SE-12	Temporary Silt Dike <sup>a</sup>
SE-13	Compost Socks and Berms <sup>a</sup>
SE-14	Biofilter Bags <sup>a</sup>
WE-1	Wind Erosion Control <sup>b</sup>
TC-1	Stabilized Construction Entrance/Exit
TC-2	Stabilized Construction Roadway
TC-3	Entrance/Outlet Tire Wash

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The BMP Tool Box



Question:  
Which tool should you reach for first?

Answer: Erosion Control BMPs

- Keep the soil in place
- An ounce of prevention is worth a pound of cure!

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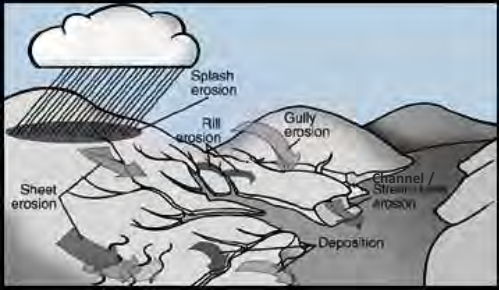
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Types of Erosion



Source: extension.missouri.edu

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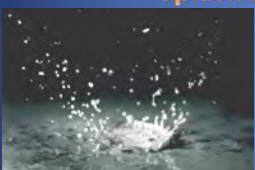
Module 2 – Page 7



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Splash Erosion



Rain drops strike bare soil directly at 5 – 20 mph!

- Detaches soil particles
- Particles can then be transported by the action of water or wind

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got **SWPPP?**



Splash Erosion



- Primary source of erosion
- Often imperceptible
- Indicators include: pedestals, stains, & graveling or lag
- Splash detachments carry away fine soil particles
- Protect against splash erosion with soil stabilization tools

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Sheet Erosion



- The removal of a uniform thin layer of soil by splash erosion
- Surface film of water is 1/16" to 1/8" deep
- May go unnoticed even though large quantities of soil is leaving the site
- Leads to the formation of rills and gullies

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got swppp?

got SWPPP?

The BMP Tool Box


Control Erosion

Prevent Contamination

Reduce Sediment

Rill Erosion

- Shallow surface flows that become condensed
- Well defined tiny channels, small enough to step across
- Often end part way up the slope
- Increased velocity and turbulence
- Rill erosion is as much as 100x that of sheet erosion



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got swppp?

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The BMP Tool Box


Control Erosion

Prevent Contamination

Reduce Sediment

Rill Erosion

- Make sure to note where the rills are starting. They give a clue to the real problem.
- Will need to add another tool from our BMP tool box – Runoff Control BMPs



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got **SWPPP?**




The 400' Test Box

Control Erosion  
Control Sediment  
Control Pollution

### Gully Erosion

- The accumulation of runoff from rills and sheet flow into concentrated flow paths
- Large deep cuts, too big to step across, many times big enough to stand in
- 100x the erosion of rills
- Add sediment control to the mix of tools



Remember, rill and gully erosion are symptoms, not the problem!

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got **SWPPP?**




The 400' Test Box

Control Erosion  
Control Sediment  
Control Pollution

### Channel Erosion

- Results from increased volume, velocity, and duration of the flow
- Primarily from increased impervious surfaces



USGS

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### Channel Erosion



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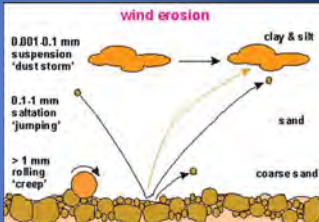
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### got SWPPP?

### Wind Erosion

- Depending on wind velocity and particle size, soil particles can move by:
  - Saltation,



**SALTATION:** Movement of particles by a series of short bounces along the surface of the ground, and dislodging additional particles with each impact. The bouncing particles ranging in size from 0.1 to 0.5 mm usually remain within 30 cm of the surface. Depending on conditions, this process accounts for 50 to 90% of the total movement of soil by wind.

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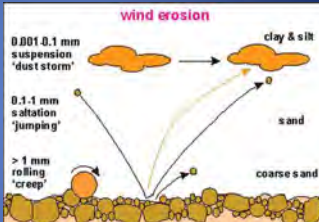
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### got SWPPP?

### Wind Erosion

- Depending on wind velocity and particle size, soil particles can move by:
  - Saltation,
  - Soil creep,



**SOIL CREEP:** The rolling and sliding of larger soil particles along the ground surface. The movement of these particles is aided by the bouncing impacts of the saltating particles described above. Soil creep can move particles ranging from 0.5 to 1 mm in diameter, and accounts for 5 to 25% of total soil movement by wind.

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got swppp?

got SWPPP?

The 60/60 Soil Box

Control  
Soil  
Erosion

Prevent  
Control  
Sediment

Reduce  
Control  
Sediment

Wind Erosion

- Depending on wind velocity and particle size, soil particles can move by:
  - Saltation,
  - Soil creep, and
  - Suspension.

wind erosion

0.001-0.1 mm suspension 'dust storm'

0.1-1 mm saltation 'jumping'

> 1 mm rolling 'creep'

clay & silt

sand

coarse sand

SUSPENSION: Fine particles less than 0.1 mm in size are moved parallel to the surface and upward into the atmosphere by strong winds. The most spectacular of erosive processes, these particles can be carried high into the atmosphere, returning to earth only when the wind subsides or they are carried downward with precipitation. Suspended particles can travel hundreds of miles.

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got swppp?

got SWPPP?

The 60/60 Soil Box

Control  
Soil  
Erosion

Prevent  
Control  
Sediment

Reduce  
Control  
Sediment

Wind Erosion

Wind Erosion Equation (WEQ):

Wind erosion equation (WEQ). An erosion model designed to predict long-term average annual soil losses from a field having specific characteristics. [NAM-88]

WEQ is  $E = f(KICLV)$ , where:

- E = Estimated average annual soil loss expressed in tons per acre per year
- I = Soil erodibility factor
- K = Soil ridge roughness factor
- C = Climatic factor
- L = Equivalent unsheltered distance across the field along the prevailing wind erosion direction
- V = Equivalent vegetative cover

Source: USDA National Agronomy Manual (NAM)

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got swppp?

got SWPPP?

The 60/60 Soil Box

Control  
Soil  
Erosion

Prevent  
Control  
Sediment

Reduce  
Control  
Sediment

Wind Erosion Control

- Reduce wind speed on the soil surface
  - Cover stockpiles
  - Change stockpile orientation and shape
  - Scarify the soil surface
- Form a new, less erodible soil surface
  - Spray water to compact and weight soil particles
  - Apply a chemical dust suppressant or soil binder
  - Establish vegetation

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Erosion Pop Quiz



Type of Erosion:  
A - Splash  
B - Sheet  
C - Rill  
D - Gully  
E - Channel

Tools Needed:

The 600" Tool Box

Erosion Control Matting

Perforated Geotextile Fabric

Stabilization Matting

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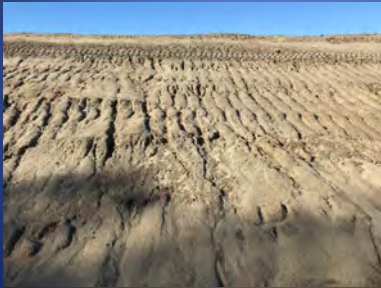
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Erosion Pop Quiz



Type of Erosion:  
A - Splash  
B - Sheet  
C - Rill  
D - Gully  
E - Channel

Tools Needed:

The 600" Tool Box

Erosion Control Matting

Perforated Geotextile Fabric

Stabilization Matting

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Erosion Pop Quiz



Type of Erosion:  
A - Splash  
B - Sheet  
C - Rill  
D - Gully  
E - Channel

Tools Needed:

The 600" Tool Box

Erosion Control Matting

Perforated Geotextile Fabric

Stabilization Matting

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got **SWPPP?**


Erosion Pop Quiz



Type of Erosion:

- A - Splash
- B - Sheet
- C - Rill
- D - Gully
- E - Channel

Tools Needed:



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got **SWPPP?**


Erosion Pop Quiz



Type of Erosion:

- A - Splash
- B - Sheet
- C - Rill
- D - Gully
- E - Channel

Tools Needed:



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got **SWPPP?**

Erosion Prediction

This helps to identify:

1. Factors that affect erosion
2. Benefits of good site planning of temporary and permanent erosion control
3. Risk Assessment when submitting PRDs (Module 7 for QSDs)
4. Evidence of site soil stabilization when applying for a NOT (Module 8 for QSDs)

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got **SWPPP?**

**Erosion Prediction**

- Estimates average annual acre tons of soil loss (A)
- Usually expressed as the average soil loss for the entire site, soil loss for various parts of the site may vary greatly
- Do not confuse with Sediment Yield!
- Apply erosion prediction when:
  - Planning temporary and permanent erosion control measures,
  - Sizing sediment controls, and
  - Comparing pre and post construction erosion rates.

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**Sediment Yield**

- Do not confuse with erosion, the terms are not interchangeable
- It is the amount of eroded soil that settles out at a specific point, in the watershed, that is remote from the origin of the detached particles
- Includes erosion from slopes, channels, and mass wasting minus sediment deposited before reaching the point of interest
- Calculate sediment yield to size sediment control measures

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**Erosion Prediction**

- RUSLE
$$A=R \times K \times LS \times C \times P$$
- Annual (or a portion of a year)
- Only includes the following forms of erosion:
  - Raindrop
  - Sheet
  - Rill

**Sediment Yield**

- MUSLE
$$T=95(V \times Q_p)^{0.56} \times K \times LS \times C \times P$$
- Storm event specific
- All forms of erosion minus what had already settled out

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**Prediction Tools**

Models available to predict erosion include:

- Universal Soil Loss Equation (USLE)
- Revised Universal Soil Loss Equation (RUSLE)

Models available to predict sediment yield include:

- Modified Universal Soil Loss Equation (MUSLE)

The following can do both:

- RUSLE<sub>2</sub>

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got **SWPPP?**

*RUSLE - Revised Universal Soil Loss Equation ...*

**A = (R) (K) (LS) (C) (P)**

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got **SWPPP?**

*RUSLE - Revised Universal Soil Loss Equation ...*

**A = (R) (K) (LS) (C) (P)**

A = **Average Annual Acre Tons** of soil loss  
R = Rainfall runoff erosivity factor  
K = Soil erodibility factor which represents both susceptibility of soil to erosion and the rate of runoff  
LS = A function of the:  
    Slope length, representing the effect of slope length on erosion  
    The slope steepness, representing the effect of slope steepness on erosion  
C = Cover management factor  
P = Erosion control practice factor

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got swppp?

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Rainfall Erosivity (R) Factor:

When factors other than rainfall are held constant, soil loss is directly proportional to the energy of the rainfall. **Need to know the start and ending dates and the location.**



<https://lew.epa.gov/>

The USEPA calculator will only calculate for a 1-year maximum length.

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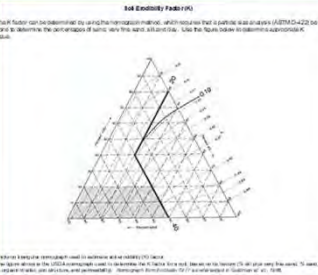
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got swppp?

got SWPPP?

Soil Erodibility (K) Factor:

The soil loss rate per erosion index unit for a specified soil.



Environmental Protection Agency, American Society for Testing and Materials (ASTM) Standards, [https://www.epa.gov/sites/default/files/2020-01/documents/sedc\\_2004-2005\\_append.pdf](https://www.epa.gov/sites/default/files/2020-01/documents/sedc_2004-2005_append.pdf) [as of June 22, 2022]

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got swppp?

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Soil Erodibility (K) Factor:

The soil loss rate per erosion index unit for a specified soil.



<http://websoilsurvey.nrcs.usda.gov/app/HomePage.htm>

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got swppp?

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Soil Erodibility (K) Factor:  
The soil loss rate per erosion index unit for a specified soil.



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got swppp?

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Slope Length & Slope Steepness (LS) Factor:  
A factor of soil loss as a function of the average field slope length and steepness.

**LS Factors:**

Sheet Flow Length (ft)	0.2	5.5	5.9	10.0	20.0	30.0	40.0	50.0	60.0
43	0.05	0.07	0.23	0.35	0.41	0.48	0.53	0.58	0.63
8	0.05	0.07	0.23	0.37	0.56	0.72	0.85	0.97	1.08
9	0.05	0.07	0.23	0.38	0.67	0.91	1.13	1.31	1.44
12	0.05	0.07	0.23	0.38	0.91	1.06	1.33	1.62	1.88
15	0.05	0.07	0.23	0.40	0.84	1.28	1.59	1.91	2.19
25	0.05	0.07	0.31	0.57	1.24	1.86	2.41	2.91	3.36
30	0.05	0.08	0.40	0.91	2.10	3.27	4.38	5.36	6.31
75	0.05	0.08	0.58	1.20	2.86	4.44	5.89	7.20	8.31
100	0.05	0.09	0.68	1.40	3.57	5.56	7.44	9.13	10.68
150	0.05	0.09	0.86	1.92	4.85	7.70	10.35	12.75	14.88
200	0.06	0.10	1.02	2.34	6.04	9.67	13.07	16.36	18.93
250	0.06	0.10	1.16	2.72	7.16	11.55	15.67	19.42	22.38
300	0.06	0.10	1.28	3.09	8.23	13.35	18.17	22.57	26.01
400	0.06	0.11	1.51	3.75	10.24	16.77	22.95	28.60	33.43
500	0.06	0.12	1.91	4.95	13.94	23.14	31.88	39.95	47.16
600	0.06	0.12	2.25	6.03	17.35	29.07	40.29	50.61	59.19
1000	0.06	0.13	2.95	7.92	25.57	34.71	48.29	60.64	72.11

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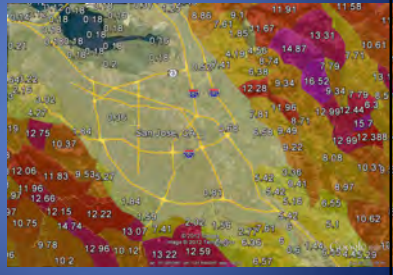
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got swppp?

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Slope Length & Slope Steepness (LS) Factor:  
A factor of soil loss as a function of the average field slope length and steepness.



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got SWPPP?

### Cover (C) Factor:

Reflects the effect of plant cover and management practices on erosion rates. It is used to compare the relative impacts of management options on conservation plans.

Table-7

COVER INDEX FACTOR C<sub>i</sub>  
CONSTRUCTION SITES


TYPE OF COVER	FACTOR C <sub>i</sub>	%*	
None (fallow ground)	1.0	0.0	
Temporary Seedings (90% Stand):			
Ryegrass (perennial type)	0.05	95	
Ryegrass (annuals)	0.1	90	
Small grain	0.05	95	
Millet or sudan grass	0.05	95	
Field bromegrass	0.03	97	
Permanent Seedings (90% stand)	0.01	99	
Sod (laid immediately)	0.01	99	
Mulch:			
Hay rate of application tons per acre:			
1/2	0.25	75	
1	0.13	87	
1-1/2	0.07	92	
2	0.02	98	
Small grain straw	2	0.02	98
Wood chips	6	0.06	94
Wood cellulose	1-3/4	0.1	90
Fiberglass	1/2	0.05	95
Asphalt emulsion (1250 gals/acre)	0.02	98	

Fiber matting, excelsior, gravel and stone may also be used as protective cover.

\*Percent soil loss reduction as compared with fallow ground.

USDA NRCS Davis, CA. Guides for Erosion & Sediment Control, 1991

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### Erosion Control Practice (P) Factor:

The ratio of soil loss with certain conservation practices compared to that of no practice.

Table-8

PRACTICE FACTOR P<sub>i</sub> OR SURFACE CONDITION FOR CONSTRUCTION SITES

SURFACE CONDITION WITH NO COVER	FACTOR P <sub>i</sub> *
Compact and smooth, scraped with bulldozer or scraper (up and down hill)	1.3
Same condition except raked with bulldozer root rake up and down hill	1.2
Compact and smooth, scraped with bulldozer or scraper across the slope	1.2
Same condition except raked with bulldozer root rake across the slope	0.9
Loose as a dried plow layer	1.0
Rough (irregular surface equipment tracks in all directions)	0.9
Loose with rough surface greater than 12" depth	0.8
Loose with smooth surface greater than 12" depth	0.9


\*Values based on estimate.

Table 1 Erosion Management Factors

Erosion Control Treatment	C Factor	P Factor
Bare Soil	1.00	1.00
Grassed Bare Soil	1.00	0.70
Softwood Bark Chips	1.00	0.50
Straw Bale Barrier	1.00	0.40
30 FPM Barrier	1.00	0.50
Asphalt Concrete Pavement	0.50	1.00
Compact Gravel Layer	0.50	0.50
Superficial Heavy Duty Storm Drainage	0.50	0.50
Soil Gravel	0.01	1.00
Agriculture Crop	0.40	1.00
Forest Control Barriers	0.001 to 0.003	1.00
Turf Reinforcement Mats	0.001 to 0.003	1.00

USDA NRCS Davis, CA. Guides for Erosion & Sediment Control, 1991

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### Risk Determination is a Two Step Process:

- First Half of the Risk Determination factor – Sediment Discharge Risk
  - Calculate soil loss using the RUSLE equation
- A = (R) (K) (LS); (c) & (P) both = 1

Watershed Erosion Estimate (tons/acre) = R x K x LS =

Watershed Erosion Estimate (tons/acre)	Site-Specific Sediment Risk
Less than 15 tons/acre	Low
Greater than or equal to 15 tons/acre and less than 75 tons/acre	Medium
Greater than or equal to 75 tons/acre	High

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## ***Risk Determination is a Two Step Process:***


- First Half of the Risk Determination factor – Sediment Discharge Risk
  - Calculate soil loss using the RUSLE equation
  - **A = (R) (K) (LS) (C) (P)**
- ***Second Half*** of the Risk Determination factor – Receiving Water Risk
  - Sediment sensitive water; 303(d) listed or TMDL for sediment-related pollutant; or beneficial Uses of COLD, SPAWN, and MIGRATORY

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# got SWPPP?

## Receiving Water Risk Determination:



The map shows a red-shaded area in the San Jose, CA region, indicating a high risk of sediment runoff. The area is labeled 'San Jose, CA' and 'San Jose River'. The map is a Google Earth satellite view with a red overlay indicating the risk area. The text 'got swppp?' is in a blue circle on the left, and 'got SWPPP?' is in a blue box at the top. The title 'Receiving Water Risk Determination:' is in white text on a blue background.

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**got SWPPP?**

## Receiving Water Risk Determination:

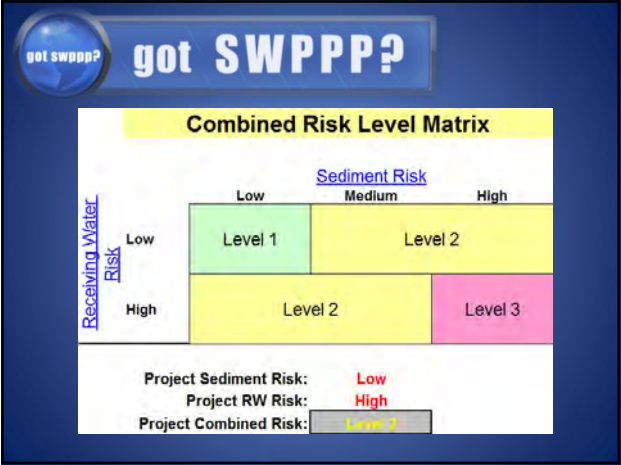
COUNTY	AOB	MEN	FRESH	OTHER	PND	PND-C	CONDM	DREL	COLD	EST	SALT	SALT	RABR	SPIN	WARM	WILD	BIC-1	BIC-2	NAB
Waterbody																			
Burrett Canyon Creek																			
Coyote Creek				E					E				E	E	E	H		P	E
Lower Penitencia Creek																			
Berryessa Creek																			
Upper Penitencia Creek																			
Cherry Flat Reservoir	E	E													E	H		L	E
Arroyo Aguajere Creek																			
Halls Valley Reservoir																			
Silver Creek															E	E		H	E
Fremont Lagoon																			
Sandy Wood Lake									E						E	E			E
Cotton Wood Lake															E	E			E
Anderson Lake				E		E													
San Felipe Creek									P						P	E		E	P
Ora Canyon Creek																			
Coyote Lake																			
Soda Springs Canyon Creek	E	E							E						E	H		H	E

**SANTA CLARA BASIN**

E: Existing beneficial use    L: Limited beneficial use    P: Potential beneficial use

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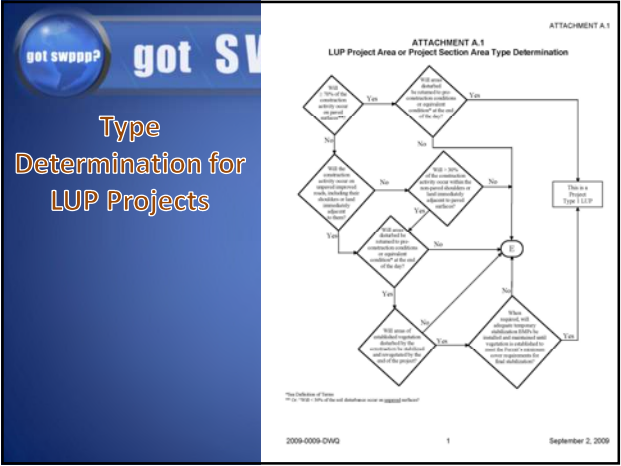
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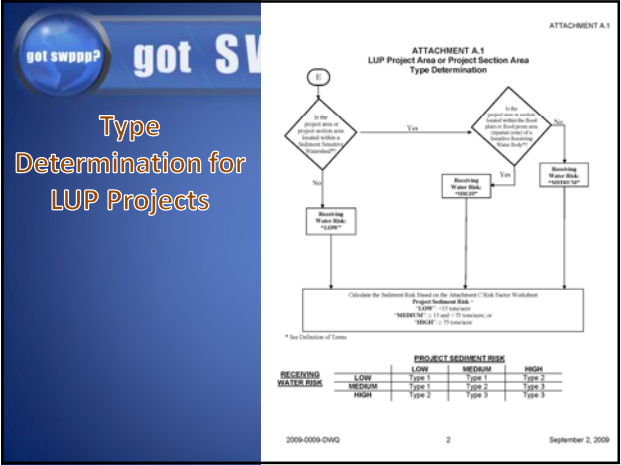
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got **SWPPP?**

Estimating Gross Erosion

Gross Erosion =  
Sheet and Rill Erosion (RUSLE) + Other Erosion

- Calculate Sheet and Rill Erosion using RUSLE (average annual acre tons)
- Other Erosion is soil loss (annual tons) from gullies, channels, or other areas of concentrated flow.

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Estimating Gross Erosion

Soil Texture Class	Dry Density (lbs./ft³)
clay	70 – 95
silty clay, silty clay loam	75 – 100
sandy clay, loam, sandy loam	80 – 105
clay loam, silt loam	85 – 100
sandy clay loam, loamy sand, sand	95 - 110

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got **SWPPP?**

Erosion Prediction Problem #1

- A new residential development is going to be built in Lockeford, California (38.16618, -121.14306)
- The project will disturb 42 acres.
- The project will last from Jan. 1 - Dec. 31, 2023
- The average slope is 2% and the average slope length is 300 feet.
- The entire site will be grubbed and rough graded at the beginning of the project.

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got **SWPPP?**

**Erosion Prediction Problem #1**  
How much soil will be eroded from the entire site during the course of the project?

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got **SWPPP?**

**Erosion Prediction Problem #1**  
*RUSLE - Revised Universal Soil Loss Equation ...*  
**A = (R) (K) (LS) (C) (P)**  
A = Average Annual Acre Tons of soil loss  
R = Rainfall runoff erosivity factor  
K = Soil erodibility factor which represents both susceptibility of soil to erosion and the rate of runoff  
LS = Slope length and steepness function  
C = Cover management factor  
P = Erosion control practice factor

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got **SWPPP?**

**Erosion Prediction Problem #1**  
To find **R**:

Facility Information

Start Date: 12/01/2022	Latitude: 36.1000
End Date: 12/31/2022	Longitude: -121.8533

Calculation Results

Rainfall erosivity factor (R Factor) = **46.6**

A rainfall erosivity factor of 5.0 or greater has been calculated for your site's period of construction. You do NOT qualify for a waiver from NPDES permitting requirements and must seek Construction General Permit (CGP) coverage. If you are located in an area where DDA is the permitting authority, you must submit a Notice of Intent (NOI) through the NPDES e-reporting tool (NET). Otherwise, you must seek coverage under your state's CGP.

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Erosion Prediction Problem #1

To Find **K**, determine the soil type

Option 1 – Use the Websoil Survey



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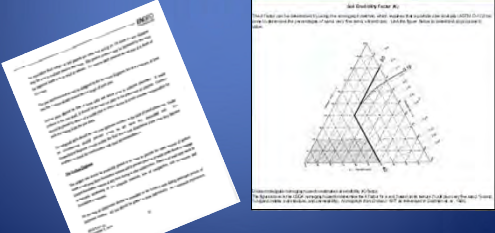
got swppp?

got SWPPP?

Erosion Prediction Problem #1

To Find **K**, determine the soil type

Option 2 – Soils Report and the Erikson Triangle



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Erosion Prediction Problem #1

To Find **K**, look up K Factor rating for that soil

Option 3 – Use the SMARTS default.



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Erosion Prediction Problem #1

To find **LS**:

Option 1 – Actual average conditions:

The average slope is 2% and the average slope length is 300 feet

Sheet Flow Length (ft)	0.2	0.5	1.0	2.0	3.0	4.0	5.0
<3	0.05	0.07	0.09	0.13	0.17	0.20	0.23
6	0.05	0.07	0.09	0.13	0.17	0.20	0.23
9	0.05	0.07	0.09	0.13	0.17	0.20	0.23
12	0.05	0.07	0.09	0.13	0.17	0.20	0.23
15	0.05	0.07	0.09	0.13	0.17	0.20	0.23
25	0.05	0.07	0.10	0.16	0.21	0.26	0.31
50	0.05	0.08	0.13	0.21	0.30	0.38	0.46
75	0.05	0.08	0.14	0.25	0.36	0.47	0.58
100	0.05	0.08	0.15	0.28	0.41	0.55	0.68
150	0.05	0.09	0.17	0.33	0.50	0.68	0.86
200	0.06	0.10	0.18	0.37	0.57	0.79	1.02
250	0.06	0.10	0.19	0.40	0.64	0.89	1.16
300	0.06	0.10	0.20	0.43	0.69	0.98	1.28
400	0.06	0.11	0.22	0.48	0.80	1.14	1.51
600	0.06	0.12	0.24	0.56	0.96	1.42	1.91
800	0.06	0.12	0.26	0.63	1.10	1.65	2.25
1000	0.06	0.13	0.27	0.69	1.23	1.86	2.55

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got swppp?


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Erosion Prediction Problem #1

To find **LS**:

Option 2 – SMARTS default:

The average slope is 2% and the average slope length is 300 feet



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got swppp?

got SWPPP?

Erosion Prediction Problem #1

Now put it together

**A = (R) (K) (LS) (C) (P)**

R = 40.6  
K = 0.37  
LS = 0.41  
C = 1.0  
P = 1.0

**A = ???** average annual acre tons

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got **SWPPP?**

**Erosion Prediction Problem #1**

Now put it together

**A = (R) (K) (LS) (C) (P)**

R = 40.6  
K = 0.37  
LS = 0.41  
C = 1.0  
P = 1.0

**A = 6.16** average annual acre tons

Soil loss for the entire site during the project =  
**A x 42 acres = 258.7 tons**

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got **SWPPP?**

**Erosion Prediction Problem #2**

How much soil will be eroded from the same site and project if they quickly hydroseed disturbed areas, covering it with blown straw and tackifier and also if they install a sediment basin/trap prior to the project's outfall?

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got **SWPPP?**

**Erosion Prediction Problem #2**

Find **C** & **P**:  
Assume bare soil

Table 1 Erosion Management Factors		
Erosion Control Treatment	C Factor	P Factor
Bare Soil	1.00	1.00
Drilled Bare Soil	1.00	0.90
Sediment Basin/Trap	1.00	0.50
Straw Bale Barrier	1.00	0.80
Silt Fence Barrier	1.00	0.50
Asphalt/Concrete Pavement	0.10	1.00
Compete/seed Gravel Layer	0.05	1.00
Established Native Grass (100% coverage)	0.03	1.00
Soil Grass	0.01	1.00
Agroecultural Crop	0.45	1.00
Erosion Control Blankets	0.002 to 0.003	1.00
Turf Reinforcement Mats	0.002 to 0.003	1.00

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got **SWPPP?**

Erosion Prediction Problem #2

Now put it together

$$A = (R) (K) (LS) (C) (P)$$

R = 40.6  
K = 0.37  
LS = 0.41  
C = 0.03  
P = 0.5

$A = ???$  average annual acre tons

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got **SWPPP?**

Erosion Prediction Problem #2

Now put it together

$$A = (R) (K) (LS) (C) (P)$$

R = 40.6  
K = 0.37  
LS = 0.41  
C = 0.03  
P = 0.5

A reduction in erosion of over 254 tons  
or 98.5%

$A = 0.09$  average annual acre tons

Soil loss for the entire site during the project =  
 $A \times 42 \text{ acres} = 3.9 \text{ tons}$

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got **SWPPP?**

Questions and Discussion?

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SWPPP Requirements

Order p. 31-32

IV.O.2. The SWPPP shall include:

a. Identification of all pollutants, their sources, and control mechanisms, including sources of sediment associated with all construction activities (e.g., sediment, paint, cement, stucco, cleaners, site erosion);

b. Pollutant source assessments, including a list of potential pollutant sources and identification of site areas where additional BMPs are necessary to reduce or prevent pollutants in stormwater and authorized non-stormwater discharges, per the following minimum requirements when developing the pollutant source assessment:

i. Consider all potential sources of pollutants, including non-visible pollutants which are known, or should be known to occur on-site including those that:

1. Are used in construction activities;

2. Are stored on-site;

3. Were spilled or released during construction activities or past land use activities and not cleaned up; and

4. Were applied to land as part of past land use activities.

ii. Consider all potential sources of pollutants associated with applicable TMDLs listed in Attachment H, and state whether or not sources of those pollutants are present on-site;

iii. Consider the quantity, physical characteristics (e.g., liquid, powder, solid), and locations of each potential pollutant exposed, source handled, produced, stored, recycled, or disposed of on-site;

iv. Consider the degree to which pollutants associated with those materials may be exposed to and mobilized by contact with stormwater; and

v. Consider the direct and indirect pathways that pollutants may be exposed to stormwater or authorized non-stormwater discharges. This shall include an assessment of past spills or leaks, non-stormwater discharges, and discharges from adjoining areas.

4

SWPPP Requirements

Order p. 32-33

c. Description of site-specific BMPs implemented to reduce or eliminate stormwater pollution, including the following, if applicable:

i. Minimum sediment and erosion control BMPs as outlined in Attachments D and E of this General Permit;

ii. Active treatment systems as included in an Active Treatment System Plan (as required in Section E.1 of Attachment F);

iii. Passive treatment technologies as included in a Passive Treatment Plan (as required in Section D.2 of Attachment G);

iv. BMPs implemented to address applicable TMDL implementation requirements (as required by Attachment H); and

v. Dewatering systems (as required by Attachment J).

d. Site-specific BMPs initiated immediately to temporarily stabilize an area disturbed by construction where construction activities will not be resumed within 14 days;

e. Identification, elimination, control, or treatment information for all non-stormwater discharges from the site not regulated by this or another NPDES permit;

f. Description of efforts and BMPs used to minimize and control pollutants discharged from equipment and vehicle washing, wheel wash water, and other wash waters. Wash waters must be captured and properly disposed of and/or treated to mitigate impacts to water quality;

g. Description of efforts and BMPs used to minimize exposure of building materials, building products, construction wastes, trash, landscape materials, fertilizers, pesticides, herbicides, detergents, sanitary waste, and other materials present on the site to precipitation and to stormwater;

h. Description of spill and leak prevention and response plan including:

i. Procedures that effectively address hazardous and non-hazardous spills in accordance with law;

ii. Spill and leak response equipment and materials to be available on-site, cleaned up immediately, and disposed of properly; and

iii. Personnel are assigned and trained for spill and leak prevention and response.

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got SWPPP?

SWPPP Basics - Elements

• Identify the WDID #, author and their credential, and that the LRP has signed the certification statement on the SMARTS system


• Call out BMPs on the plan

• Details of proper installation

• Identify run-on & run-off points for monitoring and inspection

• Provide a custom inspection checklist that meets the appropriate Risk Level / Type requirements

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got **SWPPP?**

**SWPPP Basics - Elements**

- For Risk 2 & 3 projects, the REAPs must be included in the SWPPP – **2009 Order Only**
- The SWPPP is a living document that is amended to reflect current conditions and pollutants. All amendments and updates are to be made in the SWPPP by a QSD.

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got **SWPPP?**

**SWPPP Basics - Strategies**



- Prevent storm water from flowing across the construction site (run-on diversion)
- Protect disturbed soil areas (DSAs) from erosion
- Minimize sediment in storm water before it discharges
- Prevent storm water from coming into contact with other pollutants
- Prevent non-storm water discharges

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got **SWPPP?**

**BMP Implementation & Maintenance**

We will be noting the differences between **Traditional** and **LUP** projects. The first difference is traditional projects have only one risk level (i.e., Risk Level 2), but LUP projects may have multiple types (i.e., Type 1 in one watershed and Type 3 in another watershed.)

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got swPPP?

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BMP Implementation & Maintenance

The CGP identifies 5 different BMP categories:

1. Good Site Management – “Housekeeping”

2. Non-Storm Water Management

3. Preserve Existing Topsoil

4. Erosion / Runoff Controls

5. Sediment Control

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got swPPP?

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BMP Implementation & Maintenance

Please turn to Attachment D of your CGP copy.

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Mandatory Minimum Best Management Practice Requirements

II.A. Good Site Management “Housekeeping”

II.A.1. Dischargers shall implement good site management (i.e., “housekeeping”) measures for construction materials that could potentially be a threat to water quality if discharged or exposed to stormwater. At a minimum, dischargers shall implement the following good housekeeping measures:

a. Identify and protect the products used and/or expected to be used and the end products that are produced and/or expected to be produced from exposure to stormwater. Products do not include materials and equipment that are designed to be outdoors and exposed to environmental conditions (e.g., poles, equipment pads, cabinets, conductors, insulators, bricks, roofing, and siding).



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Mandatory Minimum Best Management Practice Requirements

b. Apply BMPs to erodible stockpiled construction materials (e.g., soil, spoils, fly-ash, stucco, hydrated lime) to prevent erosion and pollutant transport;

14-day period of inactivity does not apply!



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Mandatory Minimum Best Management Practice Requirements

c. Store chemicals in watertight containers with secondary containment to prevent any spillage or leakage or store in a completely enclosed storage area;



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Mandatory Minimum Best Management Practice Requirements

d. Minimize exposure of construction materials to precipitation. Construction materials do not include materials and equipment that are designed to be outdoors and exposed to environmental conditions (e.g., poles, equipment pads, cabinets, conductors, insulators, bricks);



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Mandatory Minimum Best Management Practice Requirements

e. Implement BMPs to control the off-site tracking of sediment and loose construction and landscape materials; and



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Mandatory Minimum Best Management Practice Requirements

f. Implement BMPs to control the discharge of plastic materials and limit the use of plastic materials when more sustainable, environmentally friendly alternatives exist. Dischargers shall consider the use of plastic materials resistant to solar degradation where plastic materials are deemed necessary.



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Mandatory Minimum Best Management Practice Requirements

II.A.2. Dischargers shall implement good housekeeping measures for waste management, which, at a minimum, shall consist of the following:  
a. Minimize the discharge of pollutants from equipment and vehicle washing, wheel wash water, masonry wash waters, and other wash waters. Wash waters shall be captured and treated prior to discharge, or disposed of at a permitted facility that can accept that waste, to mitigate impacts to water quality;



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Mandatory Minimum Best Management Practice Requirements

b. Provide containment (e.g., secondary containment) of sanitation facilities (e.g., portable toilets) to prevent discharges of pollutants to the stormwater drainage system or receiving water;

c. Clean or replace sanitation facilities and inspect them regularly for leaks and spills;





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Mandatory Minimum Best Management Practice Requirements

d. Keep debris or trash in waste containers if it is subject to transport from the site by wind or runoff;

e. Cover waste disposal containers at the end of every business day and during a precipitation event;

f. Prevent discharges from waste disposal containers to the stormwater drainage system or receiving water (e.g., containers with solid bottoms and regular maintenance);



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Mandatory Minimum Best Management Practice Requirements

g. Contain and securely protect stockpiled waste material from wind and precipitation unless actively being used; and



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Mandatory Minimum Best Management Practice Requirements

h. Secure and contain concrete washout areas and other washout areas that may contain additional pollutants to minimize discharge into the underlying soil and onto surrounding areas. Washout areas shall be covered prior to and during a precipitation event.



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Mandatory Minimum Best Management Practice Requirements

II.A.3. Dischargers shall implement good housekeeping for vehicle/equipment storage and maintenance, which shall consist of the following:  
a. Contain fuel, grease, and oil to prevent them from leaking into ground, storm drains, or surface waters;  
b. Place all equipment or vehicles, which are to be fueled, maintained, and/or stored in a designated area with BMPs installed; and  
c. Clean leaks immediately and dispose of leaked materials properly in accordance with the law.



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Mandatory Minimum Best Management Practice Requirements

II.A.4. Dischargers shall implement good housekeeping for landscape materials, which shall consist of the following:  
a. Contain and protect stockpiled materials such as mulches and topsoil, or other erodible landscape materials, from wind and precipitation unless being actively used;  
b. Contain packaged landscape materials (e.g., fertilizers) when they are not being actively used;



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**Mandatory Minimum Best Management Practice Requirements**

c. Discontinue the application of any erodible landscape material at least 2 days before a forecasted precipitation event as defined in Attachment B or during periods of precipitation; and

d. Apply erodible landscape material at quantities and rates in accordance with manufacturer recommendations or based on written specifications by knowledgeable and experienced field personnel;



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**Mandatory Minimum Best Management Practice Requirements**

II.A.5. Dischargers shall implement good housekeeping measures on the construction site to control the aerial deposition of site materials and from site operations. Such particulates can include, but are not limited to, metals, nutrients, organics, sediment, other particulates, and trash.



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**Mandatory Minimum Best Management Practice Requirements**

II.A.6. Dischargers shall document all housekeeping BMPs in the SWPPP that correspond to the nature and phase of the construction activities. Construction phases at traditional land development projects include demolition and pre-development site preparation phase, grading and land development phase, streets and utilities phase, vertical construction phase, and final landscaping and site stabilization phase.



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### Mandatory Minimum Best Management Practice Requirements

## II.B. Non-Stormwater Management

II.B.1. Dischargers shall implement the following measures to control all non-stormwater discharges during construction:

- Wash vehicles in such a manner as to prevent non-stormwater discharges to surface waters or municipal separate sewer system drainage systems;
- Clean streets in such a manner as to prevent unauthorized non-stormwater discharges from reaching surface water or municipal separate sewer system drainage systems; and
- Eliminate any non-stormwater discharges not authorized in Section IV.A of this General Permit's Order.



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### **Mandatory Minimum Best Management Practice Requirements**

### II.C. Preserve Existing Topsoil

II.C.1. Dischargers shall preserve existing topsoil, unless infeasible, through the following practices:

- Stockpiling existing topsoil, or transferring topsoil to other locations, to deploy and reestablish vegetation prior to termination of coverage; and
- Stabilizing disturbed topsoil during construction.

Preserving existing topsoil is not required where the intended function of a specific area of the site dictates that the topsoil be disturbed or removed.<sup>1</sup>

<sup>1</sup> Examples may include the removal of topsoil containing invasive seedbanks, lack of space to stockpile topsoil, and sites that are designed to be highly impervious after construction with little to no vegetation intended to remain.



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### Mandatory Minimum Best Management Practice Requirements

### **ILD. Erosion Control**

**II.D.1.** Dischargers shall implement the following practices to eliminate or minimize site erosion. Erosion control BMPs (except for sprayed products) shall be available on-site or at a nearby location (e.g., common lay-down yard), year-round with trained persons able to deploy the product under the direction of the Qualified SWPPP Practitioner:

- h. Implement effective wind erosion control;
  - i. Preserve existing vegetation;
  - j. Minimize the amount of soil exposed during construction activity;
  - k. Minimize the disruption of the natural revegetation process;
  - l. Schedule earthwork to minimize the amount of disturbed area when feasible;
  - m. Immediately initiate stabilization for disturbed areas whenever earth disturbing activities have permanently ceased on any portion of the site, or temporarily ceased for a period of 14 days and will not resume for a period exceeding 14 calendar days;
  - n. Minimize erosion in areas after the storm where the inferred function of a specific area dictates that it be compacted;
  - o. Reestablish vegetation or non-vegetative erosion controls as soon as feasible;
  - p. If feasible, divert up gradient run-water from contacting areas of exposed soils disturbed by construction activities or convey run-water through the site in a manner that minimizes erosion, sediment, and perimeter controls; Run-water flowing onto a site from off-site areas may be separated from a stormwater discharge by a berm or other non-engineered construction. Run-water diversion shall occur prior to entering an area affected by construction activity, and shall be done in a manner that does not require the construction of a stormwater inlet or plastic pipe on an engineered construction channel in a manner that would require the use of plastic materials; Run-water diverted from a site's stormwater discharge is considered a stormwater discharge;
  - q. Limit the use of plastic materials from more sustainable, environmentally friendly alternatives; and
  - r. The contractor shall consider the use of plastic materials resistant to storm degradation.
- Control stormwater and non-stormwater discharges to minimize downstream channel bank erosion and sediment.
- s. Control peak flows and total volume of stormwater and authorized non-stormwater discharges to prevent channel bank streambank erosion and scour in the immediate vicinity of discharge point;




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Mandatory Minimum Best Management Practice Requirements

II.D.2. Dischargers that stabilize soil using bonded-fiber matrices, hydromulches, spray tackifiers, or other land-applied products shall:

a. Apply the product according to the manufacturer's instructions and guidance; and

b. Apply the product according to the manufacturer's guidance to allow for ample cure time and to prevent treatment chemicals from being transported by runoff.



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Mandatory Minimum Best Management Practice Requirements


II.E. Sediment Controls


II.E.1. Dischargers shall implement the following site sediment controls:

a. Establish and maintain effective perimeter controls;

b. Stabilize all construction entrances and exits to sufficiently control erosion and sediment discharges from the site; and

c. Design, install, and maintain effective sediment controls to minimize the discharge of pollutants utilizing site-specific BMPs.





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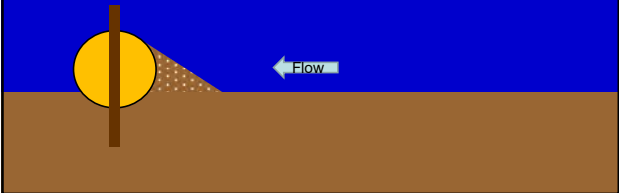
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Fiber Rolls vs. Compost Socks:

Fiber Roll



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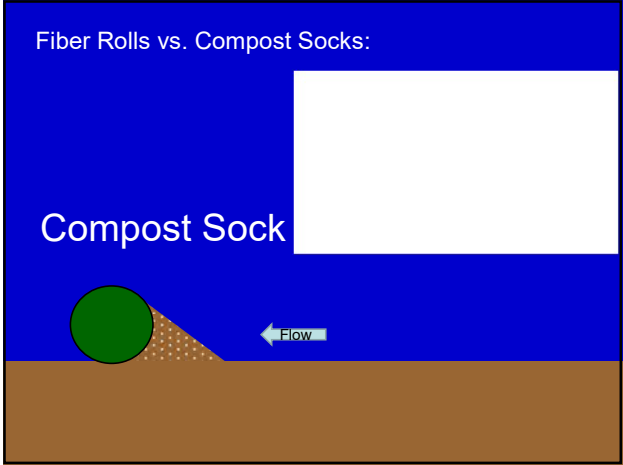
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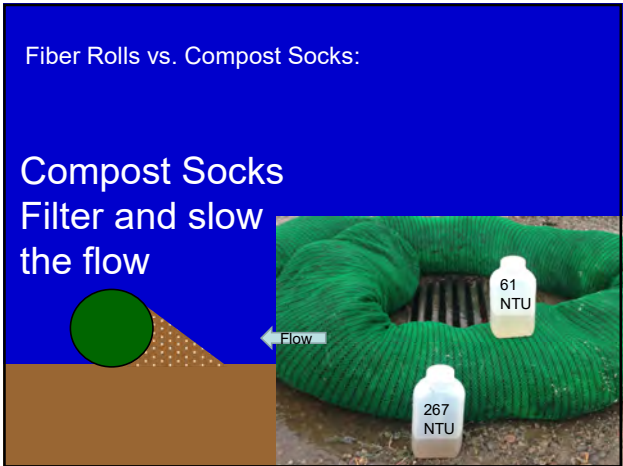
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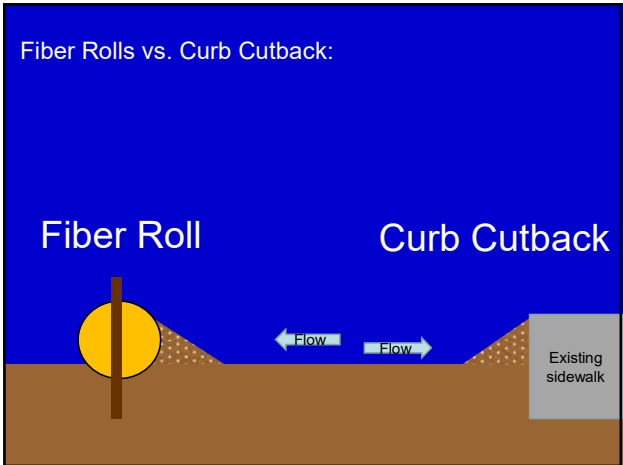
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Chain Link Perimeter Control? Not Recommended!



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Mandatory Minimum Best Management Practice Requirements

At a minimum, design sediment basins and impoundments according to the method provided in the California Stormwater Quality Association Construction BMP Handbook<sup>2</sup> and utilize outlet structures that withdraw water from the surface. Dischargers utilizing sediment basins shall complete installation prior to other land disturbance activities.





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Mandatory Minimum Best Management Practice Requirements

II.F. Additional Risk Level 2 and 3 Requirements:

II.F.1. Risk Level 2 and 3 dischargers shall implement the following additional erosion and sediment control BMPs for areas under active<sup>a</sup> construction:

a. Design and construct cut and fill slopes in a manner to ensure slope stability and to minimize erosion including, but not limited to, these practices:

i. Reduce continuous slope length using terracing and diversions;

ii. Reduce slope steepness; and

iii. Roughen slope surfaces with large cobble or track walking.





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Mandatory Minimum Best Management Practice Requirements

b. Install linear sediment controls along the toe of the slope, face of the slope, and at the grade breaks of exposed slopes according to sheet flow lengths as shown in Table 1 until the slope has reached Notice of Termination conditions for erosion protection. When infeasible to comply with Table 1 due to site-specific geology or topography, the QSD shall include in the SWPPP a justification for the use of an alternative method to protect slopes from erosion and sediment loss.

Table 1 - Critical Slope and Sheet Flow Length Combinations for Linear Sediment Reduction Barrier

Slope Ratio (Vertical to Horizontal)	Sheet flow length not to exceed
≤ 1:20	Per QSD's specification.
> 1:20 to ≤ 1:4	35 feet
> 1:4 to ≤ 1:3	20 feet
> 1:3 to ≤ 1:2	15 feet
> 1:2	10 feet



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Mandatory Minimum Best Management Practice Requirements

II.F.2. Limit construction activity traffic to and from the project to entrances and exits that employ effective controls to prevent off-site tracking of sediment.



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Mandatory Minimum Best Management Practice Requirements

II.F.3. Maintain and protect all storm drain inlets, perimeter controls, and BMPs at entrances and exits (e.g., tire wash off locations).

II.F.4. Remove any excess sediment or other construction activity-related materials that are deposited on the impervious roads by vacuuming or sweeping prior to any precipitation event.

II.F.5. Implement additional site-specific sediment controls upon written request by the Regional Water Boards when the implementation of the other requirements in this Section are determined to inadequately protect the site's receiving water(s).



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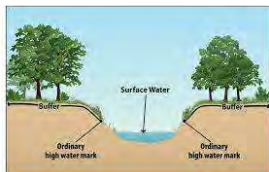
Module 3 - Page 14

### Mandatory Minimum Best Management Practice Requirements

#### II.G. Surface Water Buffer<sup>5</sup>

- II.G.1. Discharges shall provide and maintain natural buffers and/or equivalent erosion and sediment controls when a water of the U.S. is located within 50 feet of the disturbance.
- II.G.2. Discharges shall comply with one of the following alternatives for any discharge to waters of the U.S. located within 50 feet of a site or earth disturbance:
- Provide and maintain a 50-foot undisturbed natural buffer from the edge of the disturbed area to the top of the bank;
  - Provide and maintain a natural buffer that is less than 50 feet and is supplemented by erosion and sediment controls that achieve, in combination, the sediment load reduction equivalent to a 50-foot undisturbed buffer. The equivalent sediment load reduction may be achieved by RUSLE2 or another method approved by the Regional Water Board; or
  - Implement erosion and sediment controls to achieve the sediment load reduction equivalent to a 50-foot undisturbed natural buffer. The controls may provide and maintain an undisturbed natural buffer of any size that is equivalent to the sediment load may be calculated using RUSLE2 or another method approved by the Regional Water Board.

- ii. G.2. Discharges shall comply with one of the following alternatives for any discharges to waters of the U.S. located within 50 feet of a site's direct disturbances:
- a. Provide and maintain a 50-foot undisturbed natural buffer from the edge of the disturbed area to the top of bank;
  - b. Provide and maintain an undisturbed natural buffer that is less than 50 feet and is supplemented by erosion and sediment controls that achieve, in combination, the sediment load reduction equivalent to a 50-foot undisturbed natural buffer. The required sediment load reduction is calculated using RUSLE2 or another method approved by the Regional Water Board; or
  - c. Implement erosion and sediment controls to achieve the sediment load reduction equivalent to a 50-foot undisturbed natural buffer when infeasible to provide and maintain an undisturbed natural buffer of any size. The required sediment load reduction is calculated using RUSLE2 or another method approved by the Regional Water Board.



<sup>5</sup> The surface water buffer requirements apply to work above the top-of-bank or high-water level of waters of the United States. Work within a channel or altered (water body-dependent construction), Clean Water Act § 404 projects with a § 401 certification, and projects where no natural surface buffer exists (e.g., concrete channelization) are exempt from the buffer requirements. All types of in-channel work may be regulated under § 401 (Clean Water Act - Regional Requirements), § 404 (Clean Water Act - § 401/402/403/404/405/406/407/408/409/410/411/412/413/414/415/416/417/418/419/420/421/422/423/424/425/426/427/428/429/430/431/432/433/434/435/436/437/438/439/440/441/442/443/444/445/446/447/448/449/450/451/452/453/454/455/456/457/458/459/460/461/462/463/464/465/466/467/468/469/470/471/472/473/474/475/476/477/478/479/480/481/482/483/484/485/486/487/488/489/490/491/492/493/494/495/496/497/498/499/500/501/502/503/504/505/506/507/508/509/510/511/512/513/514/515/516/517/518/519/520/521/522/523/524/525/526/527/528/529/530/531/532/533/534/535/536/537/538/539/540/541/542/543/544/545/546/547/548/549/550/551/552/553/554/555/556/557/558/559/560/561/562/563/564/565/566/567/568/569/570/571/572/573/574/575/576/577/578/579/580/581/582/583/584/585/586/587/588/589/590/591/592/593/594/595/596/597/598/599/600/601/602/603/604/605/606/607/608/609/610/611/612/613/614/615/616/617/618/619/620/621/622/623/624/625/626/627/628/629/630/631/632/633/634/635/636/637/638/639/640/641/642/643/644/645/646/647/648/649/650/651/652/653/654/655/656/657/658/659/660/661/662/663/664/665/666/667/668/669/670/671/672/673/674/675/676/677/678/679/680/681/682/683/684/685/686/687/688/689/690/691/692/693/694/695/696/697/698/699/700/701/702/703/704/705/706/707/708/709/710/711/712/713/714/715/716/717/718/719/720/721/722/723/724/725/726/727/728/729/730/731/732/733/734/735/736/737/738/739/740/741/742/743/744/745/746/747/748/749/750/751/752/753/754/755/756/757/758/759/760/761/762/763/764/765/766/767/768/769/770/771/772/773/774/775/776/777/778/779/780/781/782/783/784/785/786/787/788/789/790/791/792/793/794/795/796/797/798/799/800/801/802/803/804/805/806/807/808/809/810/811/812/813/814/815/816/817/818/819/820/821/822/823/824/825/826/827/828/829/830/831/832/833/834/835/836/837/838/839/840/841/842/843/844/845/846/847/848/849/850/851/852/853/854/855/856/857/858/859/860/861/862/863/864/865/866/867/868/869/870/871/872/873/874/875/876/877/878/879/880/881/882/883/884/885/886/887/888/889/890/891/892/893/894/895/896/897/898/899/900/901/902/903/904/905/906/907/908/909/910/911/912/913/914/915/916/917/918/919/920/921/922/923/924/925/926/927/928/929/930/931/932/933/934/935/936/937/938/939/940/941/942/943/944/945/946/947/948/949/950/951/952/953/954/955/956/957/958/959/960/961/962/963/964/965/966/967/968/969/970/971/972/973/974/975/976/977/978/979/980/981/982/983/984/985/986/987/988/989/990/991/992/993/994/995/996/997/998/999/1000).

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### Mandatory Minimum Best Management Practice Requirements

## II.H. Pesticide Application

Dischargers shall only apply pesticides that have been authorized for use through California Department of Pesticide Regulation. The application of pesticides shall follow manufacturer's guidance.



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### Mandatory Minimum Best Management Practice Requirements

## II.1. Demolition of Existing Structure

Discharges shall prevent exposing demolition materials to precipitation. Demolition materials should be covered with an impermeable barrier such as, but not limited to, plastic sheeting prior to precipitation, to prevent such contaminants from being mobilized. Dischargers unable to cover demolished material that were not previously investigated or found to be absent of applicable pollutants in reportable quantities shall sample for any non-visible pollutants that may be in stormwater discharges such as, but not limited to, asbestos, leaded paint, or Poly Chlorinated Biphenyls (PCBs).



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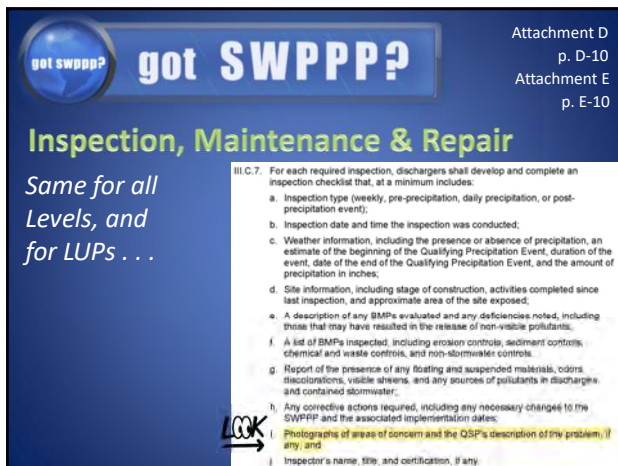
### Mandatory Minimum Best Management Practice Requirements

### II.J. Maintenance and Repair

- 4.11. Dischargers ~~shall~~ begin maintaining, repairing, and/or ~~implementing~~ implementing design changes (revising ~~alternative test~~ test have not been used yet) to BMPs within 72 hours of identification of failures at other ~~workshops~~ workshops to not complete the changes as soon as possible, prior to the next forecasted precipitation event.
- 4.12. Dischargers shall ~~have~~ use a Qualified SWPPP Practitioner (QSP) verify all BMP maintenance and repairs ~~were~~ are appropriately implemented during the next visual inspection following construction. The QSP ~~may~~ must delegate BMP maintenance and repair verification to an appropriately trained delegate.



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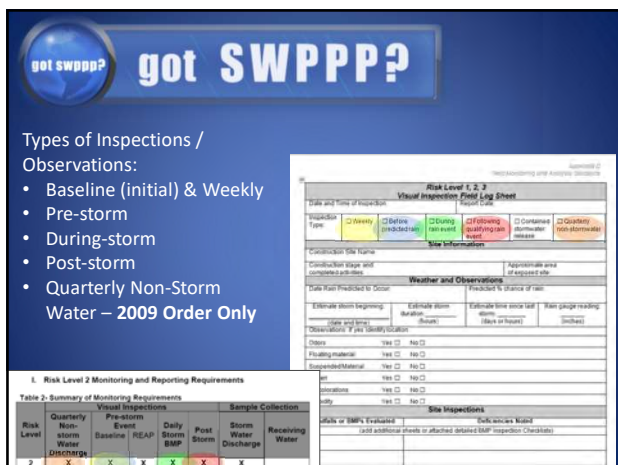
Attachment D

p. D-10

Attachment E

p. E-10

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## Types of Inspections / Observations:

- Baseline (initial) & Weekly
  - Pre-storm
  - During-storm
  - Post-storm
  - Quarterly Non-Storm
- Water – 2009 Order Only**

### 1. Risk Level 2 Monitoring and Reporting Requirements

Risk Level	Quarterly Non-storm Water Discharge	Visual Inspections				Sample Collection	
		Pre-storm Event		Daily Storm BMP	Post Storm	Storm Water Discharge	Receiving Water
		Baseline	REAP				
2	X	X	X	X	X	X	

Date and Time of Inspection		<div style="border: 1px solid black; padding: 5px; display: inline-block;"> <b>Risk Level: 1, 2, 3</b>  <b>Visual Inspection Field Log Sheet</b> </div>					
Inspection Type	<input type="checkbox"/> <b>Primary</b> <input type="checkbox"/> <b>Before scheduled work</b> <input type="checkbox"/> <b>During work</b> <input type="checkbox"/> <b>Following work on a case</b>	Site Information				<input type="checkbox"/> <b>Domestic alarm activated</b> <input type="checkbox"/> <b>Disarm</b>	
Contributing factors		Approximate area of concern					
Contributor stage and completed activities		Approximate area of concern					
Weather and Observations							
From time Predicted to Start		Predicted Service of case					
Estimated time beginning		Estimated time duration		Estimated time when alarm is heard		Time pager ringing	
Start time		Duration		Alarm		Time	
Observations (Yearly identification)							
Others	1995 CD	1995 CD	1995 CD	1995 CD	1995 CD	1995 CD	1995 CD
Frustrating incident	1995 CD	1995 CD	1995 CD	1995 CD	1995 CD	1995 CD	1995 CD
Notes	1995 CD	1995 CD	1995 CD	1995 CD	1995 CD	1995 CD	1995 CD
actions	1995 CD	1995 CD	1995 CD	1995 CD	1995 CD	1995 CD	1995 CD
1995 CD	1995 CD	1995 CD	1995 CD	1995 CD	1995 CD	1995 CD	1995 CD
Site Inspections							
<input type="checkbox"/> <b>SWR or SWR's Location</b> <input type="checkbox"/> <b>SWR location</b>				<input type="checkbox"/> <b>SWR location</b>			
<input type="checkbox"/> <b>SWR location</b>							

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got swppp?

got SWPPP?

Only for  
the 2009  
Permit

Rain Event Action Plan

- Required of Risk Levels 2 & 3, **not LUPs**
- QSP must develop a REAP 48 hours prior to any likely precipitation event. A likely precipitation event is any weather pattern that is forecast to have a 50% or greater probability of producing precipitation in the project area. The QSP must obtain a printed copy of precipitation forecast information from the National Weather Service Forecast Office entering the zip code of the project's location at <http://weather.gov>.



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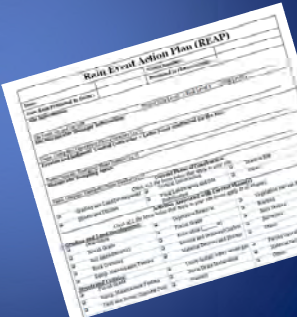
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got SWPPP?

Only for  
the 2009  
Permit

Rain Event Action Plan

- Must be in place 24 hours before storm event
- Must be done during all phases of the construction project
- Required for inactive sites
- List activities associated with that phase
- List trades which are active
- List contractor / sub-contractor information and emergency contact information
- List preventative action needed
- Keep REAP copies in the SWPPP



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QSD/QSP Training



*Schedule (approximate times):*  
Day 2 – For QSPs and QSDs  
• Practicum 8:00 – 9:30 AM  
• Module 4a 9:30 – 12:00 PM  
• Lunch 12:00 – 1:00 PM  
• Module 4b 1:00 – 3:30 PM  
• Module 5 3:30 – 4:30 PM

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got **SWPPP?**

Questions from Yesterday

*RUSLE - Revised Universal Soil Loss Equation ...*

**A = (R) (K) (LS) (C) (P)**

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got **SWPPP?**

*RUSLE - Revised Universal Soil Loss Equation ...*

**A = (R) (K) (LS) (C) (P)**

A = Average Annual Acre Tons of soil loss  
R = Rainfall runoff erosivity factor  
K = Soil erodibility factor which represents both susceptibility of soil to erosion and the rate of runoff  
LS = A function of the:  
    Slope length, representing the effect of slope length on erosion  
    The slope steepness, representing the effect of slope steepness on erosion  
C = Cover management factor  
P = Erosion control practice factor

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Rainfall Erosivity (R) Factor:  
When factors other than rainfall are held constant, soil loss is directly proportional to the energy of the rainfall.

**Need to know start date, end date, and location.**  
**Size is not a factor!**



<https://lew.epa.gov/>

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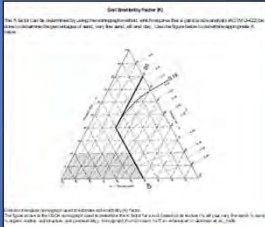
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got swPPP?

got SWPPP?

Soil Erodibility (K) Factor:  
The soil loss rate per erosion index unit for a specified soil.



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Soil Erodibility (K) Factor:  
The soil loss rate per erosion index unit for a specified soil.



<https://websoilsurvey.sc.egov.usda.gov/>

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Soil Erodibility (K) Factor:  
The soil loss rate per erosion index unit for a specified soil.



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Slope Length & Slope Steepness (LS) Factor:  
A factor of soil loss as a function of the average field slope length and steepness.

**LS Factors:**

Average Undersaturated Slope (%)												
Slope Length (ft)	0.5	0.8	1.0	1.5	2.0	2.5	3.0	4.0	5.0	6.0	8.0	10.0
10	0.05	0.07	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55
20	0.05	0.07	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55
30	0.05	0.07	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55
40	0.05	0.07	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55
50	0.05	0.07	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55
60	0.05	0.07	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55
70	0.05	0.07	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55
80	0.05	0.07	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55
90	0.05	0.07	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55
100	0.05	0.07	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55
120	0.05	0.07	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55
140	0.05	0.07	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55
160	0.05	0.07	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55
180	0.05	0.07	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55
200	0.05	0.07	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55
250	0.05	0.07	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55
300	0.05	0.07	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55
350	0.05	0.07	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55
400	0.05	0.07	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55
450	0.05	0.07	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55
500	0.05	0.07	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55
550	0.05	0.07	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55
600	0.05	0.07	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55
650	0.05	0.07	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55
700	0.05	0.07	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55
750	0.05	0.07	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55
800	0.05	0.07	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55
850	0.05	0.07	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55
900	0.05	0.07	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55
950	0.05	0.07	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55
1000	0.05	0.07	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55

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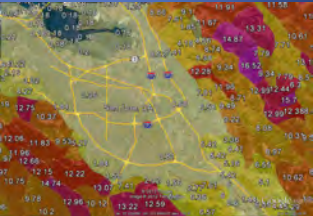
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Slope Length & Slope Steepness (LS) Factor:  
A factor of soil loss as a function of the average field slope length and steepness.



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## Cover (C) Factor:

Reflects the effect of plant cover and management practices on erosion rates. It is used to compare the relative impacts of management options on conservation plans.

Table 7  
COVER INDEX FACTOR  $C_p$   
CONSTRUCTION SITES

TYPE OF COVER	FACTOR $C_p$	%*	
None (fallow ground)	1.0	0.0	
Temporary Seedings (90% Stand):			
Ryegrass (perennial type)	0.05	95	
Ryegrass (annual)	0.1	90	
Small grain	0.05	95	
Miller or Sudan grass	0.05	95	
Field bromegrass	0.03	97	
Permanent Seedings (90% stand)	0.01	99	
Sod (not immediately)	0.01	99	
Mulch:			
Hay rate of application tons per acre:			
1/2	0.25	75	
1	0.13	87	
1-1/2	0.07	93	
2	0.02	98	
Small grain straw	2	0.02	98
Wood chips	6	0.06	94
Wood cellulose	1-3/4	0.1	90
Fiberglass	1/2	0.05	95
Asphalt emulsion (1250 gals/acre)	0.02	98	

Fiber matting, excelsior, gravel and stone may also be used as protective cover.  
\*Percent soil loss reduction as compared with fallow ground.

USDA NRCS Davis, CA. Guides for Erosion & Sediment Control, 1991

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## Erosion Control Practice (P) Factor:

The ratio of soil loss with certain conservation practices compared to that of no practice.

Table 8  
PRACTICE FACTOR  $P_p$  OR SURFACE CONDITION FOR CONSTRUCTION SITES

SURFACE CONDITION WITH NO COVER	FACTOR $P_p$ *
Compact and smooth, scraped with bulldozer or scraped up and down hill	1.3
Same condition except rated with bulldozer front roller up and down hill	1.3
Compact and smooth, scraped with bulldozer or scraped across the slope	1.3
Same condition except rated with bulldozer front roller across the slope	0.9
Loose as a dried plow turn	1.0
Rough irregular surface equipment tracks in all directions	0.9
Loose with rough surface greater than 12" depth	0.9
Loose with smooth surface greater than 12" depth	0.9

\*Value based on estimate

USDA NRCS Davis, CA. Guides for Erosion & Sediment Control, 1991

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# got swPPP?

## QSD/QSP Training

Practicum

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Project Details:

- 3 Buildings (total 23,200 sq. ft.)
- Parking lot 53,400 sq. ft.
- Undeveloped lot
- Total disturbed soil = 150,000 sq. ft.
- Receiving water is Stockton MS4 and a tributary creek to the San Joaquin River
- Risk Level 2

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Proposed Development Location

High spot: 27 ft. AMSL

Proposed development site 150,000 sq. ft.

Drainage Creek Low spot: 5 ft. AMSL

38° 00' 16"N 121° 15' 51"W

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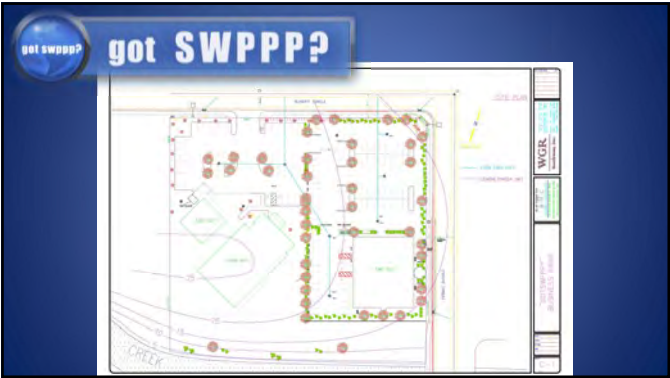
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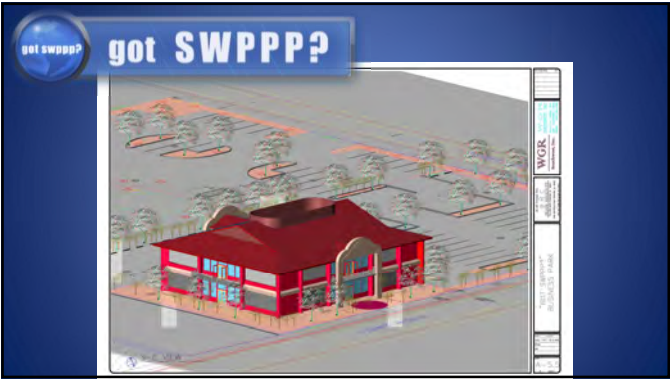
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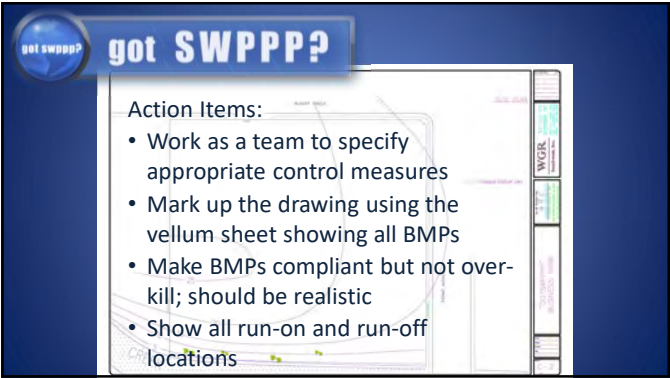
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# QSD/QSP Training




*Schedule (approximate times):*

Day 2 – For QSPs and QSDs

- Practicum 8:00 – 9:30 AM
- **Module 4a 9:30 – 12:00 PM**
- Lunch 12:00 – 1:00 PM
- Module 4b 1:00 – 3:30 PM
- Module 5 3:30 – 4:30 PM

[illegible]

Module 4 – Page 7



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**Learning Objectives**

1. To understand the various monitoring activities required by the CGP.
2. Provide QSDs with the information needed to establish a compliant and effective monitoring program.
3. To help QSPs understand their role in site monitoring and documentation.

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**Module Organization**

Part 1 – Active Treatment Systems  
(9:30 – 10:30 AM)

Part 2 – Inspections and Monitoring Requirements (10:45 – 12:00 PM)

Part 3 – Instruments and Analysis  
(1:00 to 3:30 PM)

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**Active Treatment Systems**  
vs.  
**Passive Treatment Systems**

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Attachment F



Active Treatment System

An active treatment system is a treatment technology that employs chemical coagulation, chemical flocculation, or electrocoagulation to reduce turbidity caused by fine suspended sediment, and/or to control pH levels. An active treatment system relies on enclosed computerized systems with pumps, filters, and real-time controls.

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An Electrochemical Problem needs an Electrochemical Solution



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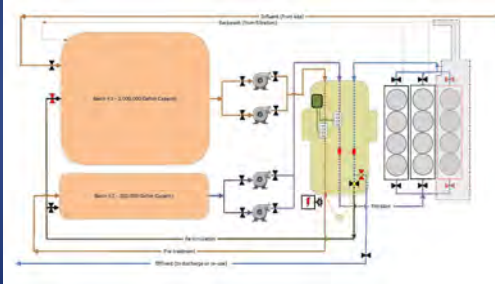
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Typical ATS Design Flow Diagram



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Attachment F

Active Treatment Systems

Let's review the permit language.

ORDER NO. 002-0007-0000  
NPDES No. CA000002

ATTACHMENT F

ACTIVE TREATMENT SYSTEM REQUIREMENTS

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)  
GENERAL PERMIT FOR STORMWATER DISCHARGES  
ASSOCIATED WITH CONSTRUCTION AND LAND DISTURBANCE ACTIVITIES  
(California Permit)

A. GENERAL ACTIVE TREATMENT SYSTEM REQUIREMENTS

A.1. The discharger choosing to implement an active treatment system on its site shall comply with all the requirements in this Attachment.

A.2. Active treatment systems are treatment technologies that employ chemical coagulation, chemical flocculation, or electrocoagulation to reduce turbidity caused by the suspended sediment, and/or to control pH levels. An active treatment system shall be enclosed compartmented systems with pumps, filters, and real-time controls.

A.3. The discharger shall assign a lead person (or project manager) who has either a diploma of the water construction demonstrator cooperative or who is a licensed contractor specifically holding a California Class A Contractor's license to oversee the operation of the active treatment system.

A.4. An active treatment system may be bypassed if the discharger has met the following conditions:  
a. The discharger demonstrates all discharges from the watershed area that the active treatment system was designed to treat are in compliance with the current action levels, numeric effluent limitations, and existing water conditions established by the General Permit through the appropriate monitoring requirements in Attachments D or E; and  
b. If discharging to receiving as part of the bypass, the discharger shall comply with any applicable standards in Attachment G.

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ATS Modes of Operation

Batch

Treat

Hold

Test

Release

If the residual chemical testing requirement cannot be met, the ATS must be operated in the Batch Mode.

Chitosan has an approved residual test.

Flow Through

Treat

Treatment, Testing, and Filtration

Release

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Attachment G

Passive Treatment

Passive treatment is the application of natural or synthetic chemicals and products to reduce turbidity in discharges through coagulation and flocculation. Passive treatment does not rely on computerized, enclosed systems with pumps, filters, and real-time controls. Passive treatment may include pumps where they are necessary to move water around the construction site. Passive treatment products are available in a variety of forms and may be land-applied for soil stabilization (e.g., bonded fiber matrices, hydromulching) or water-applied for sediment removal (e.g., liquid treatment chemicals, coagulants, slow-release solid blocks/rocks).

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Attachment G

Passive Treatment Systems

Let's review the permit language.

ORDER NO. 2022-0087-0000  
NPDES No. CA3000002

ATTACHMENT G  
REQUIREMENTS FOR THE USE OF PASSIVE TREATMENT TECHNOLOGIES  
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)  
GENERAL PERMIT FOR DISCHARGES ASSOCIATED WITH  
CONSTRUCTION AND LAND-USE/DEVELOPMENT ACTIVITIES  
(PERMIT NO. 12)

A. GENERAL PASSIVE TREATMENT TECHNOLOGIES REQUIREMENTS

A.1. The discharger choosing to implement passive treatment technologies (passive treatment on the site that comply with all requirements in this Attachment and the General Permit).

A.2. Passive treatment is the application of natural or synthetic chemicals and products to reduce turbidity in discharges through coagulation and flocculation. Passive treatment does not rely on interconnected, enclosed systems with pumps, floats, and real-time controls. Passive treatment may include pumps where they are necessary to move water around the site. This Attachment is for the use of water applied passive treatment products that remove suspended solids such as sediment from stormwater (e.g., sand treatment chambers, ponds, stormwater ponds, etc.).

A.3. The discharger shall not use chemical treatment as a discharge best management practice (BMP) for site erosion and sediment control and shall minimize the use of non-chemical BMPs for site erosion and sediment control.

A.4. The discharger shall employ a trained person knowledgeable in the principles and practices of passive treatment to oversee the product application or installation.

A.5. The discharger shall store products at the site in leak-proof containers with secondary containment kept under a storm-water shelter. The discharger shall follow the instructions to application for installation and storage.

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Module Organization

Part 1 – Active Treatment Systems  
(9:30 – 10:30 AM)

Part 2 – Inspections and Monitoring Requirements (10:45 – 12:00 PM)

Part 3 – Instruments and Analysis  
(1:15 to 2:15 PM)

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Site Specific Monitoring Factors

- Risk Level / LUP Type
- Project size and number of outfalls
- BMPs selected
- Site activities or BMP failures
- Use of an ATS
- Effluent quality
- The version of the CGP your project is subject to!



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### Required Monitoring Plans

- A site-specific Construction Site Monitoring Program (CSMP).
- It is a written document and part of the SWPPP
- Both visual inspections and effluent monitoring and testing are a part of these monitoring plans
- Must be developed by a QSD and implemented by a QSP

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### Qualifying Rain Precipitation Event

2009 Order	2022 Order
Any event that produces 0.5 inches or more precipitation with a 48 hour or greater period between rain events.	Qualifying precipitation event is any weather pattern that is forecast to have a 50 percent or greater Probability of Precipitation (PoP) and a Quantitative Precipitation Forecast (QPF) of 0.5 inches or more within a 24-hour period. The event begins with the 24-hour period when 0.5 inches has been forecast and continues on subsequent 24-hour periods when 0.25 inches of precipitation or more is forecast.



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### Qualifying Rain Precipitation Event

Tuesday




Cloud with Rain

Tuesday




Mostly Clear

Wednesday




Cloud with Rain

Wednesday




Mostly Clear

Thursday




Mostly Clear

Thursday




Mostly Clear

Friday




Mostly Clear

Friday




Mostly Clear

Saturday



Mostly Clear

<https://www.weather.gov/forecast>



0.75" in 24 hrs.      0.57" in 24 hrs.

2009 QPE: Dec. 1 – 7, assuming 0.5" of rain is received and there is 48 hours of dry weather on Dec. 6 & 7  
2022 QPE: Dec. 1 – 7, assuming 0.5" of rain is received and there is 48 hours of dry weather on Dec. 6 & 7

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Attachment D

Visual Inspection Requirements for Traditional Projects

Table 2 – Visual Inspection Schedule<sup>7</sup>

Risk Level	Weekly	Pre-Qualifying Precipitation Event	During Qualifying Precipitation Event	Post-Qualifying Precipitation Event
1	X	X	X	X
2	X	X	X	X
3	X	X	X	X

7 This table is limited to routine weekly inspections and Qualifying Precipitation Event related inspections. Other visual inspections may be required under this Permit and are described in the applicable sections.

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Visual Inspection Requirements for Traditional Projects

Type of Inspection	2009 Order (Attachments C, D, & E)	2022 Order (Attachment D)
Baseline	Weekly	Weekly
Pre-Storm	Within 2 business days prior to each qualifying event with a REAP required for RL 2 & 3 projects.	Within 72 hours prior to any weather pattern that is forecasted to have a 50 percent or greater chance of 0.5 inches or more in a 24-hour period
During-Storm	For qualifying events, every 24-hour period until there is 48 hours of dry weather.	Every 24-hour period for each subsequent day forecasted to have 0.25" of precipitation.
Post-Storm	Within 2 business days prior to each qualifying rain event.	Within 96 hours after each Qualifying Event if 0.5 inches or more precipitation is measured during the duration of the Qualifying Precipitation Event using the onsite rain gauge

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Visual Inspection Requirements for Traditional Projects

2009 Inspections:

Pre-Storm

During

During

During

During

Post-Storm

2022 Inspections:

Pre-Storm

During

During

During

Post-Storm

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(209) 334-5363 x110

Module 4 – Page 13

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Visual Inspection Requirements for LUP Projects

Type of Inspection	2009 Order (Attachment A)	2022 Order (Attachment E)
Baseline	Daily for all types *	Weekly for all types
Pre-Storm	Types 2 & 3 (time before the storm not specified) *	<b>All Types:</b> Within 72 hours prior to any weather pattern that is forecasted to have a 50 percent or greater chance of 0.5 inches or more in a 24-hour period
During-Storm	Types 2 & 3, every 24-hour period during the storm event. *	<b>All Types:</b> Every 24-hour period for each subsequent day forecasted to have 0.25" of precipitation.
Post-Storm	Types 2 & 3, after the storm event (time not specified) *	<b>Types 2 &amp; 3:</b> Within 96 hours after each Qualifying Event if 0.5 inches or more precipitation is measured during the duration of the Qualifying Precipitation Event using the onsite rain gauge

\*LUP Type 2 & 3 dischargers shall ensure that photographs of the site taken before, during, and after storm events are taken during inspections, and submitted through the State Water Board's SMARTS website once every three rain events.

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Attachment D

Sampling Requirements for Traditional Projects

Table 3 – Sample Collection Schedule

Risk Level	Stormwater Discharge Sample Collection (as applicable)	Receiving Water Sample Collection (as applicable)	Non-Visible Sample Collection (as applicable)
1	Not Applicable	Not Applicable	X
2	X	Not Applicable	X
3	X	X (Post-exceedance)	X

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Discharge Sampling Requirements for Traditional Projects

Discharge Sampling Info.	2009 Order (Attachments C, D, & E)	2022 Order (Attachment D)
Frequency	Risk 1: None Risk 2 & 3: Every day during the QPE	Risk 1: None Risk 2 & 3: Every day during the QPE
Number and Locations	RL 2 & 3 dischargers shall collect effluent samples at all discharge points where storm water is discharged off-site. A minimum of 3 samples are to be collected per day from the entire site.	One sample from each discharge location per 24-hour period of each QPE, during active discharge. Samples are to be collected from all discharge locations incorporating runoff from project construction sites.
pH NAL Exceedance	=< 6.5 and >= 8.5	=< 6.5 and >= 8.5
Turbidity NAL Exceedance	=>250 NTU	=>250 NTU
TMDL Exceedance	Refer to Appendix 4	Refer to Attachment H
How NAL exceedances are determined	When the site-wide daily average of all samples and discharge locations exceed an applicable NAL.	When the field reading for the one sample taken during each day of a QPE at each sample and/or discharge location, exceeds an applicable NAL.

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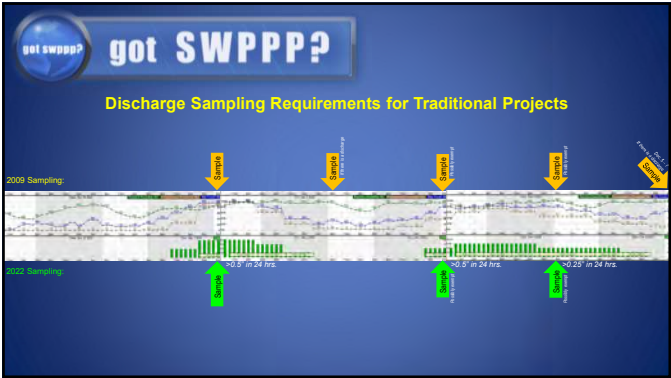
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Rules of Engagement for Qualifying Events  
For the 2009 Permit

1. No discharge = No sample

2. A minimum of 3 samples per day for the entire site

3. Every point of discharge must be sampled at least once per day

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Attachment E

Sampling Requirements for LUP Projects

Table 3 – Sample Collection Schedule

Linear Underground and Overhead Project Risk Type	Stormwater Discharge Sample Collection (when applicable)	Receiving Water Sample Collection (when applicable)	Non-Visible Sample Collection (when applicable)
1	Not Applicable	Not Applicable	X
2	X	Not Applicable	X
3	X	X (Post-exceedance)	X

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Run-on Sampling Requirements

Project Type	2009 Order (Attachments A, D, & E)	2022 Order (Attachments D & E)
Traditionals	Risk Level 2 and 3 dischargers <b>shall</b> monitor and report run-on from surrounding areas if there is reason to believe run-on may contribute to an exceedance of NALs.	Risk Level 2 and 3 dischargers <b>may</b> sample run-on from surrounding areas if there is reason to believe run-on may contribute to exceedance of numeric action levels and/or numeric effluent limitations.
LUPs	LUP Type 2 & 3 dischargers may monitor and report run-on from surrounding areas if there is reason to believe run-on may contribute to exceedance of NALs or NELs (applicable to Type 3).	Risk <b>Type</b> 2 and 3 dischargers <b>may</b> sample run-on from surrounding areas if there is reason to believe run-on may contribute to exceedance of numeric action levels and/or numeric effluent limits.

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Receiving Water Sampling Requirements

Project Type	2009 Order (Attachments A & E)	2022 Order (Attachments D & E)
Traditionals	In the event that a Risk Level 3 discharger violates an NEL (500 NTU for turbidity or <6.0 or >9.0 for pH) contained in this CGP and has a direct discharge into receiving waters, the Risk Level 3 discharger shall subsequently sample receiving waters (RWs) for all parameter(s) required (pH, turbidity, and SSC).	Risk Level 3 dischargers who discharge directly into receiving waters are also required to monitor that receiving water if sampling results from the discharge monitoring location meets either of the following conditions: i. pH value falls outside of the range of 6.0 and 9.0 pH units; or ii. Turbidity exceeds 500 NTU.
LUPs	In the event that an LUP Type 3 discharger violates an applicable NEL (500 NTU for turbidity or <6.0 or >9.0 for pH) contained in this CGP and has a direct discharge to receiving waters, the LUP discharger shall subsequently sample Receiving Waters (RWs) for turbidity, pH (if applicable) and SSC.	Risk <b>Type</b> 3 dischargers who discharge directly into receiving waters are required to monitor that receiving water if sampling results from the discharge monitoring location meets either of the following conditions: i. pH value falls outside of the range of 6.0 and 9.0 pH units; or ii. Turbidity exceeds 500 NTU.

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got SWPPP?

Receiving Water Monitoring

“Direct discharge” is defined by the following:

- **CGP Glossary** – “A discharge that is routed directly to waters of the United States by means of a pipe, channel, or ditch (including a municipal storm sewer system), or through surface runoff.”
- **State Board’s FAQ Clarification** – “Discharges from a construction site to a MS4 where commingling with upstream and/or downstream discharges can occur are not considered ‘direct discharges’.”

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got swPPP?

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2022 Order  
Receiving Water  
Monitoring  
Requirements

Attachments D & E

III.D.2.b. Receiving water monitoring does not apply if run-on from a forest fire or any other natural disaster caused the stormwater results to fall outside the pH range or exceed the turbidity value.

III.D.2.c. Risk Level 3 dischargers required to conduct receiving water monitoring shall collect samples as follows:

i. Collect, at minimum, one upstream receiving water sample from an accessible and safe location that is:

1. Representative of the receiving water;
2. As close as possible to the discharge location; and
3. Upstream from the discharge location.

ii. Collect, at minimum, one downstream receiving water sample from an accessible and safe location that is:

1. Representative of the receiving water;
2. As close as possible to the discharge location; and
3. Downstream from the discharge location.

III.D.2.d. Risk Level 3 dischargers shall analyze the samples for the parameter that triggered this monitoring (either pH or turbidity, or both).

III.D.2.e. Risk Level 3 dischargers shall collect the samples once every 24-hour period of the Qualifying Precipitation Event.

III.D.2.f. Risk Level 3 dischargers shall specify the specific locations where samples were collected, date and time of sample collection, as well as constituents analyzed.

III.D.2.g. The Regional Water Board delegate may require, in writing, that the Risk Level 3 discharger continue to sample the receiving water for the parameter that required this monitoring (pH and/or turbidity) after the Qualifying Precipitation Event ends.

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got swPPP?

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2009 Order  
p. 30

2009 Order RW Sampling Exemption

You are not required to do RW sampling if the storm exceeds a 5 year – 24 hour rain event :

- To take the “Sampling Exemption”, the discharger shall report an on-site rain gauge **and** a nearby governmental rain gauge for verification.

[www.wrcc.dri.edu/pcpnfreq/nca5y24.gif](http://www.wrcc.dri.edu/pcpnfreq/nca5y24.gif)  
[www.wrcc.dri.edu/pcpnfreq/sca5y24.gif](http://www.wrcc.dri.edu/pcpnfreq/sca5y24.gif)

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got swPPP?

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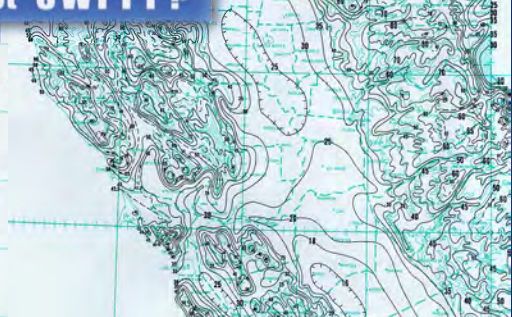
2009 Order  
p. 30

2009 Order RW Sampling Exemption

You are not required to do RW sampling if the storm exceeds a 5 year – 24 hour rain event :

- To take the “Sampling Exemption”, the discharger shall report an on-site rain gauge **and** a nearby governmental rain gauge for verification.

[www.wrcc.dri.edu/pcpnfreq/nca5y24.gif](http://www.wrcc.dri.edu/pcpnfreq/nca5y24.gif)  
[www.wrcc.dri.edu/pcpnfreq/sca5y24.gif](http://www.wrcc.dri.edu/pcpnfreq/sca5y24.gif)



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### Non-Visible Pollutant Sampling

2 hours for the 2009 Order

III.D.3. Non-Visible Pollutant Monitoring Requirements

III.D.3.a. Dischargers shall implement sampling and analysis requirements to monitor non-visible pollutants when there is:

- i. Evidence of pollutant releases that are not visually detectable in stormwater discharges; and
- ii. Releases of substances which could cause or contribute to an exceedance of water quality objectives in the receiving waters.

III.D.3.b. Dischargers are required to conduct sampling and analysis for non-visible pollutants identified in the SWPPP or otherwise known to be on site, only when the pollutants may be discharged due to failure to implement BMPs, a container spill or leak, or a BMP breach, failure, or malfunction.

III.D.3.c. Dischargers shall collect at least one sample, within 8 hours, from each discharge location hydraulically down-gradient from the observed triggering event or condition.

III.D.3.d. Dischargers shall continue to collect at least one sample per applicable discharge location for each 24-hour period that there is discharge, until the necessary corrective actions are completed to control further discharge of the pollutant.

**NEW**

III.D.3.e. Dischargers are not required to sample if one of the conditions described in Section III.D.3.b above (e.g., breach or spill) occurs and, prior to discharge, the material containing the pollutant is fully remediated or removed; and BMPs to control the pollutant are implemented, maintained, or replaced as necessary.

III.D.3.f. Dischargers shall analyze samples in the field or submit them to a laboratory as specified in Section III.F of this Attachment for analysis of all non-visible pollutants suspected to be present in the discharge, including applicable TMDL-specific pollutants listed in Table H-2 in Attachment H.

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got SWPPP?

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### Non-Visible Sampling Triggers



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## Non-Visible Sampling

Source: Appendix D of the CASQA  
California Stormwater Handbook  
for Construction

**Table D-6 Potential Non-Visible Pollutants based on Common Construction Activities**

Activity	Potential Pollutant Source	Laboratory Analysis
Water line flushing	Chlorinated water	Residual chlorine
Portable toilets	Bacteria, disinfectants	Total fecal coliforms
Concrete & Masonry	Acid wash Curing compounds Concrete rinse water	pH pH, alkalinity Volatile organic compounds (VOCs) pH
Painting	Resins Thinners Paint strippers Solvents Adhesives Sealants	Semi-volatile organic compounds (SVOCs) Pleasols, VOCs VOCs Pleasols, VOCs Pleasols, SVOCs SVOCs
Cleaning	Detergents Bleaches Solvents	Methylene Blue Activated Substances (MBAS), phosphates Residual chlorine VOCs
Landscaping	Herbicides, herbicides Fertilizers Lawn soil grout Aluminum sulfate, sulfur	Check with analytical laboratory NO <sub>3</sub> /NH <sub>4</sub> /P Acidity/alkalinity Total dissolved solids (TDS), alkalinity
Treated wood	Copper, arsenic, selenium	Metals
Soil amendments & dust control	Lime, gypsum Plant gases Magnesium chloride Calcium chloride Natural brines Lignosulfonates	pH Biochemical oxygen demand (BOD) Alkalinity, TDS Alkalinity, TDS Alkalinity, TDS Alkalinity, TDS

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## Monitoring Exceptions

2009 Order (Attachments A, C, D, & E)	2022 Order (Attachments D & E)
Non-qualifying storm events with < 0.5"	Non-qualifying Precipitation Event (PoP determined)
During dangerous weather conditions such as flooding and electrical storms.	During dangerous weather conditions such as electrical storms, flooding, and high winds above 40 miles per hour.
Outside of scheduled site business hours.	Outside of scheduled site operating hours; or When the site is not accessible to personnel

*If you claim any of these exemptions, you must document why the monitoring was not performed and include that explanation in the annual report.*



IT'S JUST A LITTLE RAIN

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## Whose Job Is It?

Type of Monitoring	2009 Order (Attachments A, C, D, & E)	2022 Order (Attachments D & E)
Weekly / Daily	QSP, QSD, or Delegated Person	QSP, QSD, or Delegated Person (QSP at least once monthly)
Pre-Storm	QSP, QSD, or Delegated Person	QSP or QSD
REAPs	QSP or QSD	N/A
During Storm	QSP, QSD, or Delegated Person	QSP, QSD, or Delegated Person
Post-Storm	QSP, QSD, or Delegated Person	QSP, QSD, or Delegated Person
Sampling	QSP, QSD, or Delegated Person	QSP, QSD, or Delegated Person
NAL Exceedance Inspection	N/A	QSP and QSD
Job start / change of QSD	N/A	QSD
Twice Annual	N/A	QSD
NOT inspection	N/A	QSP or QSD

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### Training for Delegates



V.D.3. The discharger shall ensure that a QSP verifies the following:

d. Sampling protocols for stormwater and non-stormwater discharges are correctly performed as described in the SWPPP by on-site trained personnel delegated by a QSP (including, but not limited to, taking representative samples of the runoff).

V.E. Discharger Responsibilities for Delegates' Performance

V.E.1. The discharger may authorize a QSP to delegate visual inspections, sampling, and/or SWPPP and BMP implementation activities to others (delegates) (e.g., superintendent, project manager, foreman, contractor, coworker) that have received training for their respective tasks. A QSP cannot delegate tasks to others shall provide the following training based on the guidelines set by the Construction General Permit Training Team:

a. Foundational training for all delegates regarding stormwater compliance roles and responsibilities, forecast information, and documentation and reporting procedures; and

b. Site-specific training regarding visual inspections, sampling procedures, and/or SWPPP and BMP implementation activities relevant to the delegate's assigned responsibilities.

V.E.2. The discharger shall ensure the following for QSP-delegate(s):

a. A QSP has determined the delegate(s) can perform and have a competent understanding of the visual inspection, sampling, and/or SWPPP and BMP implementation tasks prior to fully delegating the responsibility to the individual;

b. The current delegate(s), including name, email, and phone number, are maintained in a training log, uploaded as an attachment to the SWPPP in SMARTS, prior to the delegate performing the delegated function; and

c. The delegate(s) have a system used to record and report issues back to the QSP within 24 hours of when a corrective action is needed.

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### got SWPPP?

#### The Role of the Rain Gauge

- In the **2009 Order**, it determines Qualifying Precipitation Events.
- In the **2022 Order**, it determines if a post-storm inspection is to be performed. Rain gauge readings are also required in the weekly and storm-event inspection reports.



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### got SWPPP?

#### Types of Analyses

Analysis	Runoff	Run-on	Non-Visible	Non-Storm Water	Receiving Water
pH (field)	✓	✓	Conditional	✓ <small>2009 Permit Only</small>	✓
Turbidity (field)	✓	✓	Conditional	✓ <small>2009 Permit Only</small>	✓
SSC (Suspended Sediment Concentration) <small>2009 Permit Only</small>	Conditional for Risk / Type 3				Conditional for Risk / Type 3
Toxics and other exposed contaminants			Conditional		
TMDLs	If applicable			If applicable	

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pH

- Measure of acidity or alkalinity (how caustic)
- 7 is neutral
- Measured in “pH units”
- NALs are 6.5 and 8.5
- RW sampling triggers are 6.0 and 9.0

The pH scale ranges from 0 to 14. 0 is Battery acid, 1 is Lemon juice, 2 is Vinegar, 3 is Acid rain, 4 is Adult fish die, 5 is Rain reproduction affected, 6 is Normal range of stream water, 7 is Neutral, 8 is Baking soda, 9 is Sea water, 10 is Milk of Magnesia, 11 is Ammonia, 12 is Lye, 13 is Lye, 14 is Lye. Arrows indicate increasing acidity (up) and increasing alkalinity (down).

Courtesy of Environment Canada (<http://www.ec.gc.ca/>)

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got swppp?

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2009 Order Only

www.wgr-sw.com/pH

Will daily average pH values be calculated linearly or through the logarithmic method? (T) (L) (C)  
Daily average pH values must be calculated through the logarithmic method. In order to calculate an average, you must: (1) Convert the pH measurements from logarithms to real numbers; (2) Take the average of the real numbers; and (3) Convert the average of the real numbers back to a logarithm.

Excel Spreadsheet

The screenshot shows the 'pHaverages Tool' website with a BMP logo and a pH measurement tool interface.

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Turbidity

- Indirect measurement using reflected light to indicate how much suspended solids is in the water
- Measured in nephelometric turbidity units (NTU)
- NAL is 250 NTU
- RW sampling trigger is 500 NTU

The image shows three beakers of water with increasing turbidity. The first beaker is labeled '<10', the second '200', and the third '1,500'.

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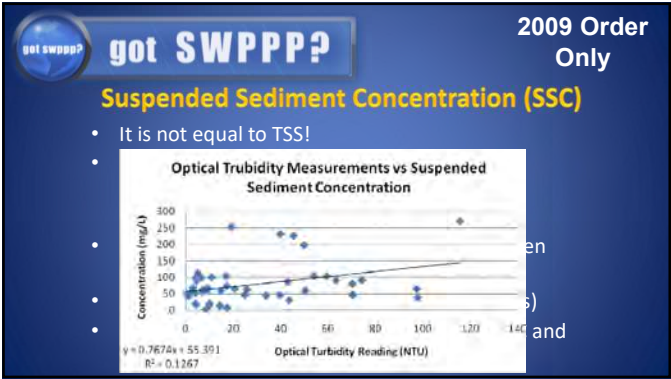
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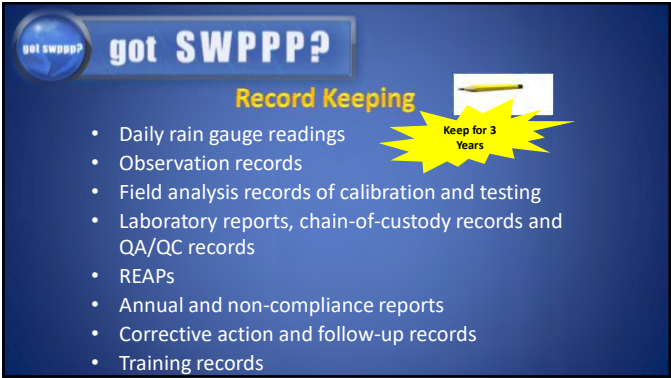
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BSK  
Analytical  
Laboratories

Certificate of Analysis

Client Name:  
Client Address:  
City, CA Zip Code

Report Issue Date: 10/14/2010 8:07  
Received Date: 10/04/2010  
Received Time: 10:55

Lab Sample ID: A0017461  
Sample Date: 10/04/2010 09:30  
Sample Type: Gravel

Sampled by: Client  
Matrix: Water

Sample Description: First Storm Sample

General Chemistry

Analyte	Method	Result	RL	Units	RL	RL	RL	Prepared	Analyzed	Quotient
Conductivity @ 25°C	SW 2510 B	87	1.0	umhos/cm	1	A000707	10/08/10	10/08/10		
pH (25)	SW 4300-10	8.8		pH Units	1	A000707	10/08/10	10/08/10		
pH Temperature in °C	SW 2510 C	23.7		°C	1	A000680	10/08/10	10/08/10		
Total Dissolved Solids	SW 2540C	128	5.0	mg/L	1	A000707	10/08/10	10/08/10		
Total Organic Carbon	SW 5310 C	82	2.0	mg/L	10	A000707	10/08/10	10/08/10		
Total Suspended Solids	SW 2540C	84	5.0	mg/L	1	A000680	10/08/10	10/08/10		

Organics

Analyte	Method	Result	RL	Units	RL	RL	RL	Prepared	Analyzed	Quotient
Organic Extraction Method by EPA 10066										
Total Oil & Grease	EPA 10066	2.8	1.0	mg/L	1	A000707	10/08/10	10/08/10		

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got SWPPP?

got SWPPP?

Using Your Data - Runoff

- Check pH and Turbidity against NALs and RW triggers
  - NALs: pH <6.5>8.5; turbidity >250 NTU
  - RW triggers (Risk / Type 3): pH <6.0>9.0, turbidity >500 NTU
- Initiate reporting as required
- No limit for SSC, information only

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got SWPPP?

got SWPPP?

Using Your Data – Receiving Water

- CGP does not specify limits for receiving water
- Check for water body specific “Water Quality Objectives” in the basin plan
- Compare upstream and downstream results to see if there is evidence of the site causing an increase
- Compare analytical results with visual observations

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got **SWPPP?**

Using Your Data – Non-Visible

- Limits are not specified in the permit, consult the RWQCB
- Evaluate whether the discharge may be a threat to receiving water quality objectives. Consult the Basin Plan and the California Toxics Rule (CTR)
- Compare results of the affected area with the unaffected area
- Take corrective action and re-test

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got **SWPPP?**

Smart Sampling

- Don't shoot yourself in the foot! It hurts and it's expensive!
- Samples carelessly collected can cause big problems.
- So, practice **smart sampling** practices.



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got **SWPPP?**

Smart Sampling

- Collect representative samples . . . not cleaner than average, not dirtier than average
- Sample flow, not puddles
- Don't muddy the water
- Try to stabilize the sampling locations
- Don't overfill sample bottles which have preservatives
- Legal flush

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**got SWPPP?**

**Smart Sampling**

Avoid contaminating the sample by doing the following:

- Only use clean collection equipment and sample bottles
- Store collection equipment and bottles in a clean location
- Use nitrile gloves, changing them at each location
- No smoking, eating, or drinking while sampling
- Never collect samples near a running vehicle; avoid collecting around a parked vehicle
- Don't breathe, sneeze, or cough in the direction of an open sample container
- Only store collected samples in a clean ice chest (with ice)
- Test for pH and turbidity ASAP

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**got SWPPP?**

**Smart Receiving Water Sampling**

- Capture flow of runoff stream:
  - Small streams: dip container into stream with the opening facing upstream
  - Larger streams: wade into flow, dip container into stream with opening facing upstream
- Sampler must be downstream of the container
- Get as close to the site as is safely possible
- Avoid sampling downstream of a bridge
- Document the sampling location
- Reach away from the bank and avoid ponded or slow water
- In-stream measurements are usually preferable

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**got SWPPP?**

**Sampling Preparation  
(before it starts raining)**

- Confirm access to sampling sites
- Gather and store needed equipment
- Prepare sample labels, chain-of-custody documents, and field log sheets
- Coordinate sample pickups or delivery to the laboratory

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Sampling Kit Contents

- Field meters (pH & turbidity)
- Calibration standards
- Digital camera
- Sample location map and field log (laminated)
- New plastic buckets, pitchers, dust pans, tubing, rope, jars, or whatever is being used to grab the sample.
- Sample pump
- Powder free nitrile gloves
- Rain gear, boots, waders

- Pole sampler
- Containers provided by the laboratory for non-visible pollutants
- Coolers and ice
- Pens, permanent markers, grease pens
- COCs, labels, and field logs
- Deionized water in spray bottle
- Rags / paper towels
- PPE

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got swPPP?

got SWPPP?

Sample Handling

- For VOCs and Oil & Grease, collect samples in the containers provided by the laboratory
- Use gloves, change gloves often
- Decontaminate all equipment before and after use (spray bottle with deionized water)
- Immediately cap containers, dry outside, label, and pack into a cooler with ice
- Ship to the laboratory ASAP
- Be careful with preservatives

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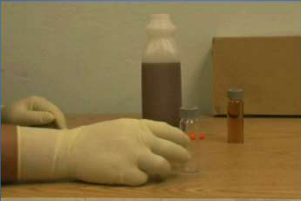
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VOA Sample Collection



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### Sampling Forms & Documents

- Inspection Checklist
- Chain-of-Custody (COC)
- Weather report printouts from NOAA
- Rain gauge record
- Laboratory reports

*Keep all records on-site with the SWPPP, and maintain for 3 years.*



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got swPPP?

got SWPPP?

### Questions and Discussion?

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# QSD/QSP Training



*Schedule (approximate times):*

Day 2 – For QSPs and QSDs

- Practicum 8:00 – 9:30 AM
- Module 4a 9:30 – 12:00 PM
- Lunch 12:00 – 1:00 PM
- Module 4b 1:00 – 3:30 PM
- **Module 5 3:30 – 4:30 PM**

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# QSD/QSP Training

*Module 5*

*Reporting*

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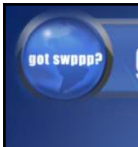
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# got SWPPP?

## Learning Objectives

1. Understand how to use SMARTS
2. How to report water quality monitoring data
3. Understand when and how to complete the required Annual Reports
4. Understand when to update the SWPPP
5. Understand when to complete other required reports

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got **SWPPP?**

Module Organization

Part 1 – SMARTS

Part 2 – Types of Reports

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got **SWPPP?**

What is SMARTS?

Storm water Multiple Application & Reporting Tracking System

- **Purpose:**  
Provide a platform where dischargers, regulators, and the public can enter, regulate, and/or comment on storm water data including NOIs, NOTs, compliance, and monitoring data.
- Internet-based
- Available 24/7
- Reports
  - SWRCB/RWQCB prioritize regulatory tasks (i.e. inspections, view trends in compliance, provide data to the Legislature)
  - Public reports - NOI, Inspections, Violations, and Enforcement data

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got **SWPPP?**

PRD Process

- Register for SMARTS account
- Link Approved Signatories / Data Submitters
- Complete a Notice of Intent (NOI) for each project
- Upload attachments / Permit Registration Documents (PRDs)
- Amend SWPPP through the Change-of-Information (COI) process
- Notice of Termination

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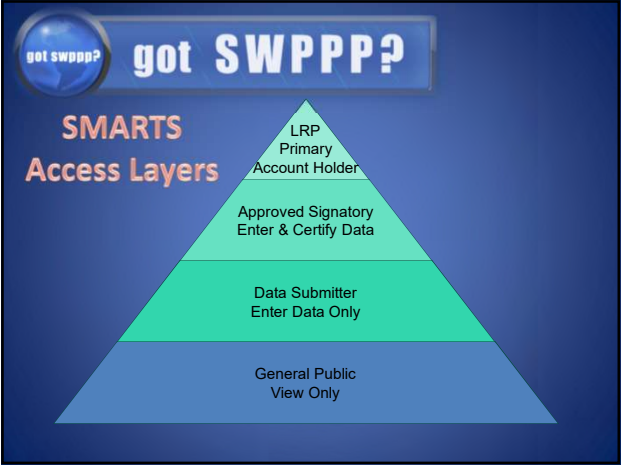
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<https://smarts.waterboards.ca.gov/>

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# got SWPPP?

## Module Organization

Part 1 – SMARTS

Part 2 – Types of Reports

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got swppp?

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Attachment D, p. 16

Visual Inspection Reports

IV.A. Visual Inspections

Dischargers shall keep all completed inspection checklists and related documentation with the SWPPP on-site or electronically.

WGR Inspection Database

Login

User

Position

Submit

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Attachment D, p. 17

Water Quality Monitoring Reports

IV.B. Water Quality Monitoring

IV.B.1. Risk Level 2 and 3 Stormwater Discharge Monitoring Reporting

IV.B.1.a. Risk Level 2 and 3 dischargers shall electronically submit through SMARTS all field sampling results within 30 days of the completion of the precipitation event or within 10 days if the field sampling results demonstrate the exceedance of the pH, and/or turbidity numeric action levels.

NEW

IV.B.1.b. Risk Level 2 and 3 dischargers that exceeded the pH and/or turbidity numeric action levels shall prepare a Numeric Action Level Exceedance Report when requested, in writing, from a Regional Water Board delegate and shall submit and certify each Numeric Action Level Exceedance Report through SMARTS within 30 days of receiving the written request, in accordance with Section IV of this General Permit's Order.

IV.B.1.c. The Numeric Action Level Exceedance Report shall include:

i. The analytical method(s), method reporting unit(s), and method detection limit(s) for each parameter;

ii. The date, place, time of sampling, visual inspections, and/or measurements, including precipitation; and

iii. An assessment of the existing BMPs associated with the sample that exceeded the numeric action level, a description of each corrective action taken including photographs, and date of implementation.

IV.B.1.d. Risk Level 2 and 3 dischargers that prepared a Numeric Action Level Exceedance Report shall retain a copy of the report for a minimum of three years after the date the exceedance report is certified and submitted.

IV.B.2. Risk Level 3 Receiving Water Monitoring Reporting

IV.B.2.a. Risk Level 3 dischargers shall electronically submit all receiving water sample results through SMARTS within 10 days of a precipitation event.

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Attachment D, p. 17

Water Quality Monitoring Reports

IV.B.3. Non-Visible Pollutant Monitoring Reporting

IV.B.3.a. All dischargers that conducted non-visible pollutant monitoring shall electronically submit through SMARTS all field and/or analytical sampling results within 30 days after obtaining the analytical result or within 10 days after if the analytical results demonstrate the exceedance of an applicable TMDL-related numeric action level or numeric effluent limitation or Basin Plan parameter.

NEW

IV.B.3.b. All dischargers that exceeded an applicable TMDL-related numeric action level shall prepare a Numeric Action Level Exceedance Report when requested, in writing, from a Regional Water Board delegate and shall submit and certify each Numeric Action Level Exceedance Report through SMARTS within 30 days of receiving the written request, in accordance with Section IV of this General Permit's Order.

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Attachment D, p. 17

Water Quality Monitoring Reports

LOOK

IV.B.3. Non-Visible Pollutant Monitoring Reporting *Continued ...*

IV.B.3.c. The Numeric Action Level Exceedance Report shall include:

- i. The analytical method(s), method reporting unit(s), and method detection limit(s) for each parameter;
- ii. The date, place, time of sampling, visual inspections, and/or measurements, including precipitation; and
- iii. An assessment of the existing BMPs associated with the sample that exceeded the numeric action level, a description of each corrective action taken including photographs, and date of implementation.

IV.B.3.d. All dischargers that prepared a Numeric Action Level Exceedance Report shall retain a copy of the report for a minimum of three years after the date the exceedance report is certified and submitted.

IV.B.3.e. All dischargers that exceed an applicable TMDL-related numeric effluent limitation shall comply with the water quality-based corrective action requirements in Section VI.Q of the Order.

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Order p. 35

Annual Reports

IV.P. Annual Reporting Requirements

IV.P.1. The discharger shall electronically certify and submit an Annual Report through SMARTS by September 1st for the previous reporting period from July 1st through June 30th if a WQID number is active for at least 90 days within the reporting period.

IV.P.2. The discharger shall retain an electronic copy or hard copy of each Annual Report for a minimum of three years after the date the Annual Report is certified.

IV.P.3. The Annual Report shall consist of the following:

- a. The summary of all stormwater sampling and monitoring reports and supporting documents (e.g., laboratory reports);
- b. The summary of all corrective actions taken during the compliance year;
- c. The identification and explanation of any compliance activities (e.g., missed sampling or visual inspections) or corrective actions that were not implemented;
- d. The summary of all the General Permit violations;
- e. The names of individual(s) who performed the site inspections, sampling, visual inspections, and/or measurements;
- f. The date, place, time of site inspections, sampling, visual inspections, and/or measurements, including the amount of precipitation measured in inches; and
- g. All visual inspection and sample collection exception records and reports.

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Types of Reports

Type of Inspection	When it is due	Enter into SMARTS	Revise SWPPP	Certification	Retain for 3 years
Weekly Inspections	The day the inspection is performed		If deficiencies are noted		✓
Storm Inspections	The day the inspection is performed		If deficiencies are noted		✓
Water Quality Monitoring Reports	Into SMARTS 30 days after storm or 10 days after NAL Exceedance	✓	If NAL exceedance	✓	✓
REAPs 2009 CGP Only	In place 24 hours before storm				✓
Quarterly Non-Storm Water 2009 CGP Only	With Annual Report				✓
Annual Report	September 1 or at NOT	✓		✓	✓

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**Other Possible Reports**

- Reporting of Contaminated Soils (Order p. 45)
- Water Quality Based Corrective Actions Report when the site's discharge is in violation of Receiving Water Limitations (Order p.48, Attachment H TMDLs)
- TMDL-specific reporting requirements (Attachment H)
- No Discharge Technical Report (Order p.17)
- Additional reports requested by the Regional Water Board.

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**Questions and Discussion?**

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# QSD/QSP Training



*Schedule:*  
Day 3 – For QSDs

- **Module 6** 8:00 – 12:00 PM
- Lunch 12:00 – 1:00 PM
- Module 7 1:00 – 3:00 PM
- Module 8 3:00 – 4:00 PM

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# QSD Training

*Module 6*  
*Project Planning & Risk Determination*

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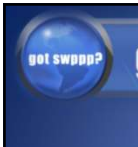
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## Learning Objectives

1. Provide a background for the reason Post-Construction Standards and BMPs are necessary and included in the CGP.
2. Introduce the concept of Water Balance and how aggradation, degradation, and hydromodification affect it.
3. Learn about the Low Impact Development design technique.
4. Learn about the two paradigm shifts in the stormwater industry: Soil Quality vs. Water Quality; and Quantity vs. Quality.
5. See how site-specific characteristics need to be considered.
6. How bioassessment is a measure of post-construction impact.

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Module Organization

Part 1 – Stream Flow & Sediment Hydrology Basics

Part 2 – Post Construction Impacts

Part 3 – Hydromodification

Part 4 – Post-Construction Measures and Water Balance Calculator

Part 5 – Low Impact Development

Part 6 – Site-Specific Considerations

Part 7 – Bioassessment

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Pre-Construction Water Balance

Stream Flow & Sediment Hydrology Basics

*Thank you to Eric Berntsen of the SWRCB for providing slides on stream theory, LID, and hydromodification.*

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Stream Flow

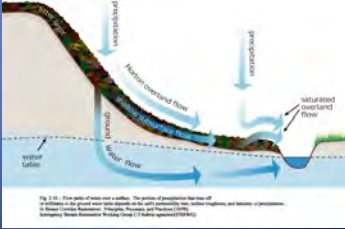
There are four basic sources of stream flow:

• Groundwater

• Shallow subsurface flow

• Direct channel precipitation

• Surface runoff



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Normal Stream Flow

All streams accomplish three basic geomorphic tasks:

- Erosion
- Sediment transport
- Sediment deposition

*These determine the size and shape of the stream channel, both laterally and longitudinally.*

The diagram shows a cross-section of a stream channel. The stream channel is the central water-filled area. The scarp is the steep bank on the right side. The thalweg is the deepest part of the channel bed, indicated by an arrow pointing to the lowest point of the channel bed.

Fig. 4.13 - Cross section of a stream channel. The thalweg is the deepest part of the channel. In: Stream Corridor Reassessment: Principles, Processes, and Practices (1998). Emergency Stream Reassessment Working Group (11 National Agencies) (ESRWG).

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Geomorphic Definitions

- **Erosion** – the detachment of soil particles along the stream bed and banks
- **Sediment transport** – the movement of eroded soil particles in stream flow
- **Sediment deposition** – the settling of eroded soil particles in the water or on land as water recedes

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Dynamic Equilibrium

- Sediment particles that erode are transported downstream
- Replaced by particles of the same size and shape from upstream

$$(Q_s * D) \propto (Q_w * S)$$

Where:  
Q<sub>s</sub>= Sediment Discharge      Q<sub>w</sub>= Stream flow  
D= Sediment particle size      S= Stream slope

*When all 4 variables are in balance, the channel is stable.*

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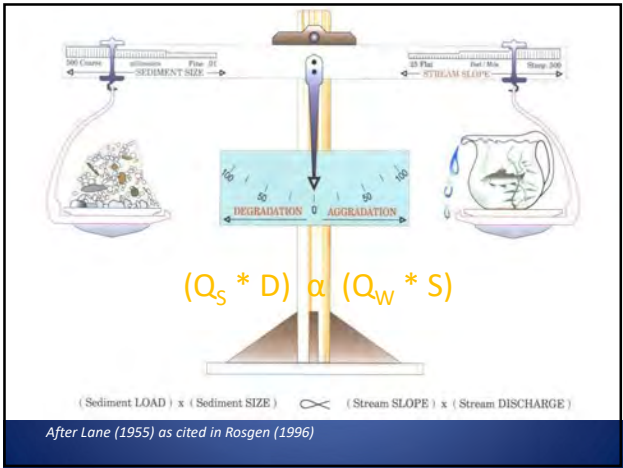
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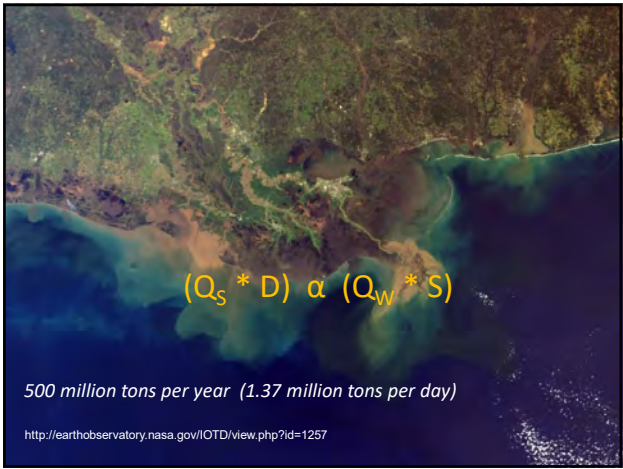
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**Aggradation** involves the raising of the streambed elevation, an increase in width/depth ratio, and a corresponding decrease in channel capacity. Over-bank flows occur more frequently with less-than-high-water events. Excess sediment deposition in the channel and on floodplains is characteristic of the aggrading river. Often, the cause of aggradation is an increase in upstream sediment load and/or size of sediment exceeding the transport capacity of the channel.

Source:  
<http://water.epa.gov/scitech/dataat/tools/warssu/channel.cfm>

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**Degradation** is the removal of sediment from the streambed. Field evidence of degradation is a combination of a lowered width/depth ratio and an increased bank height ratio. Bank height ratio is defined as the height of the lowest bank divided by the maximum depth at the bankfull stage (Rosgen 2001b).

Source:  
<http://water.epa.gov/scitech/dataat/tools/warssu/channel.cfm>

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Where are the following actions happening?

- Erosion
- Sediment transport
- Sediment deposition
- Aggradation
- Degradation

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Module Organization

Part 1 – Stream Flow & Sediment Hydrology Basics

Part 2 – Post Construction Impacts

Part 3 – Hydromodification

Part 4 – Post-Construction Measures and Water Balance Calculator

Part 5 – Low Impact Development

Part 6 – Site-Specific Considerations

Part 7 – Bioassessment

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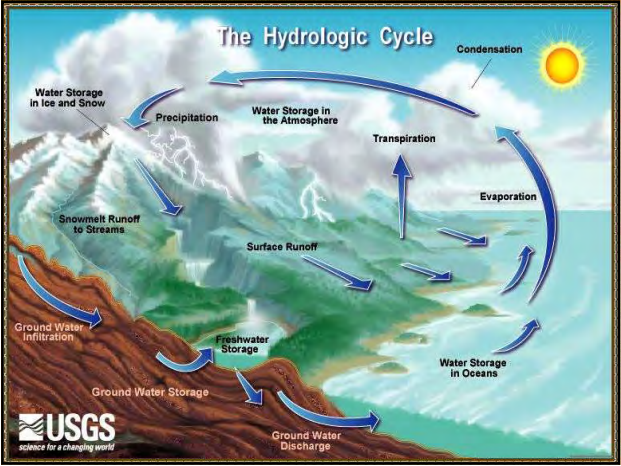
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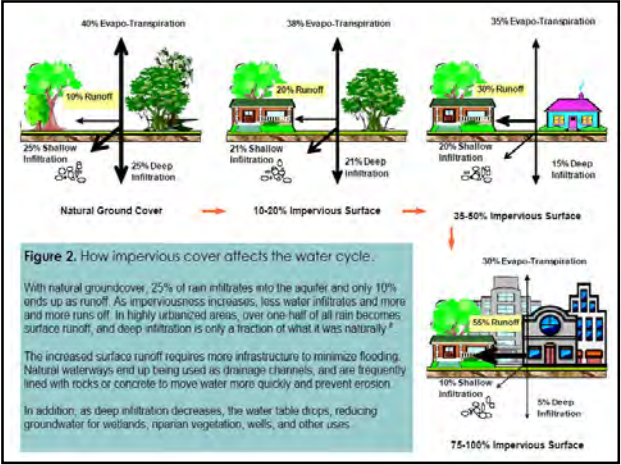
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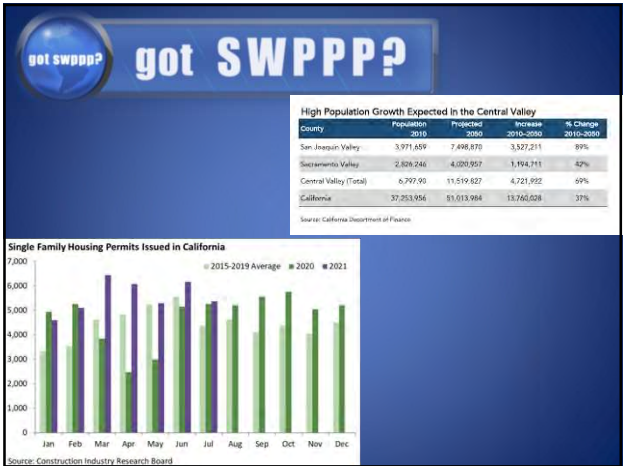
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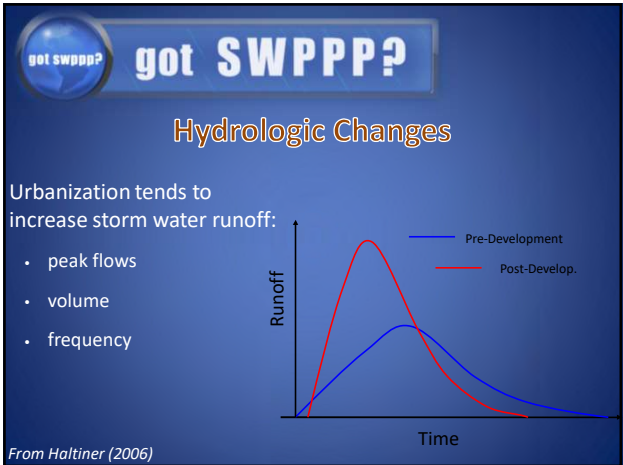
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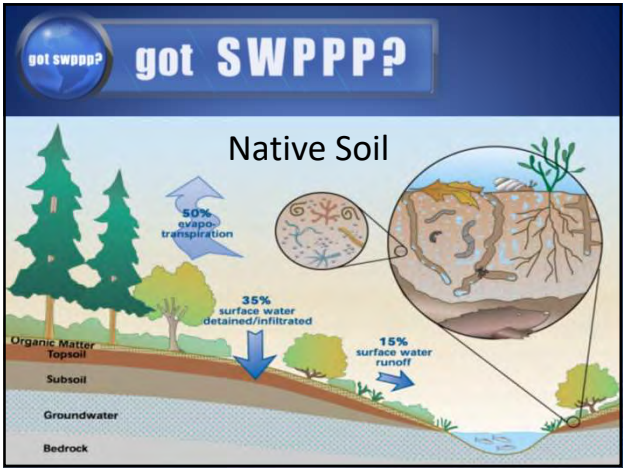
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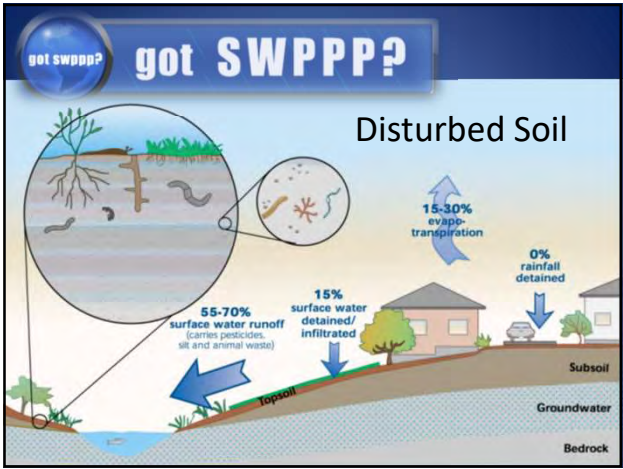
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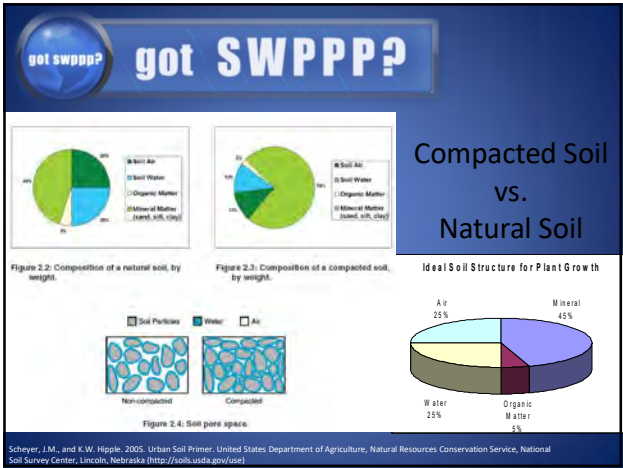
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What happens when we maintain soil quality?

- More nutrient and water retention
- Less need for fertilizer, pesticides, etc.
- Filtering and decomposition of toxins

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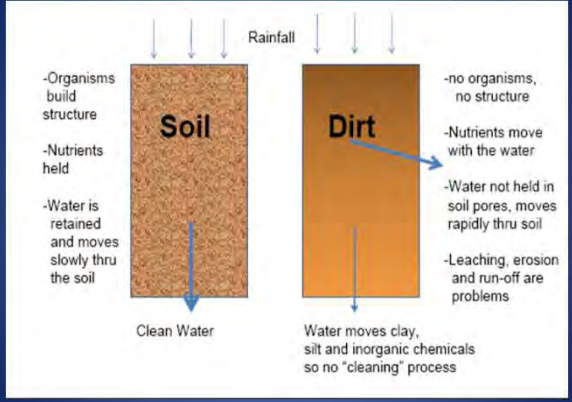
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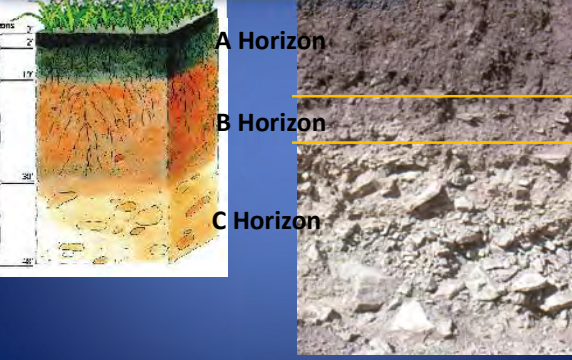
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Ken Oster, Soil Scientist

USDA Natural Resources Conservation Service

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Construction Impacts

Construction projects present a two-fold impact to beneficial uses of water:

• During – accelerated erosion

• After – increased imperviousness and hydromodification



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Post-Construction Impacts

Sources of Impairment (USEPA 2006)

	Rivers and Streams	Lakes, Ponds, and Reservoirs	Estuaries
Sources*	Agriculture (48%) <sup>a</sup>	Agriculture (41%)	Municipal Point Sources (37%)
	Hydrologic Modification (20%) <sup>a</sup>	Hydrologic Modification (18%)	Urban Runoff/Storm Sewers (32%)
	Habitat Modification (14%) <sup>a</sup>	Urban Runoff/Storm Sewers (18%)	Industrial Discharges (26%)
	Urban Runoff /Storm Sewers (13%)	Nonpoint Sources (14%)	Atmospheric Deposition (23%)
	Forestry (10%)	Atmospheric Deposition (13%)	Agriculture (18%)
	Municipal Point Sources (10%)	Municipal Point Sources (12%)	Hydrologic Modification (14%)
	Resource Extraction (10%)	Land Disposal (10%)	Resource Extraction (12%)

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**Module Organization**

Part 1 – Stream Flow & Sediment Hydrology Basics  
Part 2 – Post Construction Impacts  
**Part 3 – Hydromodification**  
Part 4 – Post-Construction Measures and Water Balance Calculator  
Part 5 – Low Impact Development  
Part 6 – Site-Specific Considerations  
Part 7 – Bioassessment

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Attachment B

**What is Hydromodification**

**Hydromodification**  
Hydromodification is the alteration of the hydrologic characteristics of coastal and non-coastal waters, which in turn could cause degradation of water resources. Hydromodification can cause excessive erosion and/or sedimentation rates, causing excessive turbidity, channel aggradation and/or degradation.

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**Hydromodification**

The USEPA categorizes hydromod activities into three categories:

- Channel modification
- Dams
- Stream bank erosion




Fig. 3.10 – Stream channelization. Stream modifications, such as uniform cross section and armoring, result in ecological deficits.  
In Stream Corridor Restoration: Principles, Processes, and Practices (SCORP)  
By the Federal Interagency Stream Restoration Working Group (FISRWG) (a Federal agency of the U.S.E.)

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Channel Modification

Channel Changes Associated with Urbanization

The diagram illustrates five cross-sections of a channel (I-V) showing various modifications and sediment transport. Section I shows a channel with  $h < h_c$  and a FLOODPLAIN. Section II shows a channel with  $h < h_c$ . Section III shows a channel with  $h > h_c$  and a TERRACE. Section IV shows a channel with  $h > h_c$ , a TERRACE, and MUD DRAPES. Section V shows a channel with  $h < h_c$ , a TERRACE, SAND & MUD COUPLET, BERM, and ADVENTITIOUS ROOTS.

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Channel Modification

Causes:

- Increased imperviousness in watershed
- Increased imperviousness of channel
- Loss of vegetation
- Increased velocities

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Channel Modification

Results:

- Channel deepened and widened
- Increased sediment transport capacity and decreased sediment supply
- Disturbs the stream stability
- Disturbs the associated habitats
- Flooding
- Increased ability to transport toxic pollutants

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Dams Modification

Channel Changes Associated with Urbanization



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Dams Modification

- Retains water by design
- Range in size from berms across small streams creating farm ponds to large concrete structures
- Changes the down river characteristics
- Dams can lead to sediment accumulation in a reservoir
- Must be carefully managed:  
<http://cdec.water.ca.gov/cgi-progs/current/RES>

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Streambank Modification

- Stream banks and shorelines erode naturally
- Water flowing along a stream bank dislodges sediment
- Accelerators: livestock grazing, roads, increased imperviousness (development / fires), changes in climate



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So, what does this have to do with the CGP?

To address hydromodification concerns and impacts, the new CGP includes:

- Post-construction standards
- Post-construction Water Balance Calculator
- Increased sampling and monitoring for projects with higher sediment or receiving water risk levels
- Bioassessment monitoring

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**Module Organization**

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Part 6 – Site-Specific Considerations

Part 7 – Bioassessment

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**Post-Construction Standards**

- Are measures to mitigate post-construction storm water runoff impacts
- Specifically address water quality and quantity
- Are currently required for all new projects in areas covered by an active Phase I or II MS4 permit
- The CGP requires post-construction measures of new projects in areas **not covered** by an MS4 permit

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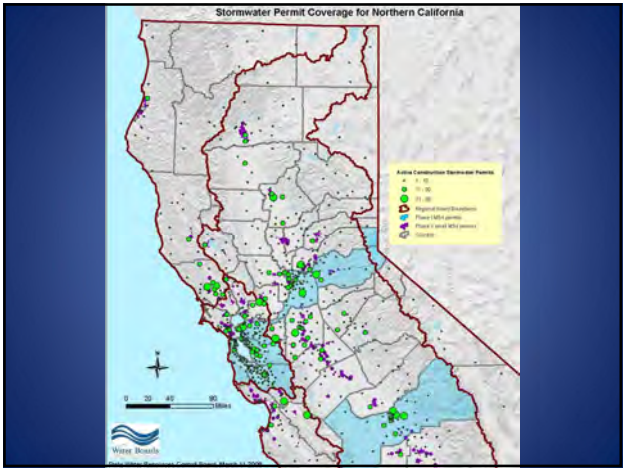
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**Name Confusion?**

- WQMP
- DSP
- SWDSP
- SUSMP
- SWQCCP
- C3

- Post-Construction Design Measures
- Post-Construction Standards
- Post-Construction Control Measures

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Order  
p.29-31

What does  
the CGP  
Require?

IV.N. Post-Construction Requirements

IV.N.1. All dischargers, other than linear underground and overhead project dischargers, shall implement BMPs to reduce runoff and pollutants in stormwater discharges that are reasonably foreseeable after all construction phases have been completed at the site (post-construction BMPs).

IV.N.2. Dischargers subject to the post-construction requirements of an existing NPDES Phase I or Phase II municipal separate storm sewer system permit are not subject to the post-construction requirements in Section IV.N.3 below, and shall submit the following items with their Permit Registration Documents through SMARTS:

NEW

a. An attachment or web-source containing the applicable NPDES Phase I or Phase II municipal separate storm sewer system permittee's post-construction requirements; and

b. The post-construction plans and calculations submitted to, or approved by, the applicable NPDES Phase I or Phase II municipal separate storm sewer system permittee. If the discharger submitted preliminary post-construction plans and calculations as a Permit Registration Document, the discharger shall submit the approved plans and calculations within 14 days of approval by the municipal stormwater permittee, through a Change of Information in SMARTS. The discharger shall submit a Change of Information in SMARTS for any revisions to post-construction plans and calculations prior to submitting the Notice of Termination.

IV.N.3. All dischargers, other than linear underground and overhead project dischargers or dischargers subject to the post-construction requirements of an existing NPDES Phase I or Phase II municipal separate storm sewer system permit, shall comply with the following post-construction runoff reduction requirements. The discharger shall comply with this General Permit's post-construction requirements if the Permit Registration Documents were submitted prior to the effective date of applicable post-construction requirements of the corresponding NPDES Phase I or Phase II municipal stormwater permit.

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Order  
p.29-31

What does  
the CGP  
Require?

LOOK

IV.N.4. The discharger shall use non-structural and/or structural measures to replicate the pre-construction water balance (for this General Permit, defined as the volume of rainfall that ends up as runoff) for the smallest storms up to and including the 85<sup>th</sup> percentile, 24-hour precipitation event (or the smallest precipitation event that generates runoff, whichever is larger).

IV.N.5. For sites with disturbed area exceeding two acres, the discharger shall preserve the pre-construction drainage density (miles of stream length per square mile of drainage area) for all drainage areas within the area serving a first order stream<sup>12</sup> or larger stream and ensure that post-project runoff time of concentration is equal to or greater than pre-project time of concentration.

IV.N.6. The discharger shall certify and submit post-construction plans, calculations, and other supporting documentation as a Permit Registration Document in SMARTS. The discharger shall submit a Change of Information in SMARTS for any revisions to post-construction plans and calculations prior to submitting the Notice of Termination.

IV.N.7. Regional Water Board staff may review post-construction plans, calculations, and other supporting documentation to verify that the post-construction water balance is accurate; and may request that the discharger make revisions if necessary.

IV.N.8. The discharger may use the contact information found online or in Attachment C to request Regional Water Board staff review post-construction plans, calculations, and other supporting documentation prior to and during construction.

12 A first order stream is defined as a stream with no tributaries.

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All these  
BMPs reduce  
the volume  
discharged

Post Construction BMPs  
Available for Crediting

• Porous Pavement

• Tree Planting

• Downspout Disconnection

• Impervious Area Disconnection

• Green Roof

• Stream Buffer

• Vegetated Swales

• Rain Barrels and Cisterns

• Landscaping Soil Quality

Post-Construction BMPs

Post-construction BMPs are structural and non-structural controls which detain, retain, infiltrate, and/or filter out pollutants discharged to receiving waters after a construction project is completed. Low impact development features are considered a type of post-construction BMP.

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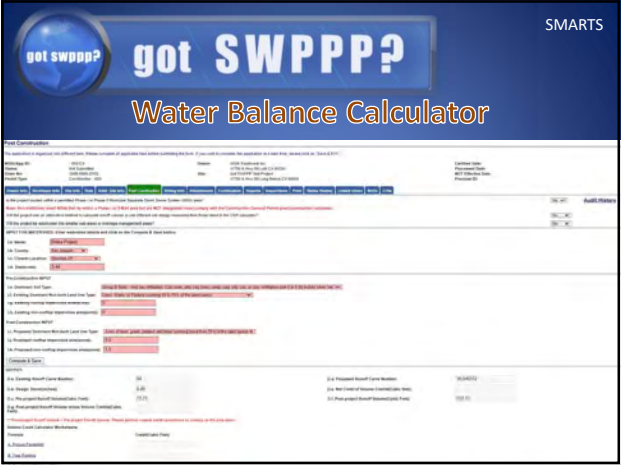
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WGR Southwest, Inc.  
(209) 334-5363 x110

Module 6 – Page 16





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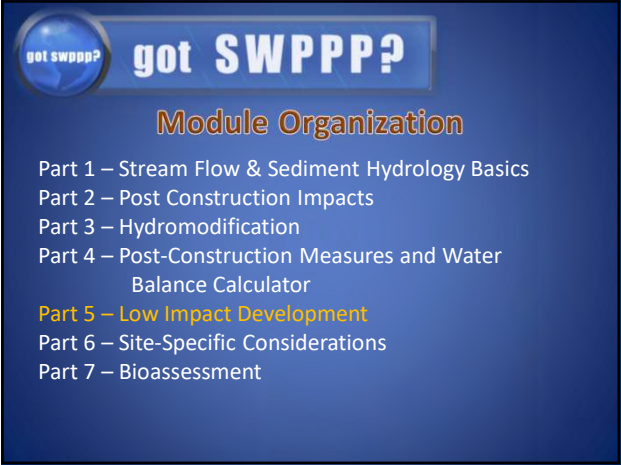
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Low Impact Development (LID) Principles

LID's goal is to mimic a site's predevelopment hydrology by using design techniques that infiltrate, filter, store, evaporate, and detain runoff close to its source.



*Thank you to Eric Berntsen of the SWRCB for providing slides on stream theory, LID, and hydromodification.*

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LID Benefits

- **Multifunctionality** – landscaping costs also serve as storm water treatment costs, etc.
- **Lower lifetime costs** – e.g., lower overall operation, repair, maintenance, and decommissioning costs
- **Additional environmental and social benefits** – multiple objectives met
- **Reduced offsite costs** – fewer offsite sewer collection and treatment costs
- **Functional use of open space land** – LID practices can be put in open space, thereby not reducing developable land



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LID Example Project



Traditional asphalt paving

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got swPPP?

got SWPPP?

TRADITIONAL DEVELOPMENT

\$ Pay to Pipe / Pump offsite

\$ Risk onsite WQ violations / fines

LID

Treat onsite

\$ Pay to treat at end of Pipe

Reduced piping / pumping costs

\$ Excavate, grade site and haul away materials

Utilize natural terrain / preserve natural channels

can be

LID is Cost Effective

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got swPPP?

got SWPPP?

Reports of Reduced Costs

• Case studies show reduction of 25-30% over conventional projects.

• Somerset Rain Gardens<sup>1</sup>

– Original retention ponds - \$400,000

– Implementation using natural drainage - \$100,000

• Pembroke subdivision<sup>2</sup>

– Used LID practices to eliminate stormwater ponds

– Saved \$200,000

Sources: 1- "Low-impact Development" by Mary Catherine Hager

2- "Stormwater Strategies: Community Responses to Runoff Pollution" NRDC

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got swPPP?

got SWPPP?

Ways to mimic predevelopment hydrology

– Soil quality improvement (porosity)

– Native and drought tolerant vegetation

– Trees

– Permeable pavement

– Riparian buffers

– A general reduction of connected, impervious surfaces in runoff pathways

– Bioretention

– Disconnected downspouts/rain chains/rain barrels





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WGR Southwest, Inc.  
(209) 334-5363 x110

Module 6 – Page 19



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**got SWPPP?**

**Module Organization**

Part 1 – Stream Flow & Sediment Hydrology Basics

Part 2 – Post Construction Impacts

Part 3 – Hydromodification

Part 4 – Post-Construction Measures and Water Balance Calculator

Part 5 – Low Impact Development

**Part 6 – Site-Specific Considerations**

Part 7 – Bioassessment

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**got SWPPP?**

**Determine the Drainage Management Areas (DMAs)**

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got swppp?

got SWPPP?

Address the Nine LID Goals

1. Define the development envelope and protected areas, identifying areas that are most suitable for development and areas to be left undisturbed.

2. Concentrate development on portions of the site with less permeable soils and preserve areas that can promote infiltration.

3. Limit overall impervious coverage of the site with paving and roofs.

4. Set back development from creeks, wetlands, and riparian habitats.

5. Preserve significant trees.

6. Conform the site layout along natural landforms.

7. Avoid excessive grading and disturbance of vegetation and soils.

8. Replicate the site's natural drainage patterns.

9. Detain and retain runoff throughout the site.

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got swppp?

got SWPPP?

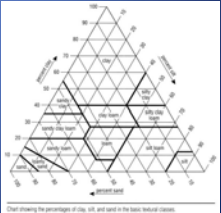
Determine the Soil Type

Performing a soil particle size analysis by American Society for Testing and Materials (ASTM) Test Method D422 will assist in:

Determining soil compatibility for plantings of native plants or broadcasting native seed mixes.

Determining effective non-structural and structural BMPs to be implemented during and after construction.

Determining infiltration rates of the planting media and the sub-soil; and the need for underdrains.



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got swppp?

got SWPPP?

Read the Soil Report

An equivalent fluid weight of 300 pounds per cubic foot acting on 1/4 times the pile diameter may be used to evaluate positive resistance. The positive pressure may be increased by one-third for transient loads such as wind or seismic. The positive earth pressure should start at a depth of 12 inches.

The pile reinforcement should be designed by the Structural Engineer, but as a minimum, at least two No. 4 rebars should extend the full length of each pile.

Drilled piles should be free of loose soils and debris prior to concrete placement. If water collects in the pile shaft, it should be pumped out prior to the placement of concrete. Concrete should be placed by means of a tremie pipe or similar device to avoid concrete contamination by soils discharging from the pile shaft.

The subgrade soils should be well over optimum moisture at the time of post placement. Under no circumstance should pre-cast panels be set upon dry, desiccated soil. The Geotechnical Engineer should review the final record wall foundation plans when they become available to check for conformance with these recommendations.

**Site Surface Drainage**

The project site should be positively graded at all times to provide for rapid removal of surface water runoff away from foundation systems and to prevent ponding of water under foundations or seepage toward foundation systems at any time during or after construction. Ponding of water may result in undesirable weakening of the subgrade materials, loss of compaction, slab movement and foundation movement.

No ponding of surface water should be permitted on the building pads during prolonged periods of inclement weather. All lots should be graded to drain individually. As a minimum requirement,

4918.1.001.01  
November 3, 2005

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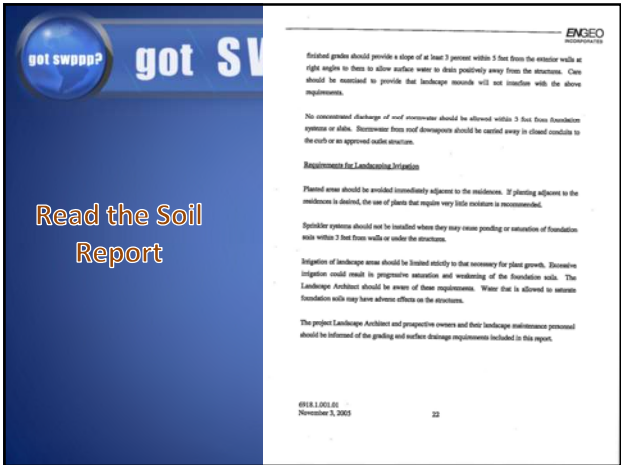
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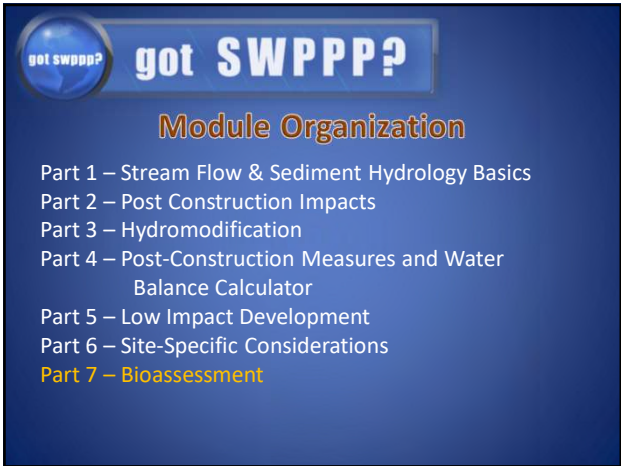
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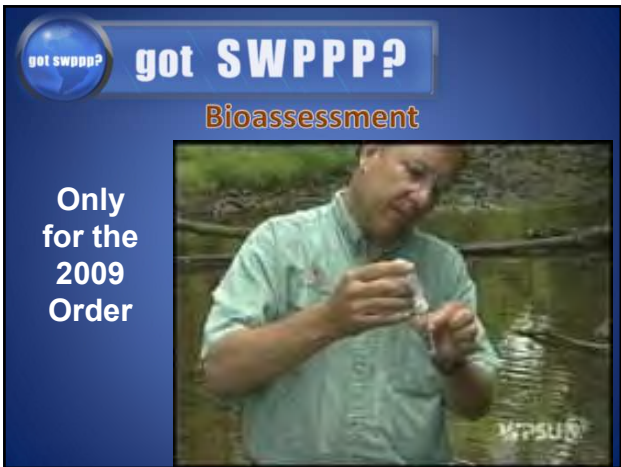
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got swppp?

got SWPPP?

Appendix 3

Bioassessment

Required for projects that meet all of the following:

- Rated Risk Level 3 or LUP Type 3
- Directly discharges runoff to a freshwater wadeable stream that is either:
  - Listed by the State Water Board or USEPA as impaired due to sediment, and/or
  - Tributary to any downstream water body that is listed for sediment; and/or with the beneficial uses of SPAWN, COLD, & Migratory
- Total project-related ground disturbance > 30 acres

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got swppp?

SWPPP

Appendix 3



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got swppp?

got SWPPP?

Bioassessment

- Bioassessment monitoring is performed by taking samples to measure the population of freshwater benthic macroinvertebrates
- Is utilized to assess the effect of the project on the biological index (health) of the receiving water
- Includes invertebrates such as crayfish, mollusks, snails, worms, and immature forms of aquatic insects

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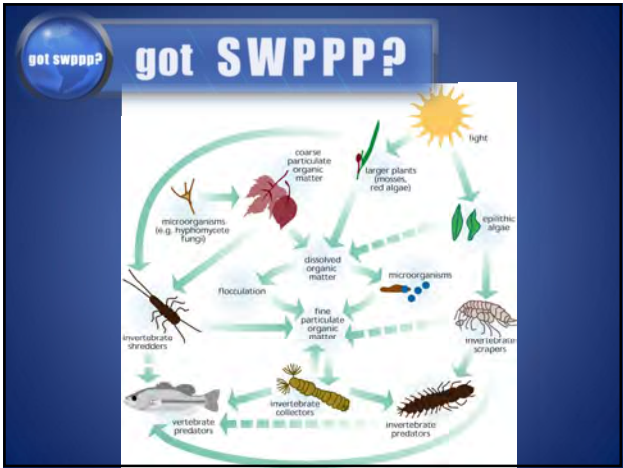
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# got SWPPP?

Appendix 3

## Bioassessment Monitoring

Index Period:

- Bioassessment is not required if the construction is performed outside of the sampling index period
- Index periods are regional
- Map of bioassessment ecoregions can be found at: [www.swrcb.ca.gov/water\\_issues/programs/stormwater/docs/constmats/cgp\\_biomap.pdf](http://www.swrcb.ca.gov/water_issues/programs/stormwater/docs/constmats/cgp_biomap.pdf)

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got **SWPPP?**

Appendix 3

**Bioassessment Monitoring**

Sampling Frequency:

- Samples are to be collected within the sampling index period for both:
  - **Before** ground disturbance is initiated, and
  - **After** the project is completed
- The “after” sample shall be collected at least one winter season resulting in surface runoff after the project ground disturbance has ceased.

*Note: NOT can be filed before the “after” sample is collected.*

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got **SWPPP?**

Appendix 3

**Bioassessment Monitoring**

Site Locations and Frequency:

- “Before” and “after” samples must be collected both upstream and downstream of the project’s discharge
- Upstream samples should be taken immediately before the site’s outfall and downstream samples immediately after the outfall
- From a freshwater, wadeable, listed for sediment water body
- Habitat assessment data must be collected concurrently with the sampling.

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got **SWPPP?**

Appendix 3

**Bioassessment Monitoring Exception**

If construction commences out of an index period for the site location, the discharger shall:

- Receive RWQCB approval for the sampling exception
- Make a check payable to: Cal State Chico Foundation (SWAMP bank account)
- Send a copy of the check to the RWQCB
- Invest into the SWAMP program \$7,500 x the number of samples required
- Conduct bioassessment as described in Appendix 3

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got SWPPP?

Appendix 3

Bioassessment Monitoring

Planning for monitoring:

- Schedule sampling to coincide with the Index Period.
- Hire a qualified consultant – don’t do it yourself!
- Use qualified laboratories. (Your qualified consultant will take care of this.)
- Make sure your consultant has a QA Plan.
- Budget adequate funding; up to \$30,000 or more!
- Each taxon id must be stored for 3 years. (more costs)
- DFG may perform external QA checks. (more costs to facilitate)

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got SWPPP?

Appendix 3

Bioassessment Monitoring

Data submittal:

- Data is submitted to the State Water Board in electronic format.
- SWAMP is currently developing standardized formats for reporting bioassessment data; until then use a MS Excel format.
- The physical / habitat data must be reported using the standard *SWAMP Stream Habitat Characterization Form – Full Version*. (See your consultant.)

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got SWPPP?

Appendix 3

Bioassessment Monitoring

Invasive Species Protection:

- Those conducting the monitoring must take precautions to prevent the introduction of invasive species.
- Follow the recommendations of California DFG.
- Once again, use a reputable and experienced consultant who has a big insurance policy!



**DON'T MOVE A MUSSEL**

The invasion of quagga and zebra mussels from the eastern US could be devastating to lakes, reservoirs and rivers of the western US. They are here... and how we control their spread on trailered watercraft presents a huge challenge.

Pacific States Marine Fisheries Commission  
www.psmfc.org

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# QSD/QSP Training



*Schedule:*  
Day 3 – For QSDs

- Module 6 8:00 – 12:00 PM
- Lunch 12:00 – 1:00 PM
- **Module 7 1:00 – 3:00 PM**
- Module 8 3:00 – 4:00 PM

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# QSD Training

*Module 7*  
*SWPPP Development & PRDs*

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**got SWPPP?**

## Learning Objectives

1. To understand the QSD’s role in preparing and amending SWPPPs.
2. To understand the Pollutant Source Evaluation Process
3. To determine BMP selection based on the Pollutant Source Evaluation and the CGP’s mandatory BMPs.
4. To understand what documents are required to be filed electronically, when they must be filed, and who must certify the documents

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got **SWPPP?**

Order p. 40

Qualified  
SWPPP  
Developer

In addition, a QSD shall have attended a 3-day State Water Board-approved QSD training course and pass the State's on-line exam.

A QSD applicant shall currently possess at least one of the following prerequisites:

a. A California landscape architect registration;

b. A professional hydrologist registration through the American Institute of Hydrology;

c. A Certified Professional in Erosion and Sediment Control (CPESC)<sup>TM</sup> registration through EnviroCert International, Inc.;

d. A Certified Professional in Stormwater Quality (CPSWQ)<sup>TM</sup> registration through EnviroCert International, Inc.; or

e. Any prerequisite course approved by the State Water Board's Division of Water Quality Deputy Director in accordance with Section V.G.

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got **SWPPP?**

Order p. 37



QSD Permit-Specified Roles

V.C. Discharger's Responsibilities for Qualified SWPPP Developer Performance

V.C.1. The discharger shall retain a QSD from the beginning of the project through the Notice of Termination approval.

V.C.2. A QSD is required to assess how construction activities will affect sediment transport, erosion, and other discharges of pollutants in stormwater runoff in the SWPPP design and implementation. The QSD is required to revise the SWPPP to address potential problems identified by visual inspections, sampling data, comments from a QSP, or their own site observations.

V.C.3. A QSD is required to include in the SWPPP the name, email, and phone number of all the QSP-trained delegate(s).

V.C.4. The discharger shall ensure that a QSD performs the following on-site visual inspections<sup>13</sup>:

a. Within 30 days of construction activities commencing on a site;

b. Within 30 days of a discharger replacing the QSD;

c. Twice annually, once August through October and once January through March;

d. Within 14 calendar days after a numeric action level exceedance; and

e. Within the time period requested in writing from Water Board staff.

V.C.5. A QSD may perform the work of a QSP.

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got **SWPPP?**

Order p. 31-35

The  
SWPPP  
Document

IV.O. Stormwater Pollution Prevention Plan Requirements

IV.O.1. The discharger shall ensure the site's SWPPP complies with the below conditions:

a. A site-specific SWPPP is developed, and amended as necessary, by a QSD. The discharger is responsible for keeping the SWPPP and associated documents updated in SMARTS to reflect current site conditions and construction activities.

b. Trained personnel and BMP materials are available at the site as required by this General Permit.

c. The SWPPP includes the implementation of BMPs that comply with BAT, BCT, and ensure compliance with water quality standards; additional BMPs based on input from the QSP to address numeric action level and numeric effluent limitation exceedances; and additional training needed for the QSP, Legally Responsible Person, or designated persons on-site.

d. The SWPPP is available at the site and made available upon request by a federal, State, or municipal inspector. A current copy of the site-specific SWPPP and any site inspection reports required by this General Permit may be kept in electronic format at the site so long as the information requested by a federal, State, or municipal inspector can be made available during an inspection. All maps are legible and available in hard copy at the site.

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# The SWPPP Document

Order p. 31-35

IV.O.2. The SWPPP shall include:

- a. Identification of all pollutants, their sources, and control mechanisms, including sources of sediment associated with all construction activities (e.g., sediment, paint, cement, sludge, cleaners, site erosion);
- b. Pollutant source assessments, including a list of potential pollutant sources and identification of site areas where additional BMPs are necessary to reduce or prevent pollutants in stormwater and authorized non-stormwater discharges, per the following minimum requirements when developing the pollutant source assessment:
  - i. Consider all potential sources of pollutants, including non-visible pollutants which are known, or should be known to occur on-site including those that:
    - 1. Are used in construction activities;
    - 2. Are stored on-site;
    - 3. Were spilled or released during construction activities or past land use activities and not cleaned up; and
    - 4. Were applied to land as part of past land use activities.
  - ii. Consider all potential sources of pollutants associated with applicable TMDLs listed in Attachment H, and state whether or not sources of those pollutants are present on-site;
  - iii. Consider the quantity, physical characteristics (e.g., liquid, powder, solid), and locations of each potential pollutant exposed, source handled, produced, stored, recycled, or disposed of on-site;
  - iv. Consider the degree to which pollutants associated with those materials may be exposed to and mobilized by contact with stormwater; and
  - v. Consider the direct and indirect pathways that pollutants may be exposed to stormwater or authorized non-stormwater discharges. This shall include an assessment of past spills or leaks, non-stormwater discharges, and discharges from adjoining areas.

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# The SWPPP Document

Order # 31-35

- c. Description of site-specific BMPs implemented to reduce or eliminate stormwater pollution, including the following, if applicable:
  - i. Minimum sediment and erosion control BMPs as outlined in Attachments D and E of this General Permit;
  - ii. Active treatment systems as included in an Active Treatment System Plan (as required in Section E.1 of Attachment F);
  - iii. Passive treatment technologies as included in a Passive Treatment Plan (as required in Section D.2 of Attachment G);
  - iv. BMPs implemented to address applicable TMDL implementation requirements (as required by Attachment H); and
  - v. Dewatering systems (as required by Attachment J).
- d. Site-specific BMPs initialized immediately to temporarily stabilize an area disturbed by construction where construction activities will not be resumed within 14 days.
- e. Identification, elimination, control, or treatment information for all non-stormwater discharges from the site not regulated by this or another NPDES permit.
- f. Description of efforts and BMPs used to minimize and control pollutants discharged from equipment and vehicle washing, wheel wash water, and other wash waters. Wash waters must be captured and properly disposed of and/or treated to mitigate impacts to water quality.
- g. Description of efforts and BMPs used to minimize exposure of building materials, building products, construction wastes, trash, landscape materials, fertilizers, pesticides, herbicides, detergents, sanitary waste, and other materials present on the site to precipitation and to stormwater.
- h. Description of spill and leak prevention and response plan including:
  - i. Procedures that effectively address hazardous and non-hazardous spills in accordance with law;
  - ii. Spill and leak response equipment and materials to be available on-site, cleaned up immediately, and disposed of properly; and
  - iii. Personnel are assigned and trained for spill and leak prevention and response.

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# The SWPPP Document

Order p. 31-35

- i. Construction Site Monitoring Program that describes methods and procedures for monitoring discharges in accordance with the applicable Attachment D or E that includes the following:
  - ii. Visual inspection locations, inspection procedures, and follow-up tracking procedures.
  - iii. Identification of sampling locations, collection, and handling procedures shall include detailed procedures for field analysis, sample collection, storage, preservation, and shipping to the laboratory to ensure consistent quality assurance and control is maintained.
  - iv. A copy of the Chain of Custody form used when handling and shipping samples.
  - v. Identification of the analytical methods and related method detection limits (if applicable) for each parameter.
  - vi. Watershed Monitoring Option:
    - 1. If the discharger is part of a qualified regional watershed-based monitoring program approved by the Regional Water Board Executive Officer or their delegate, the discharger may be eligible for relief from the monitoring requirements in the applicable Attachment D or E. The Regional Water Board may approve proposals to substitute a qualified watershed-based monitoring program if it determines the program will provide information to determine each discharger's compliance with the requirements of this General Permit.

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Order p. 31-35

The SWPPP Document

NEW

j. Title Sheet(s) with:

i. Project name;

ii. Project location (vicinity map);

iii. Preliminary schedule of activities;

iv. Site operating hours (hours when construction activities are occurring);

v. Index of attachments;

vi. Contact information for QSD(s), QSP(s), and trained delegates (name, phone numbers, license or certification number); and

vii. Signature of the QSD(s) who prepared the SWPPP.

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Order p. 31-35

The SWPPP Document

NEW

k. Pre-Earthwork Drawing with:

i. Site and project boundaries;

ii. Areas disturbed during geotechnical or other preconstruction investigation work;

iii. Existing roads and trails;

iv. Drainage areas;

v. Discharge locations;

vi. Existing storm drain system if applicable; and

vii. Proposed locations of storage areas for waste, construction materials, project staging areas, stockpiles, vehicles, equipment and vehicle maintenance, loading/unloading of materials, site access (entrance/exits), fueling, water storage, water transfer for dust control, demolition, and areas of other construction support activities.

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Order p. 31-35

The SWPPP Document

LOCK

i. Construction and Earthwork Drawing(s) with:

i. Site layout (grading plans) including roads;

ii. Site and project boundaries;

iii. Drainage areas;

iv. Discharge locations;

v. Sampling locations;

vi. Areas of soil disturbance (temporary or permanent);

vii. Proposed active areas of soil disturbance (cut or fill);

viii. Proposed locations of erosion control BMPs;

ix. Proposed locations of sediment control BMPs;

x. Proposed locations of run-off BMPs;

xi. Temporary and/or permanent run-on conveyance (if applicable);

xii. Proposed locations of active treatment systems(s) (if applicable);

xiii. Locations of storage areas for waste, construction materials, project staging areas, stockpiles, vehicles, equipment and vehicle maintenance, loading/unloading of materials, site access (entrance/exits), fueling, water storage, water transfer for dust control, demolition, and areas of other construction support activities; and

xiv. Site-specific procedures to implement final stabilization BMPs as soon as reasonably practicable.

NEW

LOCK

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got swPPP?

got **SWPPP?**

Connect the dots SWPPP

Identify Activities

Identify Materials

Pollutant Source Evaluation

Identify Pollutants

Specify BMPs

Monitoring to check in BMPs and control of pollutants

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Connect the dots SWPPP

Associate specific pollutants with specific activities and materials



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got swPPP?

got **SWPPP?**

Connect the dots SWPPP

Types of pollutants:

- Sediment
- Concrete slurries
- Asphalt
- Fuels
- Equipment fluids
- Sanitary wastes
- Soil amendments

- Paints and solvents
- Sealers
- Pesticides
- Herbicides
- Contaminated soil
- Treated wood
- Construction Materials

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Connect the dots SWPPP

Specify BMPs to Address the Identified Activities and Pollutants

**Fiber Rolls**

**SE-5**

**Category:**

- XC Erosion Control
- 40 Erosion Control
- 1C Sedimentation
- 4B Erosion Control
- 4C Erosion Control
- 4D Erosion Control

**Subcategory:**

- 4D Erosion Control

**Targeted Beneficiaries:**

- Environment
- Public
- Private
- State
- Local

**Potential Adversities:**

- 1. Erosion Control
- 2. Sedimentation
- 3. Erosion Control
- 4. Sedimentation
- 5. Erosion Control
- 6. Sedimentation

**Legend:**

- 1 Erosion Control
- 2 Sedimentation

**Notes:**

- 1. Erosion Control
- 2. Sedimentation
- 3. Erosion Control
- 4. Sedimentation
- 5. Erosion Control
- 6. Sedimentation

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Connect the dots SWPPP

Establish a monitoring program to verify the effectiveness of the BMPs

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Let's Look Inside

STORM WATER POLLUTION PREVENTION PLAN

Goldhill 3 Subdivision Project

RISK LEVEL 2

Legally Responsible Person (LRP):  
Linda Parsons  
Gold Hill 3 & Albert D. Stone Construction Company  
4021 East Chicago Street  
Concord, CA 94520  
(925)452-6409

Prepared For:  
Stone Tamarack  
Discovery Builders, Inc.  
4021 East Chicago Street  
Concord, CA 94520  
(925)452-2616

Project Address:  
Latitude: 38.10340°N / Longitude: -122.13084°W  
Lopez Road Goldhill Road  
Fairfield, CA 94534

SWPPP Prepared by:  
John Tamarack, CPESC, QSP/QSD/QSP, T&E  
WGR Southwest, Inc.  
11780 N. Hwy. 99  
Lodi, CA 95240  
(209) 334-5363 x110

SWPPP Preparation Date:  
April 25, 2021

WDID # \_\_\_\_\_

Estimated Project Dates:  
Start of Construction: June 1, 2021      Completion of Construction: December 15, 2025

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got swppp?

got SWPPP?

Your Turn!

Using the following photo, make a list of the following:

a. Activities

b. Trades present on the project

c. Materials used by each trade

d. Wastes generated

e. Potential pollutants

f. BMPs needed

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# got SWPPP

## Need a template?

- CASQA Outline / Template

[www.casqa.org/](http://www.casqa.org/)

### Appendix B Stormwater Pollution Prevention Plan Outline

**Additional Outline of SWPPP components in more General Permit Requirements**

This appendix presents a recommended structure for a construction site Stormwater Pollution Prevention Plan (SWPPP) with associated content. The structure and content is based on a comparison of specific SWPPP permit requirements and other suggested content to meet the Permit General Permit requirements to follow a SWPPP as stormwater prevention and pollution control measure (Section 30.1.1.1) and that the SWPPP must include information needed to demonstrate compliance with all requirements of the General Permit (Section 30.1.1.2). The size of the plan and content of a specific SWPPP should be tailored to the specific project based on the judgment of the [SWPPP Developer](#) (SWPPP Developer). Specific details for SWPPP components are provided in the following table, with the content deemed to be included in the SWPPP documents are indicated in the table with the relevant permit section(s) in parentheses.

The suggested SWPPP outline is tailored to the outline associated with suggested content for this section.


#### B.1 Suggested SWPPP Outline

##### SWPPP Certification by Qualified SWPPP Developer

##### SECTION 1 SWPPP Requirements

- 1.1 Introduction
  - 1.1.1 Permit Signature Requirements
  - 1.1.2 SWPPP availability and Implementation
  - 1.1.3 SWPPP Amendments
  - 1.1.4 Extension of Records
  - 1.1.5 Required Non-Compliance Reporting
  - 1.1.6 Annual Report
  - 1.1.7 Changes to Permit Coverage
  - 1.1.8 Terms of Termination
- SECTION 2 Project Information
  - 2.1 Project and Site Description
  - 2.2 Stormwater Run-Off From Offsite Areas
  - 2.3 Potential for Construction Site Sediment and Erosion From Site Disturbance
  - 2.4 Construction Schedule
  - 2.5 Potential Construction Site Pollution Sources
  - 2.6 Identification of All Stormwater Discharges

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**got S**

**What Go**

Need a template?

- Caltrans MS Access SWPPP

**REQUIRED TEXT:**

WASTE DISCHARGE IDENTIFICATION (WQID) NUMBER:

**STORMWATER POLLUTION PREVENTION PLAN**

for

Start Here → Triple Click here to insert PROJECT NAME - then TAB to next field to continue entering project specific information

*REQUIRED TEXT when CALTRANS is administering the project:*

CONTRACT NO.: [INSERT CALTRANS CONTRACT NUMBER-then TAB TO NEXT CALTRANS Project Identifier NUMBER: [insert Caltrans Project Identifier Number] then TAB to next field.

*REQUIRED TEXT when a LOCAL AGENCY / PRIVATE ENTITY is administering the project:*

CALTRANS ENCROACHMENT PERMIT NUMBER FOR LOCAL AGENCY / PRIVATE ENTITY: [insert Caltrans Encroachment Permit Number Issued to Local Agency / Private Entity]-then TAB to next field.

CALTRANS ENCROACHMENT PERMIT NUMBER FOR CONTRACTOR: [insert Caltrans Encroachment Permit Number Issued to Contractor]- then TAB to next field.

**REQUIRED TEXT:**

RISK LEVEL: [insert Risk Level]-then TAB to next field.

*Prepared for:*

Insert Name of Lead Agency-then TAB

Insert Address 1 and press ENTER to insert Address 2 or TAB to next field

Insert City, State, ZIP-then TAB

Insert RE's Name-then TAB

Insert RE's Telephone Number-then TAB

*Submitted by:*

Insert Contractor's Company Name-then TAB

23

# SWPPP Amendments

24



## SWPPP Amendments

Upload Amended SWPPP onto SMARTS as part of a COI that the LRP will need to certify.

[illegible]

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# QSD/QSP Training



Schedule:

Day 3 – For QSDs

- Module 6 8:00 – 12:00 PM
- Lunch 12:00 – 1:00 PM
- Module 7 1:00 – 3:00 PM
- **Module 8 3:00 – 4:00 PM**

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# QSD Training

Module 8

Project Close Out

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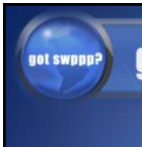
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# got SWPPP?



So, you think you are ready for a NOT?

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**got SWPPP?**

## Learning Objectives

1. To understand what is necessary to deem a project complete
2. To understand what documents are required to be filed electronically, when they are required to be filed, and who must certify them

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**got SWPPP?**

Order  
p. 20 - 23

## Basis of Termination

A project may be terminated if any one of the following are satisfied:

**Issue of Termination (Must select one option below)**

☒ The construction project completes because the methods used to demonstrate the final stabilization.

☒ 70% Final Cover Method

☐ RULE or RULE 2 Method

☐ Custom Method

Date of project completion: 11/21/2022

Have all elements of the RAPP been completed?

Yes  No

If "No" provide a reason in the text box below.

Is there a potential for construction-related storm water pollutants to be discharged into the site area runoff?

Yes  No

If "No" provide a reason in the text box below.

Have construction materials and waste been disposed of properly?

Yes  No

If "No" provide a reason in the text box below.

Are all construction-related equipment, materials and any temporary BMP's no longer needed and removed from the site?

Yes  No

If "No" provide a reason in the text box below.

Has compliance with Final Construction Stabilization been demonstrated?

Yes  No

If "No" provide a reason in the text box below.

Has a Final Construction BMP Long term maintenance plan been established?

Yes  No

If "No" provide a reason in the text box below.

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**got SWPPP?**

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## Basis of Termination

A project may be terminated if any one of the following are satisfied:

✓ Construction activities have two suspense boxes. Choose the methods used to demonstrate the final stabilization.

☐ 70% Final Cover Method  
☐ RUSLE or RUSLE-2 Method  
☐ Custom Method

Date of suspension: [mm/dd/yyyy] Expected start up date: [mm/dd/yyyy]

Is there a potential for construction-related storm water pollutants to be discharged into the site runoff? Select ▼

Have construction materials and waste been disposed of properly? Select ▼

Has all disturbed areas and other areas of potential erosion been stabilized? Select ▼

Is there an operation and maintenance plan for erosion and sediment control in place? Select ▼

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got swppp?

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Basis of Termination

A project may be terminated if any one of the following are satisfied:

✓

Site cannot discharge storm water to waters of the United States (check one):

☐ All storm water is retained on site.

✓

All storm water is discharged to impoundment or retention ponds offsite.

✓

Discharge of storm water from the site is now subject to another NPDES general permit or an individual NPDES permit.

✓

NPDES Permit No. \_\_\_\_\_ Date discharge began: \_\_\_\_\_ Permit expires: \_\_\_\_\_

✓

Have you notified the new operator/owner of the storm water NPDES permit requirements? ☐ Yes ☐ No

✓

Have you notified the new operator/owner of the storm water NPDES permit requirements? ☐ Yes ☐ No

✓

Other

Business Name: \_\_\_\_\_ Street Address: \_\_\_\_\_ City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

First Name: \_\_\_\_\_ Last Name: \_\_\_\_\_ Title: \_\_\_\_\_ Email: \_\_\_\_\_

Phone: \_\_\_\_\_ Fax: \_\_\_\_\_

Other: \_\_\_\_\_

✓

Other

Explain any other circumstances that are not covered above:

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got swppp?

got SWPPP?

Order  
p. 20 - 23

NOT  
Submission  
Requirements

III.H. Terminating Permit Coverage

III.H.1. To terminate General Permit coverage, the discharger shall electronically certify and submit the required documentation (Section III.H.2 below) to demonstrate compliance with all General Permit coverage termination requirements, including applicable post-construction BMPs and/or low impact development features.

III.H.2. The discharger shall electronically certify and submit the following through SMARTS to be considered for General Permit coverage termination:

NEW

a. A complete Notice of Termination;

b. QSP-prepared final Notice of Termination inspection with the QSP name and valid QSP certificate number;

c. A final site map; and

d. Photos demonstrating final stabilization and the implementation of applicable post-construction BMPs and/or low impact development.

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got swppp?

got SWPPP?

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NOT  
Submission  
Requirements

NEW

Same map, but much more info.

III.H.3. The discharger shall certify and submit a final site map, as part of the Notice of Termination documents through SMARTS. The Notice of Termination final site map shall, at minimum, include the following:

a. Project boundaries and adjacent lands with labeled key features, such as roadways and waterbodies;

b. Developed drainage basin boundaries and discharge location points;

c. Site entrances and exits, lot boundaries, roads, structures, and features related to the project that may be used as a reference;

d. Specific permanent erosion control BMPs, post-construction BMPs, and low impact development features;

e. Individual erosion control BMPs (including final landscaping) identified using hatch patterns, symbols, or shading unique to each BMP;

f. Location and orientation of all photos used to document final site conditions and demonstrate compliance with post-construction requirements of this General Permit; and

g. If applicable, areas of the site being transferred to new ownership, and the name and contact information of the owner.

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# got SWPPP?

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## NOT Submission Requirements

III.H.4. The Regional Water Board will consider a site, parcel, or individual lot complete only when all portions of the site comply with all the following conditions:

- a. The discharger has completed all construction activity;
- b. There is no greater potential for construction-related stormwater pollutants to be discharged into site runoff than prior to the construction activity;
- c. Construction-related equipment and temporary BMPs have been removed from the site, except as set forth in Section III.F.2.b above;
- d. Construction materials and wastes have been disposed of properly;
- e. Soils disturbed by construction activities have been permanently stabilized (final stabilization), except as set forth in Section III.F.2.b above, using materials that:
  - i. Have a product life that support the full and continued stabilization of the site;
  - ii. Achieve stabilization without becoming trash or debris; and
  - iii. Minimize the risk of wildlife entrapment;

III.F.2.b. For a larger common plan of development for residential use, the discharger may, through the Change of Information process, remove residential lots from permit coverage once the lot meets the following criteria:

**NEW**

- i. The residential lot has been sold to the individual homeowner(s) for residential use;
- ii. A certificate of occupancy or equivalent document, is maintained on-site and can be made available during inspections;
- iii. The lot is less than one acre of disturbance;
- iv. All construction activity conducted on the lot by the discharger is complete; and
- v. The discharger has temporarily stabilized any unfinished yard and landscaping areas with BMPs.

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## NOT Submission Requirements

f. The discharger has ensured the QSP completed on-site visual inspections and verified the site complies with all Notice of Termination requirements, including installation of post-construction stormwater runoff BMPs and/or low impact development features;

g. The Legally Responsible Person has submitted the information in the Notice of Termination and has certified and submitted through SMARTS; and

h. The discharger has demonstrated that the site complies with all Notice of Termination conditions above (Section III.H) and all final stabilization conditions by one of the following methods:

- i. **70 percent final cover method.** No computational proof required. Requires permanent vegetative cover to be evenly established over 70 percent of all disturbed and exposed areas of soil (non-paved or non-built). In areas that naturally have low vegetative coverage (e.g. deserts), 70 percent of natural conditions of local undisturbed areas is acceptable. Photos of all site areas are required to verify compliance with the 70 percent final cover requirement.
- OR
- ii. **Revised Universal Soil Loss Equation (RUSLE or RUSLE2) method.** Computational proof required. Site conditions shall match values used in method computation. Photos of all site areas are required to verify pre-construction and post-construction conditions used in the computations.
- OR
- iii. **Custom method.** The discharger may request approval from the Regional Water Board to use a method or analytical model other than Section III.H.4.h.i and 4.h.ii above to demonstrate that the site complies with the "final stabilization" requirements. Photos of all site areas are required to verify the custom method used.

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## NOT Submission Requirements

III.H.5. The Notice of Termination photo documentation for General Permit compliance verification shall include photos of the site's final site conditions; post-construction BMPs and/or low impact development features; a description of the corresponding location, and orientation of photos as indicated on the final site map.



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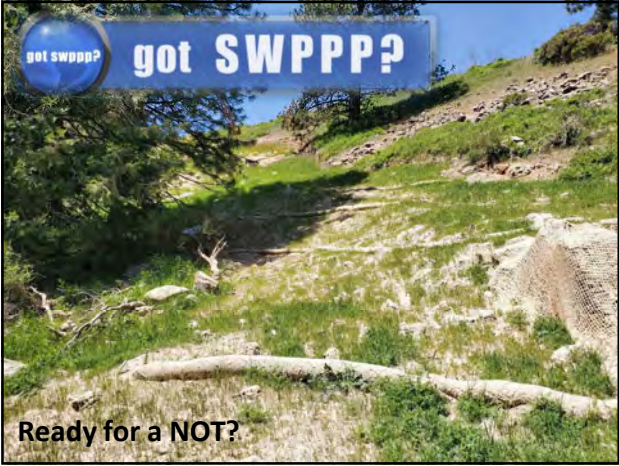
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